



Public Input No. 285-NFPA 101-2021 [Section No. 14.2.2.2.4]

14.2.2.2.4* Locking of Classroom Doors and Doors to Other Instructional Spaces.

Classroom doors and doors to other instructional spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged from the egress side of the door without opening the door.
- (2) The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
- (3) The releasing mechanism shall open the door leaf with not more than one releasing motion and shall not require tight grasping, tight pinching, or twisting of the wrist to operate .
- (4) The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (5) Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- (6) The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
- (7) The locking means shall not ~~modify the~~ impair the operation or affect the listing of the door closer, the lockset, panic hardware, or fire exit hardware ~~or impair their operation~~ .
- (8) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (9) The emergency action plan, required by 14.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- (10) Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 14.7.2.

Additional Proposed Changes

<u>File Name</u>	<u>Description Approved</u>
NFPA_101_Classroom_Door_Locking_Ch_14_15_16_17_38_39_20210531.pdf	Locking of Classroom Doors; and Door Locking to Prevent Unwanted Entry Chapters 14, 15, 16, & 17; 38 & 39

Statement of Problem and Substantiation for Public Input

The revisions in Item 3 are intended to remind the user of this section of the code of this important requirement for the operation of door releasing mechanisms.

The revisions to Item 7 are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

This is an example of a locking device which is lockable from inside the room, and is installed along with a typical lever-operated lockset where the lockset is not lockable from inside the room:
<https://securitech.com/safebolt>.

This is an example of a modification to panic hardware which converts the panic hardware to be lockable from inside the room with a thumb turn: <https://idighardware.com/2021/04/product-update-von-duprin-emergency-secure-lockdown-es/>

Submitter Information Verification

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Submittal Date: Mon May 31 11:37:11 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6702-NFPA 101-2021](#)

Statement: The suggested change to item 3 is not necessary as it's already a requirement under 7.2.1.5.3.3. The revisions to item 7 are an improvement that will clarify the requirement.

NFPA 101-2021

Locking of Classroom Doors; and Door Locking to Prevent Unwanted Entry

Chapters 14, 15, 16, & 17; 38 & 39

BHMA, John Woestman

14.2.2.2.4 * Locking of Classroom Doors and Doors to Other Instructional Spaces.

Classroom doors and doors to other instructional spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

1. The locking means shall be capable of being engaged from the egress side of the door without opening the door.
2. The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
3. The releasing mechanism shall open the door leaf with not more than one releasing motion and shall not require tight grasping, tight pinching, or twisting of the wrist to operate.
4. The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
5. Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
6. The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
7. The locking means shall not ~~modify or impair~~ the operation or affect the listing of the door closer, the lockset, panic hardware, or fire exit hardware ~~or impair their operation.~~
8. Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
9. The emergency action plan, required by 14.7.1, shall address the use of the locking and unlocking means from both sides of the door.
10. Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 14.7.2.

Reason: The revisions in Item 3 are intended to remind the user of this section of the code of this important requirement for the operation of door releasing mechanisms.

The revisions to Item 7 are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

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15.2.2.2.4 * Locking of Classroom Doors and Other Instructional Spaces.

15.2.2.2.4.1

Classroom doors and doors to other instructional spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

1. The locking means shall be capable of being engaged from the egress side of the door without opening the door.
2. The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
3. Two ~~nonsimultaneous~~-releasing motions shall be permitted where approved by the authority having jurisdiction provided that releasing does not require simultaneous operations, and provided the door is not equipped with panic hardware or fire exit hardware.
4. The releasing mechanism(s) shall not require tight grasping, tight pinching, or twisting of the wrist to operate.
- 4-5. The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- 5-6. Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- 6-7. The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
- 7-8. The locking means shall not ~~modify, impair the operation or affect the listing of~~ the door closer, the lockset, panic hardware, or fire exit hardware ~~or impair their operation.~~
- 8-9. Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- 9-10. _____ The emergency action plan, required by 15.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- 10-11. _____ Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 15.7.2.

Reason: The proposed revisions in Item 3 regarding “not require simultaneous operations” for the two releasing motions is to align with a similar requirement in 7.2.1.5.3.7 (where two releasing motions are permitted). In addition, in Item 3, it’s important to recognize that doors required with panic hardware or fire exit hardware should not be permitted more than one releasing motion.

The addition of new Item 4 is intended to remind the user of this section of the code of this important requirement for the operation of door releasing mechanisms.

The revisions to what was Item 7, now Item 8, are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

This is an example of a locking device which is lockable from inside the room, and is installed along with a typical lever-operated lockset where the lockset is not lockable from inside the room:
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16.2.2.2.6 Locking of Classroom Doors and Doors to Other Client Care Spaces.

Classroom doors and doors to other client care spaces shall be permitted to be locked to prevent unwanted entry provided that the locking means is approved and all of the following conditions are met:

1. The locking means shall be capable of being engaged from the egress side without opening the door.
2. The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.

3. The releasing mechanism shall open the door leaf with not more than one releasing motion and shall not require tight grasping, tight pinching, or twisting of the wrist to operate.
4. The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
5. Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
6. The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
7. The locking means shall not ~~modify or impair~~ the operation or affect the listing of the door closer, the lockset, panic hardware, or fire exit hardware ~~or impair their operation.~~
8. Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
9. The emergency action plan, required by 16.7.1, shall address the use of the locking and unlocking means from both sides of the door.
10. Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 16.7.2.

Reason: The revisions in Item 3 are intended to remind the user of this section of the code of this important requirement for the operation of door releasing mechanisms.

The revisions to Item 7 are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

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17.2.2.2.6.1

Classroom doors and doors to other client care spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

1. The locking means shall be capable of being engaged from the egress side of the door without opening the door.
2. The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
3. Two ~~nonsimultaneous~~-releasing motions shall be permitted where approved by the authority having jurisdiction provided that releasing does not require simultaneous operations, and provided the door is not equipped with panic hardware or fire exit hardware.
4. The releasing mechanism(s) shall not require tight grasping, tight pinching, or twisting of the wrist to operate.
- 4-5. The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- 5-6. Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- 6-7. The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.

- ~~7.8.~~ The locking means shall not ~~modify-impair~~ the operation or affect the listing of the door closer, the lockset, panic hardware, or fire exit hardware ~~or impair their operation~~.
- ~~8.9.~~ Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- ~~9.10.~~ The emergency action plan, required by 17.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- ~~10.11.~~ Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 17.7.2.

Reason: The proposed revisions in Item 3 regarding “not require simultaneous operations” for the two releasing motions is to align with a similar requirement in 7.2.1.5.3.7 (where two releasing motions are permitted). In addition, in Item 3, it’s important to recognize that doors which have panic hardware or fire exit hardware should not be permitted more than one releasing motion.

The addition of new Item 4 is intended to remind the user of this section of the code of this important requirement for the operation of door releasing mechanisms.

The revisions to what was Item 7, now Item 8, are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

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<https://securitech.com/safebolt>.

This is an example of a modification to panic hardware which converts the panic hardware to be lockable from inside the room with a thumb turn: <https://idighardware.com/2021/04/product-update-von-duprin-emergency-secure-lockdown-es/>

38.2.2.2.2 * Door Locking to Prevent Unwanted Entry.

Where approved, doors, other than those complying with 38.2.11.2, shall be permitted to be locked to prevent unwanted entry provided that all of the following conditions are met:

1. The locking means shall be capable of being engaged without opening the door.
2. The unlocking and unlatching operation from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
3. The releasing mechanism shall open the door leaf with not more than one releasing motion and shall not require tight grasping, tight pinching, or twisting of the wrist to operate.
4. The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
5. Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
6. The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
7. The locking means shall not ~~modify-impair~~ the operation or affect the listing of the door closer, the lockset, panic hardware, or fire exit hardware.
8. Modifications to required fire door assemblies, including door hardware, shall be in accordance with NFPA 80.

Reason: The revisions in Item 3 are intended to remind the user of this section of the code of this important requirement for the operation of door releasing mechanisms.

The revisions to Item 7 are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

This is an example of a locking device which is lockable from inside the room, and is installed along with a typical lever-operated lockset where the lockset is not lockable from inside the room:
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39.2.2.2.2 * Door Locking to Prevent Unwanted Entry.

Where approved, doors, other than those complying with 39.2.11.2, shall be permitted to be locked to prevent unwanted entry provided that all of the following conditions are met:

1. The locking means shall be capable of being engaged without opening the door.
2. The unlocking and unlatching operation from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
3. ~~Egress shall require~~ The releasing mechanism shall open the door with not more than one releasing motion and shall not require tight grasping, tight pinching, or twisting of the wrist to operate.
4. The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
5. Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
6. The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
7. The locking means shall not ~~modify-impair~~ the operation or affect the listing of the door closer, the lockset, panic hardware, or fire exit hardware.
8. Modifications to required fire door assemblies, including door hardware, shall be in accordance with NFPA 80.

Reason: The revisions in Item 3 are intended to align with similar requirements in Chapter 7 (7.2.1.5.3.2 and 7.2.1.5.10) and also to remind the user of this section of the code of the important requirements of no tight grasping, tight pinching, or twisting of the wrist for the operation of door releasing mechanism.

The revisions to Item 7 are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

This is an example of a locking device which is lockable from inside the room, and is installed along with a typical lever-operated lockset where the lockset is not lockable from inside the room:
<https://securitech.com/safebolt>.

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Public Input No. 100-NFPA 101-2021 [Section No. 14.2.11.1.1]

14.2.11.1.1

Every room or space greater than 250 ft² (23.2 m²) and used for classroom or other educational purposes or normally subject to student occupancy shall have not less than one outside window for emergency rescue that complies with all of the following, unless otherwise permitted by 14.2.11.1.2:

- (1) Such windows shall be openable from the inside without the use of tools and shall provide a clear opening of not less than 20 in. (510 mm) in width, 24 in. (610 mm) in height, and 5.7 ft² (0.5 m²) in area.
- (2) The bottom of the opening shall be not more than 44 in. (1120 mm) above the floor, and any latching device shall be capable of being operated from not more than 54 in. (1370 mm) above the finished floor.
- (3) Permanently fixed stairs or ramp are permitted to be used to allow occupants to be within 44 in. of the bottom window sill. The clear width of the stairs or ramp shall be at least the width of the window or 36 in. whichever is wider. The stairs or ramp and access thereto shall not be obstructed.
- (4) The clear opening shall allow a rectangular solid, with a width and height that provides not less than the required 5.7 ft² (0.5 m²) opening and a depth of not less than 20 in. (510 mm), to pass fully through the opening.
- (5) Such windows shall be accessible by the fire department and shall open into an area having access to a public way.
- (6) Windows for rescue that have a sill height below the adjacent finished ground level shall comply with 24.2.2.3.3(4)

Statement of Problem and Substantiation for Public Input

It is possible that Chapter 14 could be used for occupancy change to an existing building. Sometimes existing window locations may be more than 44 inches off the floor and this language would permit permanent structures (stairs or ramps) to be installed to bring a window for rescue into compliance. The structure would be permanent (unmovable) and required to be unobstructed. This would prevent them from being used for storage or blocked by storage or furnishings.

Windows for rescue could be found in below grade classrooms and there is no reference to requirements related to window wells. This language provides minimum sizing for the window well to permit full opening of the window as well as egress out of the window well.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 99-NFPA 101-2021 [Section No. 15.2.11.1.1]	
Public Input No. 101-NFPA 101-2021 [Section No. 16.2.11.1.1]	
Public Input No. 102-NFPA 101-2021 [Section No. 17.2.11.1.1]	

Submitter Information Verification

Submitter Full Name: Catherine Stashak

Organization: Office of the Illinois State Fire Marshal
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Submittal Date: Wed May 05 14:56:16 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: The proposed additions are more appropriately placed in the existing occupancy chapter.



Public Input No. 149-NFPA 101-2021 [Section No. 14.3.4.4.1]

14.3.4.4.1

Carbon monoxide detectors in accordance with Section 9.12 shall be provided in new educational occupancies in the locations specified as follows:

- (1) Carbon monoxide detectors shall be installed on the ceilings of rooms containing permanently installed fuel-burning appliances.
- (2) Carbon monoxide detectors shall be installed centrally located within occupiable spaces served by the first supply air register from a permanently installed, fuel-burning HVAC system.
- (3) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to a communicating attached garage.
- (4) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to an attached garage with a separation wall constructed of gypsum wallboard panels.

Statement of Problem and Substantiation for Public Input

The Building Code Technical Committee of the Gypsum Association reviewed references to gypsum products throughout NFPA 101 and identified several instances where incorrect terminology was used. This is one of several Public Inputs being submitted to ensure consistency in the use of gypsum terms throughout all codes, standards, and industry publications.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 145-NFPA 101-2021 [Section No. 8.6.11.3]	
Public Input No. 146-NFPA 101-2021 [Section No. 12.4.7.10.3]	
Public Input No. 148-NFPA 101-2021 [Section No. 13.4.7.10.3]	
Public Input No. 155-NFPA 101-2021 [Section No. 13.3.1]	
Public Input No. 150-NFPA 101-2021 [Section No. 14.3.4.4.3]	
Public Input No. 151-NFPA 101-2021 [Section No. A.3.3.182]	
Public Input No. 152-NFPA 101-2021 [Section No. A.7.1.3.2.1(1)]	
Public Input No. 153-NFPA 101-2021 [Section No. A.7.1.3.2.1(3)]	

Submitter Information Verification

Submitter Full Name: Timothy Earl
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Committee: SAF-END

Committee Statement

Resolution: [FR-6678-NFPA 101-2021](#)

Statement: This update aligns the terminology used within NFPA 101 and 5000 with the standard terminology used throughout the industry.



Public Input No. 150-NFPA 101-2021 [Section No. 14.3.4.4.3]

14.3.4.4.3

Carbon monoxide detectors as specified in 14.3.4.4.1 shall not be required in the following locations:

- (1) Garages
- (2) Occupiable spaces with communicating attached garages that are open parking structures as defined in 3.3.284.8.4
- (3) Occupiable spaces with communicating attached garages that are mechanically ventilated in accordance with the applicable mechanical code
- (4) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where panels where the garage is an open parking structure as defined in 3.3.284.8.4
- (5) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where panels where the garage is mechanically ventilated in accordance with the mechanical code

Statement of Problem and Substantiation for Public Input

The Building Code Technical Committee of the Gypsum Association reviewed references to gypsum products throughout NFPA 101 and identified several instances where incorrect terminology was used. This is one of several Public Inputs being submitted to ensure consistency in the use of gypsum terms throughout all codes, standards, and industry publications.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 145-NFPA 101-2021 [Section No. 8.6.11.3]	
Public Input No. 146-NFPA 101-2021 [Section No. 12.4.7.10.3]	
Public Input No. 148-NFPA 101-2021 [Section No. 13.4.7.10.3]	
Public Input No. 149-NFPA 101-2021 [Section No. 14.3.4.4.1]	
Public Input No. 155-NFPA 101-2021 [Section No. 13.3.1]	
Public Input No. 151-NFPA 101-2021 [Section No. A.3.3.182]	
Public Input No. 152-NFPA 101-2021 [Section No. A.7.1.3.2.1(1)]	
Public Input No. 153-NFPA 101-2021 [Section No. A.7.1.3.2.1(3)]	

Submitter Information Verification

Submitter Full Name: Timothy Earl
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Submittal Date: Fri May 14 10:12:55 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6713-NFPA 101-2021](#)

Statement: This update aligns the terminology used within NFPA 101 and 5000 with the standard terminology used throughout the industry.



Public Input No. 400-NFPA 101-2021 [Section No. 14.3.5]

14.3.5 Extinguishment Requirements.

14.3.5.1

Educational occupancy buildings shall be protected throughout by an approved, ~~supervised~~ automatic sprinkler system in accordance with Section 9.7. ~~except .1 and electrically supervised in accordance with 9.7.2, except~~ as otherwise permitted by 14.3.5.2.

14.3.5.2

The requirement of 14.3.5.1 shall not apply to any of the following:

- (1) Non-relocatable buildings having an area not exceeding 1000 ft² (93 m²)
- (2) Non-relocatable buildings containing a single classroom
- (3) Relocatable buildings complying with all of the following:
 - (a) Building area does not exceed 1000 ft² (93 m²)
 - (b) Building contains a single classroom
 - (c) Building is located not less than 30 ft (9.1 m) from another building

14.3.5.3

Every portion of educational buildings below the level of exit discharge shall be protected throughout by an approved, ~~supervised~~ automatic sprinkler system in accordance with Section 9.7. 1 and electrically supervised in accordance with 9.7.2.

14.3.5.4

Buildings with unprotected openings in accordance with 8.6.6 shall be protected throughout by an approved, ~~supervised~~ automatic sprinkler system in accordance with Section 9.7. 1 and electrically supervised in accordance with 9.7.2.

14.3.5.5

Where another provision of this chapter requires an automatic sprinkler system, the sprinkler system shall be installed in accordance with 9.7.1.1(1) and electrically supervised in accordance with 9.7.2.

Statement of Problem and Substantiation for Public Input

The SAF-AAC and BLD-AAC formed a task group to review fire sprinkler supervision requirements in NFPA 101 and 5000. The task group recommends occupancy chapters to consider replacing text that points to Section 9.7.1.1 (likewise in NFPA 5000, Section 55.3.1.) for supervision, as this can be interpreted the installation standard, i.e. NFPA 13, drives the method of supervision which allows chains and locks on new installations. This is not the intent of NFPA 101 or NFPA 5000 as model codes that allow construction tradeoffs and exceptions based on electrical supervision of valves, waterflow, etc. The task group recommends occupancy TCs to revise text in XX.3.5.1 to be explicit as follows:

- ...protected by an automatic sprinkler system in accordance with Section 9.7.1 and electrically supervised in accordance with 9.7.2.
- ...protected by an automatic sprinkler system in accordance with Section 55.3 and electrically supervised in accordance with 55.3.2.

Submitted on behalf of the SAF-AAC and BLD-AAC task group on sprinkler supervision.

Submitter Information Verification

Submitter Full Name: Jeffrey Hugo
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Street Address:
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Submittal Date: Tue Jun 01 14:27:09 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [CI-6674-NFPA 101-2021](#)

Statement: The word "electrically" included in PI 400 is not needed, and this section should stay consistent with 9.7.2 which already requires systems to be electrically supervised.

This committee input is intended to be a placeholder for second draft.



Public Input No. 410-NFPA 101-2021 [New Section after 14.3.5.5]

14.3.5.6 Portable Fire Extinguishers.

Portable fire extinguishers shall be provided in accordance with Section 9.9.

Statement of Problem and Substantiation for Public Input

Reason: The concept of trading off portable extinguishers in sprinklered buildings has been largely abandoned by fire protection principles. The National Fire Codes of both NFPA 1 and the ICC- IFC require portable fire extinguishers in all occupancy classes including storage which addresses property protection and property loss as well as, the safety of the building occupants.

A portable fire extinguisher is an effective item of fire protection which allows for small fires to be tackled by the occupants of a building and saves 100s of thousands of dollars in property loss.

It is important to appreciate that while different to official assumptions and desire for evacuation, research shows the public's priorities to be rational and appropriate. The public's experience of fire is vastly different to that of the professionals involved in the planning for and responding to fire.

Some key findings from research studies have been identified and the public's-oriented outcomes include, avoidance of embarrassment, inconvenience, damage to the premises or property, concern for others, pets and possessions and lastly personal injury.

The evidence further identifies that the public is willing and will accept minor consequences in their pursuit of achieving personal humanistic priorities and instinct. Concern for people, pets and possessions are strong and established drivers of behavior in the event of a fire. Therefore, this should be no surprise to see it as an influential feature of most individual's response to a fire.

Limiting a fire to the smallest area within a building is a sensible aspiration.

Official policy and attitudes are most singularly directed at avoiding the risk when the public encounters a fire. This is well meaning but the research has shown that this DOES NOT I REPEAT DOES NOT align with the publics' attitude or the ability of the general public.

Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. NFPA 10 states: 5.1.2 The selection of extinguishers shall be independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment. Other codes, and other occupancy chapters have abandoned this concept in recognition of the fact that portable extinguishers are a valuable, cost-effective layer of fire protection, and are intended for a different purpose than sprinklers. To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

A significant amount of data has been collected to support the requirement for portable extinguishers, including: WPI/EKU Study: "Ordinary People and the Effective Operation of Fire Extinguishers", which clearly showed that the vast majority of people who have never used an extinguisher can operate one safely and effectively.

2013 NFPA Report: "U.S. Experience with Sprinklers" reports that there were 48,460 reported structure fires annually in buildings equipped with sprinkler systems between 2007-2011, and 40,440 (83 percent) never grew large enough to activate the system. Based on this report alone, it's clear that people are reacting to small fires and extinguishing them prior to sprinkler activation.

A study by Richard Bukowski in 2014, the life cycle cost of portable fire extinguishers was determined to be between one and a half and four cents per foot annually; if coverage could be maximized to that allowable by code, the cost drops to between a half cent and one cent per foot annually. It's unlikely that any other layer of fire protection is so cost-effective.

Submitter Information Verification

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Affiliation: The National Association of State Fire Marshals, The International Fire Marshal's Association - Georgia Chapter / The Georgia Fire Prevention Association and FEMA
Street Address:
City:
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Zip:
Submittal Date: Tue Jun 01 14:56:42 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: The Code is focused on life safety and therefore the committee does not want to encourage staff to attempt using extinguishers, which could delay activation of the fire alarm system and the evacuation of occupants.



Public Input No. 327-NFPA 101-2021 [Section No. 14.4.5]

14.4.5 Alcohol-Based Hand-Rub Dispensers.

~~Alcohol The installation and maintenance of Alcohol -based hand-rub dispensers shall be protected in accordance with 8 dispensers and the storage of alcohol-based hand rub solutions in accordance with 8 .7.3. 1, unless all of the following requirements are met:~~

- ~~• Dispensers shall be installed in rooms or spaces separated from corridors and exits.~~
- ~~• The maximum individual dispenser fluid capacity shall be as follows:~~
 - ~~(1) 0.32 gal (1.2 L) for dispensers in rooms~~
 - ~~(2) 0.53 gal (2.0 L) for dispensers in suites of rooms~~
- ~~• The dispensers shall be separated from each other by horizontal spacing of not less than 48 in. (1220 mm).~~
- ~~• Storage of quantities greater than 5 gal (18.9 L) in a single fire compartment shall meet the requirements of NFPA 30.~~
- ~~• The dispensers shall not be installed over or directly adjacent to an ignition source.~~
~~Dispensers installed directly over carpeted floors shall be permitted only in sprinklered rooms or spaces 3 shall be permitted .~~

Statement of Problem and Substantiation for Public Input

Our current health situation with the latest viral outbreak has led to a need to increase the number of alcohol based hand sanitizer dispensers within many different types of occupancies. Although alcohol based hand sanitizer was addressed in this chapter and many other requirements were also located in this chapter, the requirements did not apply to storage of sanitizer when not in use or many other provisions that could be applicable. Providing a pointer to section 8.7.3.3 will provide a direct link to all the requirements needed for safe installation, use, and maintenance of alcohol based hand rub dispensers as well as the storage of any alcohol based hand rub materials not in use.

Currently Robert Upson is also chairing an NFPA 30 task group, and Bruce Johnson is chairing an NFPA 1 task group to address this subject within those standards respectively. So a recommendation should be made to this committee to put forth a committee input and create a task group to review this requirement throughout and ensure correlation with NFPA 1 and NFPA 30 task groups that are already reviewing this.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 316-NFPA 101-2021 [Section No. 8.7.3.3]	
Public Input No. 324-NFPA 101-2021 [New Section after 11.4.3.6]	
Public Input No. 325-NFPA 101-2021 [Section No. 12.4.6]	
Public Input No. 326-NFPA 101-2021 [Section No. 13.4.6]	
Public Input No. 329-NFPA 101-2021 [Section No. 15.4.5]	
Public Input No. 330-NFPA 101-2021 [Section No. 16.4.5]	
Public Input No. 332-NFPA 101-2021 [Section No. 16.6.4]	
Public Input No. 333-NFPA 101-2021 [Section No. 17.4.5]	

[Public Input No. 334-NFPA 101-2021 \[Section No. 17.6.4\]](#)
[Public Input No. 336-NFPA 101-2021 \[Section No. 18.4.4\]](#)
[Public Input No. 337-NFPA 101-2021 \[Section No. 19.4.4\]](#)
[Public Input No. 339-NFPA 101-2021 \[Section No. 20.4.4\]](#)
[Public Input No. 340-NFPA 101-2021 \[Section No. 21.4.4\]](#)
[Public Input No. 342-NFPA 101-2021 \[Section No. 22.4.7\]](#)
[Public Input No. 344-NFPA 101-2021 \[Section No. 23.4.7\]](#)
[Public Input No. 347-NFPA 101-2021 \[Section No. 26.3.2.1\]](#)
[Public Input No. 349-NFPA 101-2021 \[Section No. 28.4.2\]](#)
[Public Input No. 354-NFPA 101-2021 \[Section No. 29.4.2\]](#)
[Public Input No. 357-NFPA 101-2021 \[Section No. 30.4.3\]](#)
[Public Input No. 360-NFPA 101-2021 \[Section No. 32.2.4\]](#)
[Public Input No. 361-NFPA 101-2021 \[Section No. 32.3.4.2\]](#)
[Public Input No. 363-NFPA 101-2021 \[Section No. 33.2.4\]](#)
[Public Input No. 364-NFPA 101-2021 \[Section No. 33.3.4.2\]](#)
[Public Input No. 365-NFPA 101-2021 \[Section No. 36.4.6\]](#)
[Public Input No. 367-NFPA 101-2021 \[Section No. 37.4.6\]](#)
[Public Input No. 368-NFPA 101-2021 \[Section No. 38.4.4\]](#)
[Public Input No. 369-NFPA 101-2021 \[Section No. 39.4.4\]](#)
[Public Input No. 370-NFPA 101-2021 \[Section No. 40.4.3\]](#)
[Public Input No. 371-NFPA 101-2021 \[Section No. 42.4.3\]](#)

Submitter Information Verification

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Submittal Date: Tue Jun 01 09:07:21 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6676-NFPA 101-2021](#)
Statement: The TC agrees that the language should refer to 8.7.3.3 for requirements relating to ABHR dispensers.



Public Input No. 165-NFPA 101-2021 [Section No. 14.7.6]

14.7.6 Integrated Fire Protection and Life Safety Systems.

14.7.6.1

Building security features included in the built environment are to be integrated and must comply with both the life safety features in this chapter and the building's emergency planning, evacuation planning, and training in accordance with 4.8.

14.7.6.2

Integrated fire protection and life safety systems shall be tested in accordance with 9.11.4.1.

Statement of Problem and Substantiation for Public Input

This change is being submitted on behalf of the SAF-End task group to integrate security and life safety in class room environments. With the increased emphasis on MNS/ECS, it is intended to provide guidance to ensure both life safety and security are considered

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 164-NFPA 101-2021 [Section No. 4.8.2.1]	
Public Input No. 166-NFPA 101-2021 [New Section after 15.7.6]	
Public Input No. 167-NFPA 101-2021 [Section No. 16.7.6]	
Public Input No. 168-NFPA 101-2021 [Section No. 17.7.6]	
Public Input No. 166-NFPA 101-2021 [New Section after 15.7.6]	
Public Input No. 167-NFPA 101-2021 [Section No. 16.7.6]	
Public Input No. 168-NFPA 101-2021 [Section No. 17.7.6]	

Submitter Information Verification

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Submittal Date: Tue May 18 11:17:59 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6684-NFPA 101-2021](#)

Statement: This change is being submitted on behalf of the SAF-End task group to integrate security and life safety in daycare and educational environments. With the increased emphasis on MNS/ECS, it is intended to provide guidance to ensure both life safety and security are

considered.



Public Input No. 286-NFPA 101-2021 [Section No. 15.2.2.2.4]

15.2.2.2.4* Locking of Classroom Doors and Other Instructional Spaces.

15.2.2.2.4.1

Classroom doors and doors to other instructional spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged from the egress side of the door without opening the door.
- (2) The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
- (3)* ~~Two nonsimultaneous~~ releasing motions shall be permitted where approved by the authority having jurisdiction provided that releasing does not require simultaneous operations, and provided the door is not equipped with panic hardware or fire exit hardware.
- (4) The releasing mechanism (s) shall not require tight grasping, tight pinching, or twisting of the wrist to operate.
- (5) The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (6) Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- (7) The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
- (8) The locking means shall not ~~modify~~ impair the operation of the door closer, the lockset, panic hardware, or fire exit hardware- ~~or impair their operation~~.
- (9) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (10) The emergency action plan, required by 15.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- (11) Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 15.7.2.

15.2.2.2.4.2

Where existing classroom doors and doors to instructional spaces are replaced, they shall comply with the provisions of 14.2.2.2.4.

Statement of Problem and Substantiation for Public Input

The proposed revisions in Item 3 regarding “not require simultaneous operations” for the two releasing motions is to align with a similar requirement in 7.2.1.5.3.7 (where two releasing motions are permitted). In addition, in Item 3, it’s important to recognize that doors with panic hardware or fire exit hardware should not be permitted more than one releasing motion.

The addition of new Item 4 is intended to remind the user of this section of the code of this important requirement for the operation of door releasing mechanisms.

The revisions to what was Item 7, now Item 8, are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language

explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

This is an example of a locking device which is lockable from inside the room, and is installed along with a typical lever-operated lockset where the lockset is not lockable from inside the room:
<https://securitech.com/safebolt>.

This is an example of a modification to panic hardware which converts the panic hardware to be lockable from inside the room with a thumb turn: <https://idighardware.com/2021/04/product-update-von-duprin-emergency-secure-lockdown-es/>

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 285-NFPA 101-2021 [Section No. 14.2.2.2.4]	
Public Input No. 287-NFPA 101-2021 [Section No. 16.2.2.2.6]	
Public Input No. 288-NFPA 101-2021 [Section No. 17.2.2.2.6]	
Public Input No. 289-NFPA 101-2021 [Section No. 38.2.2.2.2]	
Public Input No. 290-NFPA 101-2021 [Section No. 39.2.2.2.2]	

Submitter Information Verification

Submitter Full Name: John Woestman
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Submittal Date: Mon May 31 11:42:22 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6705-NFPA 101-2021](#)

Statement: The proposed revisions in item 4 would require a wholesale replacement of classroom door locks that is not justified.

The revisions to items 3 and 7 clarify the existing language.



Public Input No. 445-NFPA 101-2021 [Section No. 15.2.2.2.4.1]

15.2.2.2.4.1

Classroom doors and doors to other instructional spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged from the egress side of the door without opening the door.
- (2) The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
- (3)* ~~Two nonsimultaneous~~ The releasing motions shall be permitted where approved by the authority having jurisdiction mechanism shall open the door leaf with not more than one releasing motion.
- (4) The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (5) Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- (6) The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
- (7) The locking means shall not modify the door closer, panic hardware, or fire exit hardware or impair their operation.
- (8) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (9) The emergency action plan, required by 15.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- (10) Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 15.7.2.

Statement of Problem and Substantiation for Public Input

BHMA has long advocated for this foundation of life safety regarding door operations in schools – classroom doors need to be openable for egress with not more than one releasing motion. Permitting doors on classrooms to require up to two releasing motions is contrary to BHMA's long-standing position, and is contrary to the established guidance of the National Association of State Fire Marshals (NASFM).

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 447-NFPA 101-2021 [Section No. 17.2.2.2.6.1]	

Submitter Information Verification

Submitter Full Name: John Woestman
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Submittal Date: Tue Jun 01 16:38:24 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: Two nonsimultaneous operations are necessary for existing educational occupancies. The door locking provisions were always intended to be a part of a package or suite of protection strategies, and as such the existing provisions within the code provide an adequate degree of life safety within existing occupancies.



Public Input No. 71-NFPA 101-2021 [Section No. 15.2.2.2.4.1]

15.2.2.2.4.1

Classroom doors and doors to other instructional spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged from the egress side of the door without opening the door.
- (2) The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
- (3)* Two nonsimultaneous releasing motions shall be permitted where approved by the authority having jurisdiction.
- (4) Where more than one releasing device is installed on any door, any locking device shall be of a type that is readily distinguishable as locked.
- (5) The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (6) Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- (7) The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
- (8) The locking means shall not modify the door closer, panic hardware, or fire exit hardware or impair their operation.
- (9) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (10) The emergency action plan, required by 15.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- (11) Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 15.7.2.

Statement of Problem and Substantiation for Public Input

The purpose of this proposal is to clarify the position of locking hardware which is permitted to be installed as a secondary device on doors to classrooms and other instructional spaces and to reduce the possible confusion over the position of such locking hardware to persons seeking to open the door. In an emergency, the operation of such hardware, which may already be unlocked, may actually secure the door and cause a delay in the opening of the door. The wording of this arrangement is taken from Code text which currently exists in Paragraph 7.2.1.5.6.2 (4) regarding key operated locks on certain door assemblies.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 72-NFPA 101-2021 [Section No. 17.2.2.2.6.1]	

Submitter Information Verification

Submitter Full Name: Kenneth Bush

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Submittal Date: Mon Apr 26 13:40:21 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: The proposed revision would result in a requirement for wholesale replacement of classroom door locks that is not justified.



Public Input No. 99-NFPA 101-2021 [Section No. 15.2.11.1.1]

15.2.11.1.1

Every room or space greater than 250 ft² (23.2 m²) and used for classroom or other educational purposes or normally subject to student occupancy shall have not less than one outside window for emergency rescue that complies with all of the following, unless otherwise permitted by 15.2.11.1.2:

- (1) Such windows shall be openable from the inside without the use of tools and shall provide a clear opening of not less than 20 in. (510 mm) in width, 24 in. (610 mm) in height, and 5.7 ft² (0.5 m²) in area.
- (2) The bottom of the opening shall be not more than 44 in. (1120 mm) above the floor, and any latching device shall be capable of being operated from not more than 54 in. (1370 mm) above the finished floor.
- (3) Permanently fixed stairs or a ramp are permitted to be used to allow occupants to be within 44 in. of the bottom window sill. The clear width of the stairs or ramp shall be at least the width of the window or 36 in. whichever is larger. The stairs or ramp and access thereto shall not be obstructed.
- (4) The clear opening shall allow a rectangular solid, with a width and height that provides not less than the required 5.7 ft² (0.5 m²) opening and a depth of not less than 20 in. (510 mm), to pass fully through the opening.
- (5) Windows for rescue that have a sill height below the adjacent finished ground level shall comply with 24.2.2.3.3(4).

Statement of Problem and Substantiation for Public Input

(3) Existing window locations may be more than 44 inches off the floor and this language would permit permanent structures (stairs or ramps) to be installed to bring a window for rescue into compliance. The structure would be permanent (unmovable) and required to be unobstructed. This would prevent them from being used for storage or blocked by storage or furnishings.

(5) Windows for rescue could be found in below grade classrooms and there is no reference to requirements related to window wells. This language provides minimum sizing for the window well to permit full opening of the window as well as egress out of the window well.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 100-NFPA 101-2021 [Section No. 14.2.11.1.1]	
Public Input No. 101-NFPA 101-2021 [Section No. 16.2.11.1.1]	
Public Input No. 102-NFPA 101-2021 [Section No. 17.2.11.1.1]	

Submitter Information Verification

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Submittal Date: Wed May 05 14:50:53 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: FR-6743-NFPA 101-2021

Statement: Existing window locations may be more than 44 inches off the floor and this language would permit permanent structures (stairs or ramps) to be installed to bring a window for rescue into compliance.

Windows for rescue could be found in below grade classrooms and there is no reference to requirements related to window wells. This language provides minimum sizing for the window well to permit full opening of the window as well as egress out of the window well.

The same revisions were proposed in the existing daycare chapter.



Public Input No. 30-NFPA 101-2021 [Section No. 15.3.4.3.1.2]

15.3.4.3.1.2— Reserved. When an existing fire alarm system is replaced, the occupant notification required by 15.3.4.3.1.1 shall utilize an emergency voice/alarm communication system in accordance with 9.6.3 where the building has an occupant load of more than 300.

Statement of Problem and Substantiation for Public Input

The committee has in the past dealt with the addition of voice communications for new educational occupancies and has established technical reasoning for such decision. I would propose that existing educational occupancies should have the benefit of voice communications when the fire alarm system is replaced. This prevents an undue burden on smaller educational facilities financially due to the increased occupant load scoping of 300 occupants. By allowing the voice communications to be delayed until the fire alarm system is replaced this would allow for an extended period of time to fund such an improvement. The committee may want to define what a fire alarm system replacement constitutes.

Submitter Information Verification

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Submittal Date: Wed Feb 10 19:09:16 EST 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6698-NFPA 101-2021](#)

Statement: The committee has in the past dealt with the addition of voice communications for new educational occupancies and has established technical reasoning for such decision. The TC proposes that existing educational occupancies should have the benefit of voice communications when the fire alarm system is replaced. The annex language provides guidance as to what constitutes a fire alarm system replacement in an educational occupancy only.



Public Input No. 226-NFPA 101-2021 [Section No. 15.3.4.4]

15.3.4.4 Reserved. ~~Carbon Monoxide Detection Systems~~

15.3.4.4.1

Carbon monoxide detectors in accordance with Section 9.12 shall be provided in new educational occupancies in the locations specified as follows:

- (1) Carbon monoxide detectors shall be installed on the ceilings of rooms containing permanently installed fuel-burning appliances.
- (2) Carbon monoxide detectors shall be installed centrally located within occupiable spaces served by the first supply air register from a permanently installed, fuel-burning HVAC system.
- (3) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to a communicating attached garage.
- (4) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to an attached garage with a separation wall constructed of gypsum wallboard.

15.3.4.4.2

Where carbon monoxide detectors are installed in accordance with 15.3.4.4.1(1), the alarm signal shall be automatically transmitted to an approved on-site location or to an off-premises location in accordance with NFPA 72.

15.3.4.4.3

Carbon monoxide detectors as specified in 15.3.4.4.1 shall not be required in the following locations:

- (1) Garages
- (2) Occupiable spaces with communicating attached garages that are open parking structures as defined in 3.3.284.8.4
- (3) Occupiable spaces with communicating attached garages that are mechanically ventilated in accordance with the applicable mechanical code
- (4) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where the garage is an open parking structure as defined in 3.3.284.8.4
- (5) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where the garage is mechanically ventilated in accordance with the mechanical code

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Unprotected_A_Case_Study_2021_2_.pdf	Formal case study document created from 200 publicly-documented incidents of carbon monoxide in schools, daycares (created by me)	
CO_Incidences_in_Schools_Working_List_-_Attributed_to_CO_incidents_1_.pdf	Full list of 200 incidents of carbon monoxide in schools, daycares across U.S. (compiled by me)	

Statement of Problem and Substantiation for Public Input

Chapter 14, Section 14.3.4.4 mandates the installation of carbon monoxide detectors or alarms in new school construction where there is potential risk for accidental CO poisoning from known sources, such as fuel-burning HVAC systems and attached garage.

But there is equivalent risk for such exposures in existing school properties, as well as in new and existing daycare occupancies – in fact more so.

In existing educational occupancies, the risk of CO poisoning is likely higher due to aging fuel-burning appliances, deteriorating pipes and ducts, and out of date construction.

In new and existing daycare occupancies, CO poisoning could be far more devastating to a developing child – especially when these children are unable to communicate the onset of symptoms, and often sleep on the property itself.

In Virginia, less than 5% of Virginia's 2,100+ public schools were built in 2015 or later, leaving 95% of public school properties without detection requirements unless new systems were installed. Over 90% of the schools I spoke to reported having zero CO detection on site. This didn't include daycares or private schools. That's a lot of students, teachers, and community members left unprotected.

CO exposure is severely underreported in schools due to aging buildings with lack of hardwired connection to emergency services, outdated detection protocols

And due to CO's general ability to mimic other illnesses common in children at all times of year – CO likely isn't on the suspect list when a child complains of headache, stomachache or tiredness.

While I will be submitting research to the NFPA for consideration for stronger protection in Educational and Daycare Occupancies (new or existing), I believe the first step is to make the existing carbon monoxide detection code uniform in any location where children are cared for on a commercial property. I am asking for the committee to approve the revision attached, which makes carbon monoxide detection in Existing Educational Occupancies the same as New Educational Occupancies.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 227-NFPA 101-2021 [Section No. 16.3.4.5]	
Public Input No. 227-NFPA 101-2021 [Section No. 16.3.4.5]	
Public Input No. 228-NFPA 101-2021 [Section No. 17.3.4.5]	

Submitter Information Verification

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Submittal Date: Fri May 28 09:32:40 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6747-NFPA 101-2021](#)

Statement: The TC agrees that CO detection is necessary in existing occupancies in line with the requirements for new educational occupancies. Further review is needed into the chapter 9 requirements. The TC asks the Correlating Committee to look at the definitions for

carbon monoxide alarm and carbon monoxide detector.

Modifications were made to match TC actions on PI's 149, 150, 31, and 32.

Sounding the alarm on the *lack of* and *need for* carbon monoxide protection in educational and daycare occupancies

UNPROTECTED: A CASE STUDY OF CARBON MONOXIDE IN U.S. SCHOOLS AND DAYCARES

Brought to you by
Nikki James Zellner
CarbonMonoxideInSchools.org
In partnership with NCOAA

CarbonMonoxideInSchools.org



NIKKI JAMES ZELLNER
MOM OF SCHOOL CO SURVIVORS



OVERVIEW

In February 2020, my two children, ages 4 and 3, were poisoned by carbon monoxide at their Virginia preschool. Five adults and one child were taken to local hospitals for their injuries. We were lucky, as it could have been lethal. Carbon monoxide is unlike any other public health hazard out there. It is a colorless, odorless, tasteless gas. The danger is real, common and should be treated as such in schools and daycares. And even though the technology is available for detection that can prevent injury to our children, teachers, staff and community members, more often than not our schools aren't using it.

The data in this report is compiled from 200 publicly documented instances of carbon monoxide exposures in U.S. schools and daycares from 2004 - 2021, using press coverage, government testimony and FOIA requested incident reports (in Virginia specifically) as sources.

OBJECTIVE

The objective for this case study is to start a national conversation – that includes and holds accountable all stakeholders – to understand that carbon monoxide exposures and poisonings are happening in U.S. schools and daycares more often than we know. It is impacting a greater number of occupants, stemming from a wider variety of sources, spreaders and situations. The majority of these occupancies are unprotected, due to the *option*, and not requirement, of installing detection on site. Detection regulations need to be reviewed by the very parties that develop the recommendations, but they also need to be understood by the very communities these regulations are meant to protect.

Data related to carbon monoxide exposures and incidents in schools is limited – not because it's not happening, but because it's not being recorded (and therefore reported on). Lack of detection signaling an exposure occurrence, emergency services dispatched to "medical calls" that end up being CO-related, and the option of fire departments reporting to NFIRS are just some of the reasons for this. The largest issue? Carbon monoxide being treated as a non-suspect, instead of a likely candidate, even when group symptoms occur.

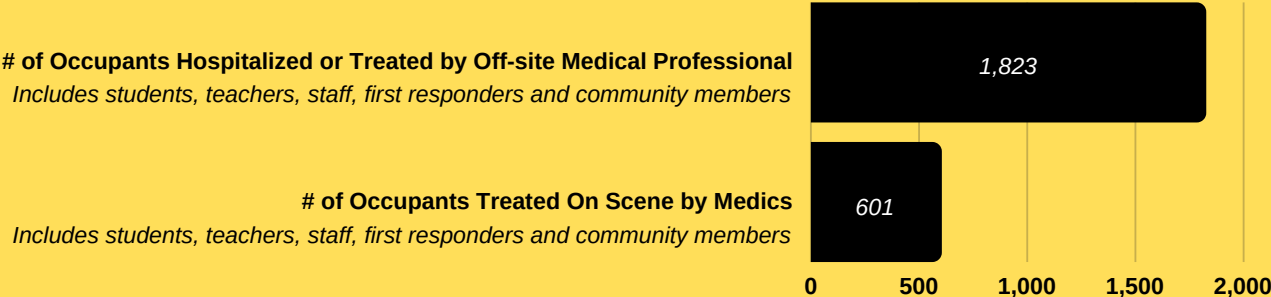
Using the Internet, I was able to find 200 press-reported incidents of carbon monoxide-confirmed exposures and poisonings in U.S. schools and commercial daycares. This data does not include in-home daycares. This data does not include "false alarms" or "malfunctioning/low battery detectors." This data does include discoverable evacuation-only incidents, as well as incidents where injuries were reported. All involved emergency services on scene. Full incident data is available at CarbonMonoxideInSchools.org.

KEY FINDINGS

- **At least 2,400 children, teachers, school staff and community members have been injured** due to carbon monoxide exposure on school properties. There have been zero deaths to date (in this time period), and there were zero instances of "intentional" poisoning (i.e. suicide attempts).
- In schools with known injury-resulting carbon monoxide exposures (versus evacuation only), **the average number of occupants injured was 27** (those requiring hospitalization, treated by an off site medical professional or being treated on scene by first responders). An overwhelming majority of these injuries were sustained by children. The amount injuries that actually occurred but were not documented is unknown.
- While winter months had the highest overall percentage of carbon monoxide exposure incidents in U.S. schools, exposures are happening year round. **Over 54% of incidents occurred in the spring, summer and fall months.**
- States in the Southern region of the United States (*Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington DC, and West Virginia*) **made up 45.5% of school-based carbon monoxide exposure incidents.**
- Public schools (*vs. charter, private or recreational childcare properties*) made up over 75% of all carbon monoxide exposure incidents. **Over half of all carbon monoxide exposure incidents are occurred in properties with elementary students** – a population more vulnerable to the effects of carbon monoxide due to their stage of development.
- **Installed carbon monoxide detection, or the access to portable monitors during the event by school staff, was confirmed in only 22% of the carbon monoxide exposure incidents occurring at schools or daycares.**
- Roughly half of the carbon monoxide exposure incidents at schools and daycares occurred due to an issue with the fuel-burning installed system itself (like boiler, furnace, HVAC system). **In the data compiled, 47.5% of the carbon monoxide exposure incidents occurred due to non-installed fuel burning systems:** idling vehicles, propane or fuel-powered cleaning equipment, construction equipment, portable generators, blocked or damaged exterior ventilation points due to environmental causes, or through unidentifiable sources (known as "chasing the ghost.")
- **The PPM readings (if recorded) related to carbon monoxide exposures in schools and daycares was (and continues to be) severely underreported to the public – only reported in less than 20% of incidents.** Carbon monoxide PPM readings directly correlate to the level of poisoning that occurred on the property. These readings have often dropped by the time first responders have arrived, post-evacuation – due to equipment shut off, or the opening of windows and doors. Clearly documenting where and what levels of PPM are occurring will give all stakeholders a better understanding of the severity of the incident, and help those seeking medical treatment more clearly communicate the volume of poison they were exposed to.

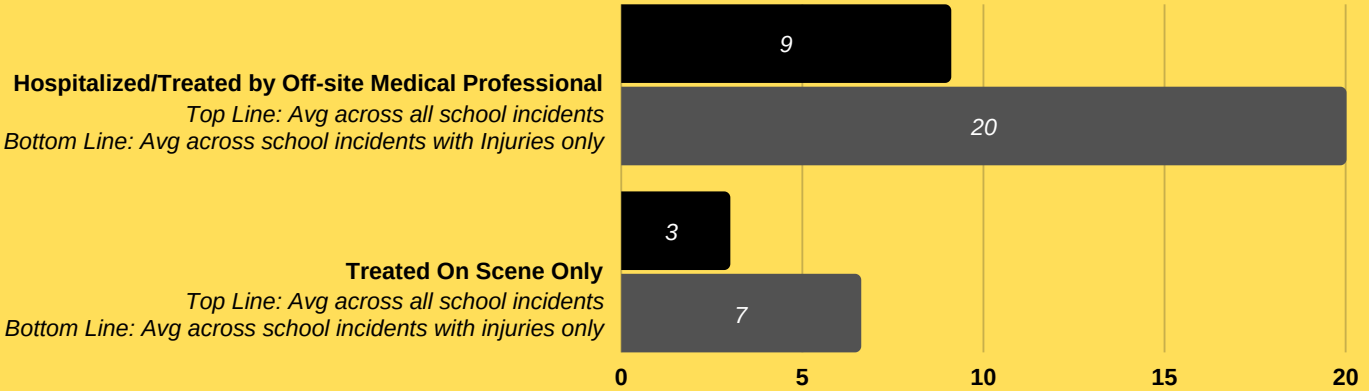
TOTAL NUMBER OF INJURIES REPORTED

WHY THIS IS IMPORTANT: Carbon monoxide exposure in an educational or daycare occupancy has the potential to impact a wide range of occupants, depending on where the source of the CO is coming from, and where the leak or accumulation is occurring. Occupancy in a gymnasium would be far greater than that in a single office, but would likely take longer to accumulate. The data below shows the number of occupants hospitalized, treated by personal physicians immediately following incident. The second row shows the number of people treated on scene only (not transported to hospital or seen by physician). *These numbers **do not include** total number of teachers, students, staff or community members evacuated from the property or those who may not have been aware they were injured in the short- or long-term by the event itself.*



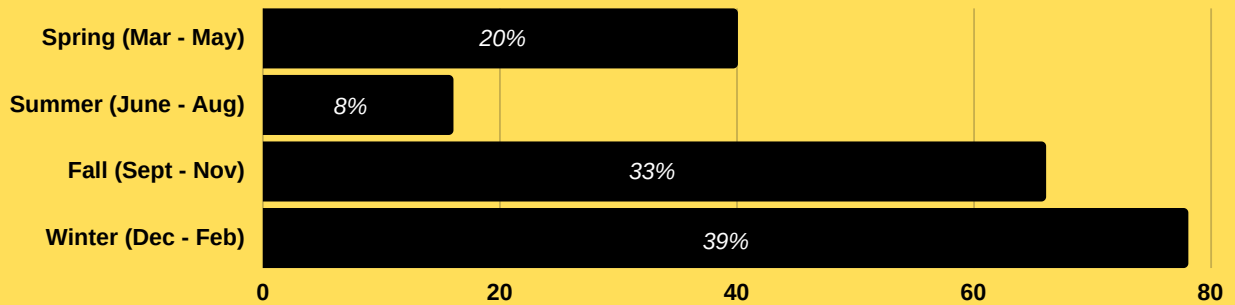
AVERAGE # OF OCCUPANTS INJURED

WHY THIS IS IMPORTANT: Carbon monoxide exposure in a residential occupancy, impacts, on average, one to three people. But in an educational or daycare occupancy, the number of occupants can vary widely. The chart below shows the average number of occupants injured across all school- and commercial daycare-based incidents (including those with zero injuries) as well takes a deeper dive in exploring the average injury count across injury-confirmed incidents only. *Note: Should a mass casualty carbon monoxide event occur, many area hospitals would not have the capability to treat severely injured occupants in hyperbaric chambers if needed, forcing medical transport outside of region or long-term health effects due to lack of local resources.*



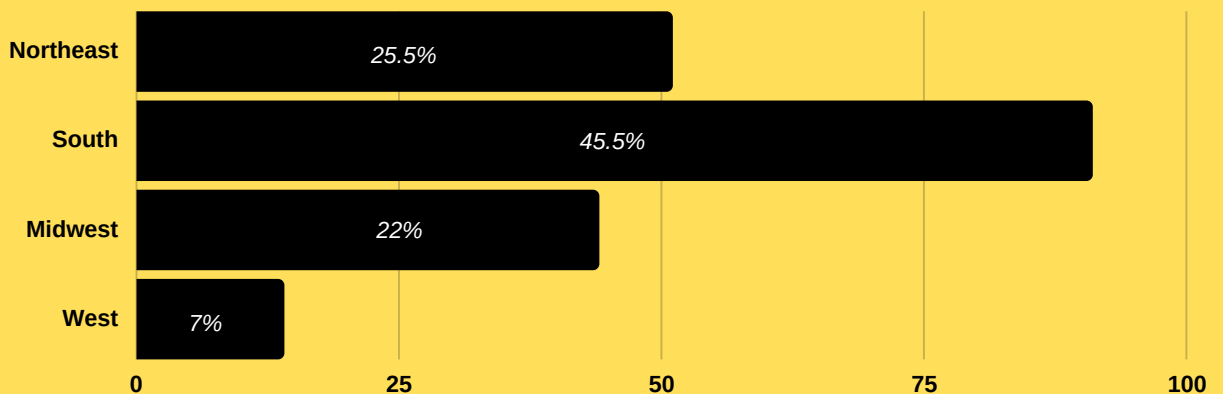
SEASON IN WHICH INCIDENT OCCURRED

WHY THIS IS IMPORTANT: Traditional carbon monoxide awareness marketing is largely centered around the "cold season" in which the majority of residential carbon monoxide incidents occur. But in educational and daycare occupancies, carbon monoxide exposure can happen at any time due to the use of cleaning equipment, construction equipment, property maintenance, transportation proximity and year-round use by students, staff and members of the community. Putting a focus on carbon monoxide education only at a certain time of year could be leaving schools and daycares with the (false) impression they shouldn't suspect carbon monoxide in the warmer months.



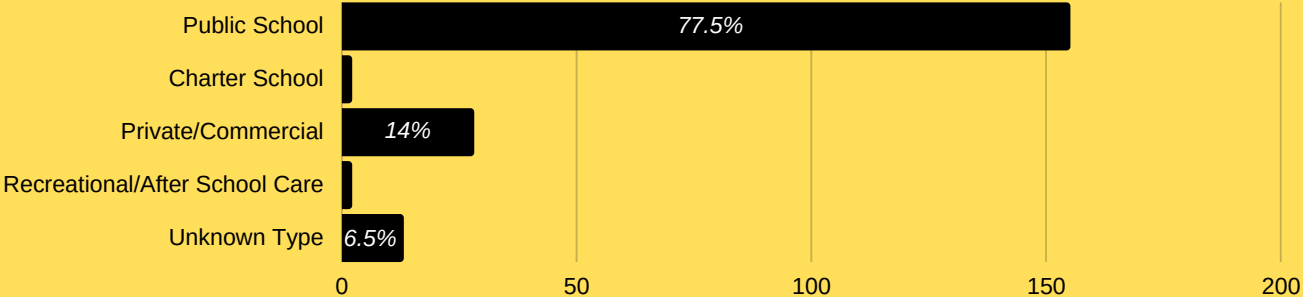
INCIDENTS BY U.S. GEOGRAPHIC REGION

WHY THIS IS IMPORTANT: Carbon monoxide education and awareness is largely focused on, and largely taught in, cold-weather states – as these states are reliant on gas-fueled heating equipment for longer durations throughout the year, and have traditionally been shown to have more residential CO-related incidents. Southern states could be less educated around where, how and when carbon monoxide can impact them in their homes, schools and communities.



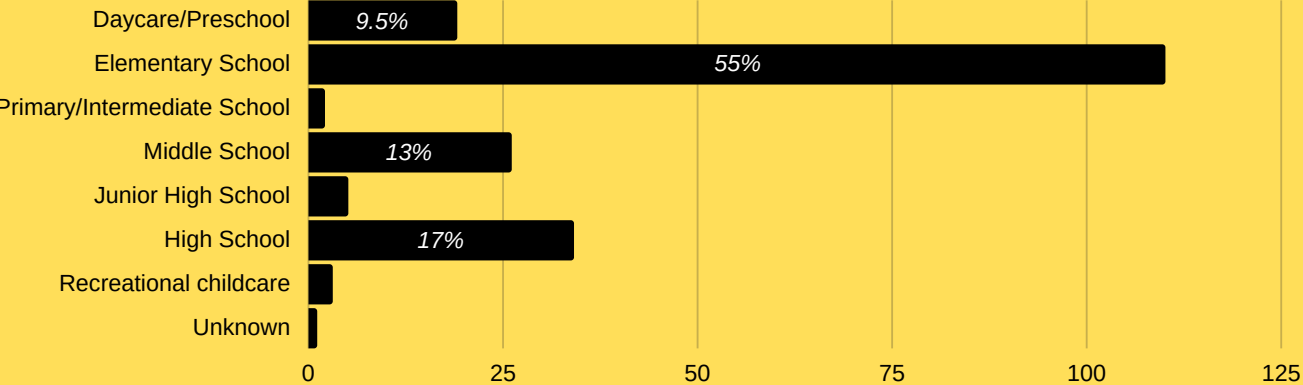
INCIDENTS BY TYPE OF SCHOOL

WHY THIS IS IMPORTANT: Funding sources for school improvements and equipment vary from school to school. Carbon monoxide incidents are occurring primarily in public school systems, which rely heavily on local taxpayer dollars, local fundraising efforts and business support, and government funding. The aging of our public schools, and their equipment, can create higher risk for carbon monoxide incidents throughout the nation. With little to no codes related to carbon monoxide regulation in existing buildings (and in some states new buildings), means inspecting for possible carbon monoxide situations, inclusion of carbon monoxide language in evacuation and emergency training plans, and investing in high quality equipment or detection systems, may not be on the radar.



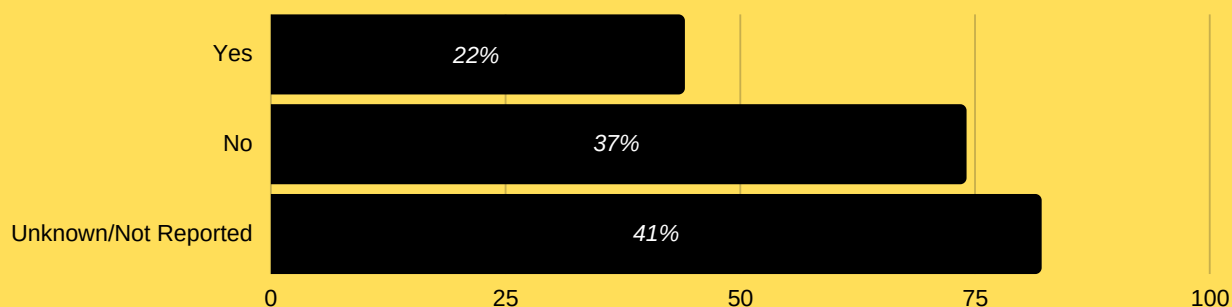
INCIDENTS BY PROPERTY USE (YOUNGEST AGE GROUP ON PROPERTY)

WHY THIS IS IMPORTANT: Carbon monoxide exposure affects different age groups in different ways. Younger children, pregnant mothers, and those with compromised immunity (like asthma or other immune disorders) are the most vulnerable. Children, in particular, experience symptoms more quickly and suffer long-term neurological effects of carbon monoxide poisoning due to their stage of development, faster breathing and increased metabolism. Younger children may not be able to communicate feeling poorly, regularly behave irritably, and regularly nap on the school/daycare property – rendering carbon monoxide a non-suspect in our most critical situations.



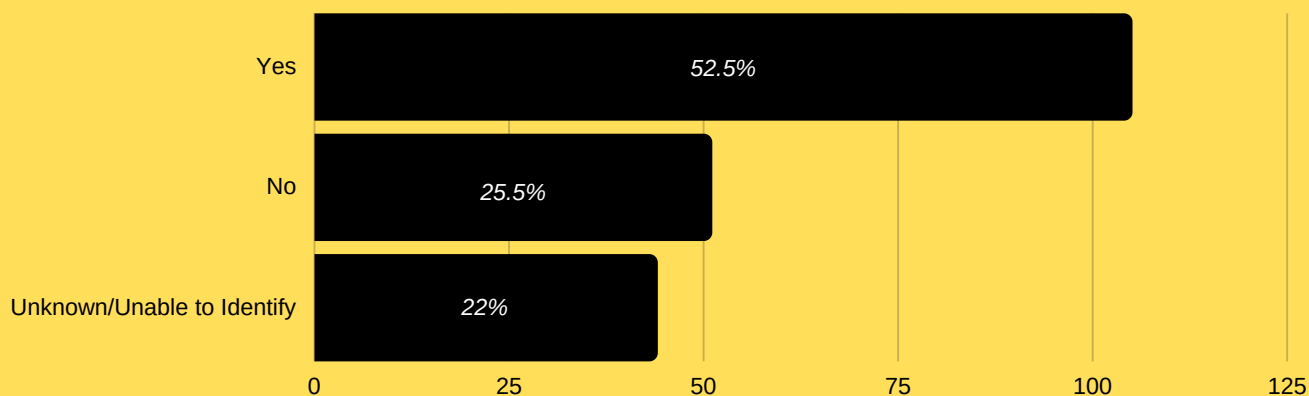
WAS THERE INSTALLED/PORABLE CO DETECTION ON THE PROPERTY?

WHY THIS IS IMPORTANT: Lack of carbon monoxide detection requirements in new and existing schools and daycares are reinforcing the mindset that it's 'optional' to protect occupants from CO exposure on these properties. In the cases where a detector was installed on site, the majority of occupants and first responders were notified early, and able to safely evacuate the property without injury. It's important to note, only 187 injuries (out of 1,823) occurred in a detection-installed occupancy. In one specific detector-installed incident, school administrators thought the newly installed alarms had "tripped" erroneously, and did not contact emergency responders until 2 hours later – resulting in 111 hospitalizations of students and staff members. Detectors prevent injury – when they're listened to, working properly, and installed.



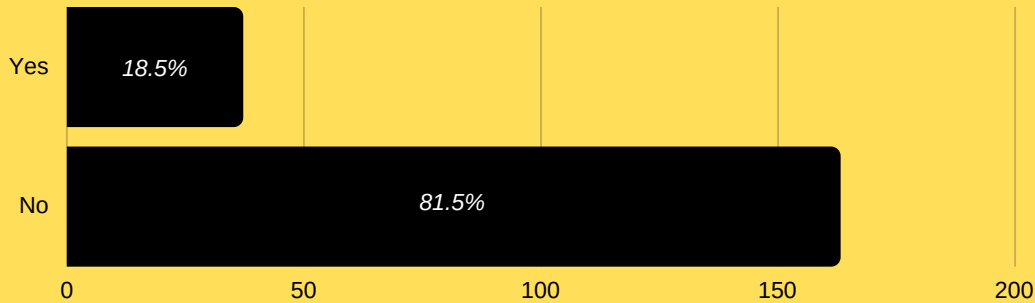
WAS EXPOSURE RELATED TO AN INSTALLED FUEL-BURNING SYSTEM?

WHY THIS IS IMPORTANT: Most legislation, building and fire codes are built around the old language that you only need an installed fuel-burning system, or gas-transporting ventilation system, on site to require carbon monoxide detectors in new or existing school properties. As you can see by this data, at least 25% of these incidents have been confirmed to be related to outside influence – or combustion-producing equipment being brought onto the property (by landscapers, contractors, cleaners) – many times while the school is occupied by students and teachers. The remaining 22% attributed to unidentified sources could be related to installed fuel burning systems, or gas-transport systems, but could just as easily be related to outside influences or portable sources.



WAS THE HIGHEST PPM READING RECORDED & REPORTED TO PUBLIC?

WHY THIS IS IMPORTANT: Carbon monoxide is measured in PPM (parts per million) and short/long term health issues are directly correlated to PPM levels, age, general health of person exposed, as well as length of exposure. PPM identification (and communication) doesn't allow for proper medical care for those who may want to seek it in the short/long term, and doesn't fully communicate the severity of the exposure to the community and stakeholders. Since it can only be measured during the event itself, in/around source as well as where others are experiencing symptoms, it's imperative that a CO gas measuring or detection device is used (and the highest PPM readings are recorded and reported) in every CO exposure situation.



NEWS MAKERS

Not all CO exposure incidents make the news, leading the public (and stakeholders in general) to believe that carbon monoxide in schools isn't an issue. For example, in the State of Virginia, after our CO incident, I only found 4 news-reported cases since 2005. But digging into FOIA request responses from the cities and counties throughout the state, there were over 100 confirmed, documented incidents of carbon monoxide incidents in Virginia schools and daycares. What could that mean for the rest of the nation in regards to reported vs. unreported incidents?

2021: Canistota, SD
Canistota School – 25 children and teachers injured; forklift exhaust and gas-based construction equipment being improperly ventilated during construction on school gym while students/staff on site; had been experiencing CO symptoms for weeks

2014: Girard, IL
North Mac Intermediate – 181 students and teachers hospitalized; 400 ppm; no detection on site; 20+ lawsuits filed claiming serious injury and disfigurement

2015: Chicago, IL
Horace Mann Elementary – 104 students, 7 staff hospitalized; CO detectors alerted at 6:30 a.m., emergency officials weren't notified by administrators until 2 hours later

2013: Salt Lake City, UT
Montezuma Creek Elementary – 40 hospitalized, 3 airlifted; exhaust pipes on water heater disconnected venting gas into mechanical room, kitchen, gymnasium and classrooms

2018: Philadelphia, PA
Loesche Elementary – 28 children, 4 teachers hospitalized; portable generator being used on roof by construction workers during school hours

2016: Beaumont, TX
Marshall Middle – 169 students and teachers seen at area hospitals; 2 separate issues contributed: corrosion let gas exit the boiler; inoperative ventilation fan

2020: Virginia Beach, VA
Kids Town Learning Center – 80+ children and teacher exposed to CO for 5+ hours from leaking furnace; 6 seen at hospital; no detection on site; legislation passed a year later to require CO detection in all schools, daycares

2019: Dutchtown, LA
Dutchtown High – 28 students treated in ER due to zero turn lawnmower operating too close to air intake ventilation

2012: Atlanta, GA
Finch Elementary – 43 students, 10 adults hospitalized; 1700 ppm; no detection on site

UNPROTECTED: REASONS TO CHANGE



REASON 1: A school or daycare building does not need an installed fuel-fired system to have a CO exposure incident that leads to injuries.

While boilers, furnaces and HVAC systems are the number one source of CO incidents in schools, they're not the only source. A growing percentage of emergency CO-related incidents in schools are caused by things like snow- or nest-blocked vents, propane-powered cleaning equipment, idling vehicles and improperly ventilated construction areas using gas-powered equipment.

REASON 2: At this time, most educators and faculty nationwide are not required to complete any kind of carbon monoxide awareness, prevention or situational training.

If there is no installed detection, or if detection devices are malfunctioning, front line staff such as teachers and maintenance teams ARE the only ones who can recognize a CO issue as it's occurring. Teachers will see changes in children's typical behavior and will be the first to see a "group" symptom emerging and where it's happening. It is imperative they know what they're looking for, how to respond, and who to alert when it comes to CO.

REASON 3: A majority of schools throughout the U.S. do not have CO detection on site because they're not required to.

It's been proven that if schools aren't required to do it, they often don't. Budget constraints, aging buildings and equipment, and increasing demands of curriculum and training often mean the CO conversation is left to maintenance personnel and risk managers. However, many staff, parents and community members who occupy these buildings are under the impression their health and life safety are being protected in this aspect as part of fire/hazard building safety.

REASON 4: Current life safety and building code language only requires detectors in schools and daycares to be installed near fuel-burning systems, first air registers, or next to attached garages. This leaves the remaining areas of the property (and therefore the occupants) vulnerable and without carbon monoxide protection should a portable carbon monoxide-producing source be brought on the grounds, or ventilation systems become blocked, disconnected or corrode.

When the layman citizen sees a simple chart that places an X in the states where some form of carbon monoxide detection is required in schools – they are assuming the whole school is protected. In reality, less than 7 states have carbon monoxide regulations and requirements in schools and daycares, and the majority of these regulations only apply to newly constructed (or currently under construction) buildings. They often do not regulate existing (and often aging) properties.

REASON 5: Children are at higher risk than adults when exposed to carbon monoxide and experience more long-term side effects.

Due to their age and current stage of development, children will respond to CO exposure differently than the adults in the room with them. Children have higher metabolism and breathe faster, meaning they will be inhaling and distributing carbon monoxide more often. Their developing minds are still in the growth stage, and exposure to poisonous toxin can change neurological response and organ development for the long term. Younger children, in particular, are unable to communicate physical issues being experienced, and it is not abnormal for them to appear drowsy and fussy.

ACKNOWLEDGEMENTS

I am not a scientist. I am not a researcher. I am not an educator. I'm a mom and a military spouse, and business owner, whose children were poisoned by carbon monoxide at their preschool – a place I incorrectly assumed they were safe. But in light of that experience, I have plunged head first into the world of codes, the world of research, the world of questioning, and the world of advocacy (and, in Virginia, the world of legislative change).

This case study would not have been possible without the team at National Carbon Monoxide Awareness Association. They were the first ones to listen to my story, they were the first to help me understand the science behind and the risks of acute and chronic CO poisoning, and they were instrumental in providing funding for this Case Study project.

Additional thanks to The Jenkins Foundation, the Suffolk and Virginia Beach Fire Departments, the teachers who saved my children, the journalists who are bringing to light the issues of carbon monoxide in schools, and the people who have listened, supported and are taking this conversation to their own schools and public servants. Thanks to the legislators in Virginia who heard our story, and wanted to create change immediately.

And special thanks to my family, who have seen me in front of my computer for hours, after a full day of work – scouring the internet for carbon monoxide stories. Who've watched me wait my turn to testify in front of Code Councils and Senators. Who've watched me cry reading NFIRS reports. This is for you.

ABOUT US

CarbonMonoxideInSchools.org is a free and public resource for concerned citizens, change makers, educators, public servants and journalists. It was designed to help all stakeholders become aware of the issue of CO in schools, learn the language to engage in conversations, give stakeholders the tools to take action, prevent and protect against carbon monoxide exposures in schools. It is my hope it is a space where life- and health-saving conversations start. On the site, you can find resources made specifically for those looking to make a change or bring this conversation to light in their own school or community.

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Unprotected: A Case Study of Carbon Monoxide Incidents in U.S. Schools and Daycares
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Carbon monoxide in Schools Report

Working list compiled by Nikki James Zellner, CarbonMonoxideInSchools.org

Updated as of May 26, 2021

REGION	STATE	DATE	COUNTY	CITY	SCHOOL NAME	TYPE OF SCHOOL	PROPERTY USE	DETECTION ON SITE?	INFO OBTAINED THROUGH?	HIGHEST PPM READING?	INJURIES, HOSPITALIZATIONS (IF MENTIONED)	SOURCE/SPREADER (ATTRIBUTED TO)	DESCRIPTION OF INCIDENT/FOIA-NFIRS NOTES
South	AL	12/12/2013	Etowah County	Hokes Bluff	Hokes Bluff Middle School	Public	Middle School	no	press coverage	unknown	17 students, 1 teacher hospitalized	unspecified	
South	AL	10/28/2016	Limestone County	Elkmont	Elkmont High School	Public	High school	no	press coverage	unknown		exhaust fan on oven stopped working	cafeteria workers fell ill
South	AL	3/7/2019	Madison County	Madison	Rainbow Elementary School	Public	Elementary	unknown	press coverage	unknown		Boiler breakdown	600 students evacuated, included special needs; had to completely replace heater and send children to alternate school until it could be procured
South	AL	8/15/2019	Coffee County	New Brockton	New Brockton High School	Public	High School	no	press coverage	unknown	8 students hospitalized	unspecified	according to a student on scene: classmates complained of a headache during first period yesterday, and then she told me during fourth period, which was their P.E. time, that kids started passing out, throwing up, crying, just having all kinds of problems
South	AR	2/10/2005	Benton County	Bentonville	Washington Junior High	Public	Junior High	unknown	press coverage	80 ppm	80 students taken to hospital for treatment via bus, ambulance or parent	Boiler	Authorities noticed after group of students in a classroom complained of illness; 1,000+ students evacuated due to CO exposure, 50 taken to hospital from scene, additional 30 taken to hospital by parents; school paid for all medical costs associated according to article because "it happened on our watch, it's our responsibility"
South	AR	1/30/2008	Mississippi County	Leachville	Buffalo Island Junior High	Public	Junior High	no	press coverage	unknown	20 students, 2 coaches taken to hospital	vents on the school's gymnasium heater were damaged by a storm	boys basketball team practicing in gymnasium, all started feeling symptomatic including coaches
South	AR	11/25/2013	Washington County	Springdale	Central Junior High School	Public	Junior High	unknown	press coverage	unknown		small carbon monoxide leak created by an exhaust pipe that somehow had become disconnected from a fresh-air intake system (new system installed 1 year earlier)	students and teachers moved to different area of school campus; repairs made and school resumed; odor was cause of concern, ahead of any illness
West	CO	10/12/2009	Arapahoe County	Aurora		Public	High School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Boiler	Students sent home for the day after elevated levels of CO discovered
West	CO	9/1/2011	Garfield County	Rifle	Graham Mesa Elementary	Public	Elementary	unknown	press coverage	unknown	2 dozen teachers and students ill	unspecified	School evacuated, nearly 2 dozen teachers and students sick due to "an odor"
West	CO	1/6/2015	El Paso County	Pikes Peak	Pikes Peak Christian School	Private	K-12	unknown	press coverage	unknown		dysfunctional furnace	CO started leaking into vents throughout the school from furnace; school evacuated
West	CO	9/27/2018	Arapahoe County	Aurora	Aurora Elementary School	Public	Elementary	no	press coverage	unknown		Heating unit on roof	Strong odor noticed by staff at 7am ahead of school starting for day, called Fire Dept, brought gas meters and found elevated levels of CO; heating units shut off, source identified, building ventilated, school cancelled for day
West	CO	4/9/2019	Archuleta County	Pagosa Springs	Pagosa Peak Open School	Charter	Elementary	yes	press coverage	158 ppm		boiler leak + leaks within the gas pipes	CO detector alerting prior to school opening, no one allowed into school; boiler leak in mechanical room, 22ppm in areas around school, 158ppm in area in/around boiler; According to Lewicki, not only was the boiler releasing carbon monoxide, but there were also leaks within gas pipes at the school. Those leaks within the gas pipes were discovered by Black Hills Energy when its personnel were checking for the carbon monoxide leak, he explained further.
Northeast	CT	1/4/2011	New Haven County	Waterbury	Barnard School	Public	Elementary	no	press coverage	unknown	40 children taken to hospital	Firefighters determined a rusty hinge on a furnace allowed the carbon monoxide to leak out into the school.	40 children (ages 8-11) hospitalized after CO leak caused illness; Firefighters were initially sent to a medical call at the school around 10:30 a.m. after a student fainted in the lobby, fire officials said. Firefighters determined a rusty hinge on a furnace allowed the carbon monoxide to leak out into the school.
Northeast	CT	4/25/2011	Hartford County	Hartford	name not provided	unknown	High School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		malfunctioning boiler	CO detected in school as students arriving for class
Northeast	CT	3/28/2012	New London County	Waterford	Friendship School	Private	Preschool	unknown	press coverage	unknown		unspecified	Children 3-5 years old; high CO levels found in school serves 500+ preK, Kindergarten students
Northeast	CT	4/12/2013	Tolland County	Tolland	Tolland High School	Public	High School	yes	press coverage	unknown		unspecified	
Northeast	CT	10/19/2016	New Haven County	Cheshire	Highland Elementary School	Public	Elementary	no	press coverage	unknown	several students that fell ill tested high for carbon monoxide.	There was a malfunctioning boiler that was releasing dangerous levels of carbon monoxide. The air handling units, also on the roof were sucking that bad air back into the school. The boiler was last serviced less than a year ago in November of 2015.	
Northeast	CT	4/6/2017	Fairfield County	Bridgeport	Columbus Elementary School	Public	Elementary	no	press coverage	unknown	4 students taken to hospital, 4 others treated by their pediatricians	assumed CO, no traces found at time of FD arrival	illness hit 1 particular classroom all at same time
Northeast	CT	5/7/2018	New Haven County	Hamden	Dunbar Hill Elementary School	Public	Elementary	unknown	press coverage	unknown		*issue with school's equipment	smell of gas prompted call to Fire department, arrived finding elevated levels of CO throughout building; 270+ students and teachers evacuated
South	DC	10/15/2013	DC	Washington	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	7 hospitalized; 20 adults, 56 students treated for exposure	defective boiler	20 adults, 56 students treated for CO exposure; 7 hospitalized in serious condition
South	DC	12/17/2019	DC	Washington	Langdon Elementary School	Public	Elementary	no	press coverage	unknown		*improper combustion in malfunctioning HVAC unit*	

South	FL	6/10/2009	Broward County	Weston	Manatee Bay Elementary	Public	Elementary	no	press coverage	unknown	5 school employees, 2 firefighters hospitalized with CO poisoning	propane-powered machine used for stripping wax floors	Firefighters transported four Broward School employees from Manatee Bay Elementary School over the summer after carbon monoxide sickened workers from a propane-powered floor stripper. A total of seven persons, including two firefighters were hospitalized after breathing the odorless gas.
South	FL	10/4/2010	Miami-Dade	Miami	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	11 sent to hospital	unspecified	11 people sent to hospital due to CO leak in cafeteria
South	FL	8/9/2015	Brevard County	Titusville	Imperial Estates Elementary	Public	Elementary	no	press coverage	unknown	1 student, 2 staff members hospitalized; 41 others symptomatic on site	fan broke in vented hood in cafeteria	Fire officials said carbon monoxide was present with the smell of gas as workers prepared lunch for students, prompting someone to pull a fire alarm. 640 students + staff evacuated from school
South	FL	10/18/2017	Miami-Dade	Miami	Miami Springs Middle School	Public	Middle School	unknown	press coverage	unknown	14 adults taken to hospital	unspecified	emergency personnel were called to Miami Springs Middle School after several workers reported feeling sick in and around the cafeteria
South	FL	1/31/2018	Monroe County	Florida Keys	Sugarloaf Elementary School	Public	Elementary and middle	unknown	press coverage	unknown	3 cafeteria workers treated at scene	improperly ventilated kitchen equipment	only cafeteria area evacuated; children ate lunch in their classrooms while cafeteria being ventilated
South	FL	4/5/2018	Miami-Dade	Miami	Orchard Villa Elementary	Public	Elementary	no	press coverage	unknown	7 cafeteria workers hospitalized	human error; improper ventilation during cooking	department notified when cafeteria workers began falling ill
South	FL	9/19/2018	Miami-Dade	Miami	Carol City Elementary	Public	Elementary	no	press coverage	unknown	3 kids, 2 adults hospitalized; 3 treated at scene	School officials said the issue may have come from a truck that was delivering items to the school.	officials said crews responded to the school after receiving a call about a person not feeling well. When firefighters walked into the school their detectors went off immediately, officials said.
South	FL	10/17/2019	Miami-Dade	North Miami	WJ Bryan Elementary	Public	Elementary	unknown	press coverage	unknown		unnamed source in cafeteria	
South	GA	3/9/2006	Hall County	Gainesville	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		HVAC unit	School evacuated due to high CO levels
South	GA	12/3/2012	Fulton County	Atlanta	Finch Elementary School	Public	Elementary	no	press coverage	1700 ppm	43 students, 10 adults hospitalized	Suspected faulty furnace	43 students, 10 adults sent to hospital after exposure to CO; mild-to-moderate symptoms; CO reading of 1,700 ppm
South	GA	11/25/2019	Fulton County	Atlanta	GATES Academy	Private	Daycare/Preschool	yes	press coverage	unknown	16 children, 3 adults taken to hospital	faulty furnace	emergency services responding to medical call regarding child having seizure; upon arrival found group symptoms; FD meters showed elevated levels of CO w/ out knowing time exposed; school had detectors but they did not alert
Midwest	IA	9/23/2010	Johnson County	Iowa City	name not provided	unknown	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Cleaning crew used unauthorized equipment in improperly ventilated area	Unsafe levels of CO; classes cancelled for day
Midwest	IA	9/8/2018	Black Hawk County	Hudson	Hudson Elementary School	Public	Elementary	yes	press coverage	100 ppm		vent malfunction in kitchen	School cancelled, evacuated after CO detector alerts in kitchen
Midwest	IL	11/5/2012	Cook County	Chicago	Harold Washington Elementary	Public	Elementary	no	press coverage	43 ppm	25 students taken to hospitals	faulty boiler	25 children taken to area hospitals after CO leak; 43 ppm
Midwest	IL	9/15/2014	Macoupin County	Girard	North Mac Intermediate	Public	Middle School	no	press coverage	400 ppm	181 students and teachers (at least 150 students) taken to hospitals	gas water heater - flue broke loose	181 students and teachers, the majority of which were children, taken to hospital after CO leak; lunch teachers fainting randomly; water heater passed inspection earlier in the year; no detection on site; 20 LAWSUITS FILED claiming disability/disfigurement of minors ;
Midwest	IL	10/29/2014	Cook County	Chicago	Harper High School	Public	High school	no	press coverage	unknown	9 students hospitalized	construction crew relining sewers in area; sewage vapors leaked into school	School evacuated and closed due to foreign odor that ended up being CO exposure; 9 students taken to hospital according to Chicago PD
Midwest	IL	10/30/2015	Cook County	Chicago	Prussing Elementary School	Public	Elementary	no	press coverage	unknown	70 children taken to hospital	boiler issue in main bldg	70 children taken to hospitals because of CO fumes at Jefferson Park grammar school in Prussing; one, inactive CO detector in boiler room was unplugged at time; a malfunctioning component on the building's boiler produced more carbon monoxide than normal. A fire door that should have been closed was left open. Claypool said, while a fresh-air door that should have been open was closed. The unplugged carbon monoxide detector was located near the boiler, he said. "Whether the one CO detector in the boiler room was active is less relevant because the boiler room is 60 feet from the main building and 20 feet underground," Arena said. "Begging the question: Who in safety and security thinks that if an alarm goes off where no one can hear it, that somehow makes the building safe and secure?"
Midwest	IL	12/3/2015	Cook County	Chicago	Horace Mann Elementary School	Public	Elementary	yes	press coverage	unknown	104 students, 7 staff hospitalized	unspecified	104 students and seven staff members were hospitalized after a carbon monoxide leak at Horace Mann Elementary in South Chicago; IMPORTANT TO NOTE: "Newly installed carbon monoxide detectors were tripped as school started Thursday at Horace Mann, 8050 S. Chappel Ave., officials said. Though the alarms were tripped as staff entered the school around 6:30 a.m., according to Chicago Teachers Union organizer Curtis Bynum, school administrators didn't contact the fire department until about 8:30."
Midwest	IL	12/21/2016	multiple	Bartlett	Bartlett Elementary School	Public	Elementary	unknown	press coverage	unknown		unspecified	school evacuated;
Midwest	IL	3/16/2017	Kankakee County	Bourbonnais	LeVasseur Elementary	Public	Elementary School	yes	press coverage	unknown	48 students, staff taken to hospitals	School's backup Generator in boiler room had a timer malfunction, causing it to run while staff/students on property; it's exhaust getting sucked into air intake system	350 students and staff evacuated; 48 taken to hospital
Midwest	IL	2/1/2019	Rock Island	Moline	Glenview Middle School	Public	Middle School	yes	press coverage	unknown		water heater malfunction in boiler room	650 students, teachers evacuated safely, responding to alarm
Midwest	IL	2/21/2019	Cook County	Tinley Park	KinderCare	Private	Daycare/ Preschool	no	press coverage	210 ppm	82 staff and students treated on scene by emergency services	hot water heater leak	staff and students falling ill;
Midwest	IL	11/4/2019	Cook County	Chicago	Burnside Academy	Private	Elementary	yes	press coverage	unknown		faulty boiler	early workers arrived to detectors alerting; notified students, other teachers before arrival
Midwest	IN	2/21/2006	Gibson County	Ft Branch	name not provided	unknown	Recreational care	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	523 ppm		furnace?	two girls passed out, emergency authorities alerted; CO levels at 523 ppm GF/613 ppm basement

Midwest	KS	11/30/2005	Ford County	Dodge City	name not provided	unknown	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Cracked heat exchanger	Annex classroom evacuated when teacher/students noticed smell
Midwest	KS	10/29/2014	Cowley County	Dexter	Dexter Elementary School	Public	Elementary	no	press coverage	unknown	18 first and second grade students taken to hospital	defective heat exchanger on the roof heating unit	school librarian was EMT and responded to initial cause of concern in 1st and 2nd grade classes; called emergency services; school evacuated, multiple children started passing out in separate classes
Midwest	KS	5/6/2019	Douglas County	Lawrence	Kennedy Elementary	Public	Elementary	no	press coverage	unknown	3 staff seek medical attention on their own, discover elevated levels of CO in body	Gas-powered hot water heater was not venting properly due to roof repairs. Roofers had covered the piping.	staff member at Kennedy Elementary reported feeling nauseous. She went to the doctor and found she had elevated levels of carbon monoxide. The portion of the building where the complaints came from houses the preschool students ages three to five. Staff members said many of them are special needs students.
South	KY	2/22/2010	Jefferson County	Louisville	Field Elementary School	Public	Elementary	no	press coverage	unknown	13 children, 1 teacher taken to hospital; 30 others treated on scene	officials say exhaust from a gas-powered concrete saw being used by a contractor outside the building spread through the ventilation system.	students reported feeling ill, headaches/nausea
South	LA	10/2/2010	Calcasieu Parish	Lake Charles	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		external conditions impacting inside school	Bldg closed up due to smoke outside/low-lying gof, air quality checked and had elevated CO; school evacuated, 20 evaluated at local hospital
South	LA	9/2/2016	Lafayette Parish	Duson	Charles M Burke Elementary School	Public	Elementary	yes	press coverage	unknown	1 cafeteria worker taken to hospital	unspecified in kitchen area	carbon monoxide meter alerted in cafeteria area
South	LA	9/5/2019	Ascension Parish	Dutchtown	Dutchtown High School	Public	High school	no	press coverage	unknown	28 students treated in ER	large capacity "zero turn" lawnmower with the balky gas tank was being used to cut grass next to an air-conditioning intake vent	nausea, dizziness and headaches experienced as fumes came in through the ventilation system
South	LA	11/6/2019	Caddo Parish	Shreveport	Broadmoor Middle	Public	Middle School	no	press coverage	unknown	13 students transported to hospital	unspecified	CO poisoning assumed because of group symptoms, source not discoverable, accumulation not active by time of emergency response
Northeast	MA	2/17/2005	Middlesex County	Lexington	Lexington High School	Public	High School	no	press coverage	65 ppm		Hole in intake pipe, unlined chimney; intake/exhaust pipes too close	School evacuated twice for CO before sources discovered; buildings not occupiable until issue fixed; has since installed CO detection
Northeast	MA	12/29/2005	Middlesex County	Chilmsford	McCarthy Middle	Public	Middle School	no	press coverage	unknown	4 staff, 4 students sent to hospital	Delivery vehicle idling outside of school	Cluster illness; Test results from 3 patients revealed traces of CO
Northeast	MA	1/11/2007	Worcester County	Fitchburg	name not provided	unknown	Middle School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	7 hospitalized	Boiler was under repair	
Northeast	MA	10/2/2008	Worcester County	Northboro	Marion Zeh Elementary	Public	Elementary	yes	press coverage	unknown	Fire personnel evaluated the school custodian at the scene for carbon monoxide exposure. He was not transported, but fire officials said he later sought medical attention on his own.	Boiler malfunction	Firefighters arriving at the scene found elevated levels of carbon monoxide in the cafeteria area. Wearing air packs to investigate further, firefighters found very high levels of carbon monoxide in the boiler room.
Northeast	MA	3/1/2012	Plymouth County	Marshfield	Marshfield High School	Public	High School	unknown	press coverage	unknown		Water heater malfunction	CO/other fumes drawn back into loading docks by wind; high levels of CO immediately outside, lower levels of CO inside
Northeast	MA	4/3/2014	Worcester County	Douglas	municipal property that cares for kids	Public	Recreational care	no	press coverage	unknown	16 hospitalized	malfunctioning boiler	16 Kindergarten children transported to area hospitals
Northeast	MA	10/9/2015	Middlesex County	Newton	Franklin Elementary	Public	Elementary	no	press coverage	1000ppm	2 hospitalized	ue to errors made by the heating contractors in the process of installing a new boiler	person found unconscious in boiler room, another ill; meters brought onto scene maxed out
Northeast	MA	10/29/2015	Middlesex County	Lowell	Sullivan Middle School	Public	Middle School	unknown	press coverage	unknown		unspecified	60 students fall ill; all showing symptoms of CO exposure
Northeast	MA	8/30/2018	Hampden County	Monson	Granite Valley Middle School	Public	Middle School	yes	press coverage	unknown		exhaust from a generator that was used by construction workers on the rooftop	high carbon monoxide set off alarm in gym area;
Northeast	MA	12/12/2018	Barnstable County	Mashpee	Quashnet Elementary	Public	Elementary	unknown	press coverage	unknown	5 staff members hospitalized	leaking boiler	school closed for three days while boiler leak repaired;
Northeast	MA	7/18/2019	Essex County	Methuen	Methuen High School	Public	High school	no	press coverage	unknown	1 adult transported to hospital	crews were stripping floors, using freon + humidifier - combo gases	freon canister exploded, detaching from humidifier while stripping floors
Northeast	MA	1/31/2020	Essex County	Marblehead	Coffin Elementary School	Public	Elementary	yes	press coverage	unknown	2 janitors hospitalized	hardwired CO detector malfunctioned and was not alerting after broken fan belt on school's exhaust system	"The building is over 70 years old and is slated to be replaced with new construction. Problems listed in the project's plan include a boiler system that's "increasingly unreliable."
Northeast	MA	12/30/2020	Middlesex County	Waltham	Waltham High School	Public	High school	no	press coverage	200 ppm		boiler	FD responded to a pulled fire alarm, building had self-evacuated; medic requested for onsite treatment; school was on Christmas break but basketball team and some teachers were on site, elevated levels of up to 200ppm found in multiple areas of building, not just boiler area
Northeast	MA	1/5/2016	Middlesex County	Waltham	Henry Whittemore Elementary	Public	Elementary	no	press coverage	135 ppm		boiler	A maintenance worker smelled the odor of natural gas and contacted police. Firefighters responded to the scene and, using a CO meter, discovered a high level of carbon monoxide.
South	MD	9/28/2002	Baltimore County	Middle River	Chase Elementary School	Public	Elementary	no	press coverage	unknown	32 children taken to 3 separate hospitals to accommodate volume	unspecified	"The scare, which started at 10:36 a.m., evoked a science-fiction thriller with pupils falling listlessly to the ground and others rushing nervously to the nurse's office before the entire school was evacuated 25 minutes later."
South	MD	2/8/2011	Baltimore City	Baltimore	Dickey Hill Elementary/Middle	Public	Elementary/Middle	no	press coverage	56 ppm	5 adults, 1 child hospitalized	Malfunctioning steam table	
South	MD	2/15/2011	Baltimore City	Baltimore	Dickey Hill Elementary/Middle	Public	Elementary/Middle	no	press coverage	55 ppm	1 child hospitalized	convection and steam oven used to prepare food, malfunction	6 students ill, 40 others exposed; same school as 2/8 incident
South	MD	2/3/2012	Frederick County	Fredericksburg	name not provided	unknown	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Diesel vehicle stuck in vicinity of individual rooms HVAC system	CO fumes from running vehicle circulated via HVAC; several taken to hospital, diagnosed with CO poisoning

South	MD	2/6/2018	Baltimore City	Baltimore	Hazelwood Elementary/Middle	Public	Elementary/Middle	unknown	press coverage	unknown	boiler	recreation hall and remaining staff evacuated; school after hours being used recreationally by community /students		
South	MD	2/25/2019	Baltimore County	Owings Mills	Shafer Center	Private	K-12	unknown	press coverage	unknown	2 adults hospitalized	heating system malfunction	60 special needs children evacuated; 2 adults hospitalized; FD indicated issue with heater	
South	MD	6/6/2019	Baltimore County	Golden Ring	Rosedale Center	Public	High school	unknown	press coverage	unknown	one priority 1 patient, a man, was taken to University of Maryland Medical System's hyperbaric chamber; and two priority 2 patients, a woman and another man, were also taken to UMMS. Priority 1 typical designates patients who are seriously injured but have a higher likelihood of recovery. Neither of these patients were staff members.	leak originated from a piece of auto equipment that was operating at an auto shop in the same complex as the school		
South	MD	11/11/2020	Baltimore City	Baltimore	Franklin Square Elementary/Middle	Public	Elementary/Middle	unknown	press coverage	unknown		unspecified	10 evacuated, elevated levels of CO found inside	
Midwest	MI	3/5/2005	Oakland County	Royal Oak	Dondero High School	Public	High School	no		SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	38 students, teachers and bystanders at a community swimming class were treated for carbon monoxide poisoning; 17 taken to hospital via ambulance, 5 treated in Hyperbaric chamber at hospital; several more arrived to hospital on their own including siblings, parents of those taking class	Furnace	High levels of CO from furnace made way to pool area during community swim lessons; instructors and their 5- to 14-year-old students began throwing up, complaining of headaches and feeling dizzy and nauseated around 9:15 a.m. The building was evacuated, and a parent called 911.
Midwest	MI	5/4/2007	Benzie County	Thompsonville	name not provided	unknown	Elementary	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		sewer gases/air exchange	School closed after students fell ill - no Co source found on site; incident potentially caused by sewer gases exiting a rooftop vent that were sucked back into building fresh air exchange
Midwest	MI	2/24/2010	Kalamazoo County	Portage	Portage Northern High School	Public	High School	unknown	press coverage	unknown	7 teachers file personal injury lawsuits due to medical issues impacting them since event	Construction equipment suspected - could never find source from any school-based systems	School undergoing renovation; parents complain of illness of children, diagnosed with higher levels of CO in system; at least 7 teachers file lawsuits	
Midwest	MI	9/17/2019	Genesee County	Swartz Creek	Morrish Elementary School	Public	Elementary	unknown	press coverage	unknown		boiler	school evacuated from combo gas leak; gas shutoff; ppms brought back to zero before students/staff allowed to return	
Midwest	MI	11/25/2019	Oakland County	White Lake Township	Lakeland High School	Public	High school	no	press coverage	70 ppm		discharge from a boiler that was flowing back into the return air system	First responders had responded to the school for unrelated emergency; their wearable CO detectors started alerting to high levels of CO when they were inside the building; school did not have alarms	
Midwest	MI	1/26/2021	Van Buren County	Mattawan	Mattawan Consolidated School	Public	Elementary building	yes	press coverage	unknown		unspecified in kitchen area	CO alarm alerting in kitchen, staff and children evacuated to other buildings;	
Midwest	MN	10/5/2010	Ramsey County	St. Paul	Como Park Elementary School	Public	Elementary	unknown	press coverage	unknown		boiler leak	School evacuated due to elevated CO levels; 25 evaluated on scene	
Midwest	MN	2/7/2014	Brown County	Springfield	Springfield Public School	Public	K-12	unknown	press coverage	unknown	30 students treated at hospital for CO poisoning	unspecific in auditorium	400 school members evacuated, 30 students treated at hospital for CO poisoning after practicing in auditorium	
Midwest	MN	10/16/2019	Carlton County	Esko	Lincoln School	Public	Middle School	unknown	press coverage	unknown		unspecified water heater issue	school evacuated	
Midwest	MO	3/6/2009	St. Louis County	Ballwin	name not provided	unknown	Elementary	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Open air handler door on HVAC system	School evacuated
Midwest	MO	4/3/2012	Cape Girardeau County	Cape Girardeau	Blanchard Elementary	Public	Elementary	yes	press coverage	unknown		Dirt-dobbers (insects) built nest and clogged up an air intake system	School evacuated for second time in a week due to buildup of CO in gym, cafeteria	
Midwest	MO	1/13/2014	St. Louis City	St. Louis	Mallinckrodt Elementary	Public	Elementary	yes	press coverage	unknown		water had accumulated in the basement of the school building due to the melting snow. Maintenance workers were using generators to siphon the water out of the basement	maintenance workers running generators indoors, improperly ventilated causing CO accumulation; detection system alerted for safe evacuation	
Midwest	MO	12/4/2014	St. Louis City	St. Louis	Nance Elementary	Public	Elementary	unknown	press coverage	unknown	2 students, 1 teacher sent to hospital	boiler malfunction	full evacuation	
Midwest	MO	1/5/2015	St. Louis City	St. Louis	Northwest Academy of Law High School	Public	High school	yes	press coverage	unknown		Boiler malfunction	detector started alerting after boiler malfunction; all students evacuated to gymnasium	
Midwest	MO	3/6/2019	Callaway County	Williamsburg	Williamsburg Elementary	Public	Elementary	yes	press coverage	unknown		malfunctioning HVAC	front office area started to experience CO symptoms ahead of school starting; meter brought in and found elevated CO levels; school cancelled for day	
South	MS	9/8/2010	Marshall County	Holly Springs	HW Byers High School	Public	High School	unknown	press coverage	unknown	5 cafeteria staff hospitalized	vent-a-hood (ventilation hood) not properly removing gas fumes from burners	5 cafeteria workers sent to hospital with CO poisoning; grades 7-12 not on campus at time	
West	MT	8/28/2004	Deer Lodge County	Anaconda	Anaconda Job Corps Center	Public	High school	no	press coverage	unknown	20 students (ages 16-24) flown to area hospitals	cracked exhaust pipe on heater	nurse reported finding several overcome with symptoms;	
South	NC	11/7/2006	Wake County	Raleigh	name not provided	unknown	Elementary	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	4 teachers, 1 student taken to hospital	Debris lodged in heating system blocked air intake system	4 teachers, 1 student taken to hospital after complaining of headaches, nausea; remaining students moved to off-site gym
South	NC	10/21/2008	Polk County	Columbus	Virtual Early College	Public	High School	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	27 students, 5 staff taken to hospital	heating system defect	faulty air flow caused CO accumulation, affecting occupants for over an hour; student passed out while evacuating
South	NC	5/13/2010	Mecklenburg County	Matthews	Crestdale Middle School	Public	Middle	no	press coverage	unknown		Turned out to be propane buffer/janitorial equipment that cleaned floors (after gas leak ruled out by inspections)	Firefighters discover high levels of CO, school cancelled due to suspected gas leak	
South	NC	8/28/2014	Mecklenburg County	Charlotte	Coulwood Middle School	Public	Middle School	yes	press coverage	unknown	2 cafeteria workers evaluated on scene; 1 taken to hospital	improper operation of a cafeteria appliance	food inspection team was on site at the time, Co alarm started alerting while on site	

South	NC	6/18/2015	Wake County	Cary	East Cary Middle School	Public	Middle School	unknown	press coverage	unknown	10 children, 7 adults treated on scene - 4 of the adults taken to hospital	unspecified	School evacuated; 10 children, 7 adults evaluated by medical professionals after reported CO leak at middle school; 3 adults taken to hospital	
South	NC	5/7/2016	Mecklenburg County	Cornelius	JV Washam Elementary School	Public	elementary	yes	press coverage	100 ppm		malfunctioning kitchen equipment	May 9 CO leak in school cafeteria exposes this had been a several-month issue causing CO symptoms in students over a period of months; detectors alerted multiple times	
South	NC	8/23/2017	Mecklenburg County	Huntersville	Phoenix Montessori Academy	Private	Preschool	yes	press coverage	unknown	1 teacher hospitalized	unattributed	fire department responded to CO alarm	
South	NC	4/3/2019	Durham County	Durham	Research Triangle Academy	Charter	Elementary	unknown	press coverage	unknown		unspecified HVAC-related issue	School evacuated due to elevated CO levels	
South	NC	3/25/2021	Cumberland County	Fayetteville	Brentwood Elementary School	Public	Elementary	no	press coverage	unknown		Faulty kitchen equipment	Assistant fire inspector using meter during inspection found presence of CO in kitchen – hazardous emergency response was signalled in to review ; no injuries	
Midwest	ND	11/7/2018	Cass County	Fargo	The Learning Circle/Baby Bloomers	Private	Daycare/Preschool	unknown	press coverage	unknown	2 adults sent to hospital	construction crew using a gas-powered concrete saw inside a building without ventilation	daycare in building property on different floor; CO levels found in daycare	
Midwest	NE	9/27/2018	Hamilton County	Aurora	Aurora Elementary School	Public	Elementary School	no	press coverage	unknown		malfunctioning air handling unit on roof	Administrators smelled something Thursday morning when arriving at Aurora Elementary School in Aurora. District Superintendent Damon McDonald told The Grand Island Independent that firefighters were called to the school. They used sensors that detected carbon monoxide levels that were too high for anyone to be in the building.	
Midwest	NE	3/8/2019	Lancaster County	Lincoln	Pershing Elementary School	Public	Elementary School	unknown	press coverage	80 ppm		boiler room, specific cause not identified	elevated levels of carbon monoxide found in boiler room	
Northeast	NH	1/29/1994	Sullivan County	Unity	name not provided	Public	Elementary	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	Furnace leak	CO leak in school sickened 25 children and several teachers
Northeast	NH	11/9/2006	Hillsborough County	Litchfield	name not provided	unknown	High School	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	Boiler smokestack and proximity to air intake unit (too close!)	Students sent home after elevated levels of CO detected
Northeast	NH	2/18/2010	Rockingham County	Derry	St. Thomas Aquinas	Private	Elementary	no	press coverage	unknown	21 students and staff members were taken by ambulance to a hospital, and another 10 either went to a hospital on their own or were driven separately.	Ventilation system (3rd floor)	Dozens of students fall ill; school and adjacent church checked for CO levels (30 students and teachers at hospital)	
Northeast	NH	3/6/2012	Belknap County	Meredith	Inter-Lakes High School	Public	High School	yes	press coverage	unknown	students who were ill treated on scene	Misfiring boiler, exhaust/air exchange	Although there are smoke detectors and carbon dioxide detectors throughout the building, Wald said there's only one carbon monoxide detector, located in the boiler room and intended to detect a back-firing boiler. The carbon monoxide was able to bypass that detector by flowing up to the roof and back down into the building.	
Northeast	NH	11/5/2020		Newport	Newport Middle High School	Public	Middle School, High school	no	press coverage	unknown	4 students taken to hospital	car exhaust fumes filled school		
Northeast	NJ	4/6/2017	Gloucester County	Glassboro	Glassboro Intermediate School	Public	Middle School	no	press coverage	unknown	37 students, 3 staff members transported to hospital	boiler exhaust fan failed, allowing fumes to enter the school building.	first responders called to respond to multiple people feeling ill; arrived and found elevated CO levels calling for evacuation of intermediate school to other facilities	
Northeast	NJ	3/19/2018	Bergen County	Lindhurst	Washington School	Public	Elementary	yes	press coverage	unknown		boiler	CO detectors alerted, school evacuated safely prior to issues occurring	
Northeast	NJ	12/12/2018	Ocean County	Brick Township	Midstreams Elementary School	Public	Elementary	yes	press coverage	unknown		malfunctioning boiler	found dangerous levels of carbon monoxide right outside the boiler room and inside the boiler room, recently installed detectors alerted authorities	
Northeast	NJ	1/22/2019	Union County	Elizabeth	Toussaint L'ouverture-Marquis de Lafayette School No. 6.	Public	Elementary	yes	press coverage	unknown		exhaust fan stopped working in boiler room	Elevated levels of CO found in basement, detectors alerted for safe evacuation	
Northeast	NJ	11/27/2019	Bergen County	Saddlebrook	Saddlebrook Daycare	Private	Daycare/Preschool	yes	press coverage	unknown		A propane tank being used by workers in an adjoining storefront	Daycare center's detectors started alerting, prompting evacuation of 20+	
Northeast	NY	4/7/2010	Bronx	Bronx	Hunts Point School	Public	K-12	no	press coverage	unknown		unspecified	Building that houses 4 public schools and 1,500 students evacuated due to elevated levels of CO; first responders were responding to a medical call when their gas detectors activated upon entering buildings	
Northeast	NY	10/10/2013	multiple	Long Island	Camp Avenue Elementary	Public	Elementary	unknown	press coverage	unknown	12 students taken to hospital	Boiler emitting smoke	Boiler started "smoking", making those in surrounding rooms nauseated, ill; fire dept found elevated levels of CO in building	
Northeast	NY	2/14/2014	Queens County	Corona	Leonardo DaVinci Intermediate School	Public	Intermediate	unknown	press coverage	400 ppm		manhole fire in street in front of school caused large amounts of CO to enter the building's basement	happened just as students started to arrive for school; evacuation of all inside	
Northeast	NY	12/1/2015	Queens	Queens	PS 295	Public	Elementary	yes	press coverage	unknown		reading came from the building's basement and electrical room and may have been the result of a smoking manhole nearby	550 students, 100 faculty members evacuated	
Northeast	NY	2/15/2017	City of New York	Staten Island	PS 29	Public	Elementary	unknown	press coverage (video)	unknown		HVAC/boiler unit	680 staff and students evacuated due to reports of high CO inside the building; HVAC/Boiler unit producing gas, odor	
Northeast	NY	1/16/2019	Broome County	Endicott	Union-Endicott High School	Public	High school	yes	press coverage	unknown		unidentified at press time; shop class	alarm sounded in shop area of high school; evacuation of school	
Northeast	NY	1/31/2019	multiple	Long Island	South Grove Elementary	Public	Elementary	no	press coverage	unknown			children sickened, fainting while practicing for performance in gymnasium; elevated CO levels found in bloodwork	
Northeast	NY	3/24/2021	Madison County	Canastota	Roberts Street Elementary School	Public	Elementary	yes	press coverage	unknown		boiler	an issue with one of the boilers at the Roberts Street Elementary School complex triggered the carbon monoxide detectors. Students and staff were immediately evacuated; onsite carbon monoxide detectors are interconnected and the malfunction was caught just as it started.	
Midwest	OH	3/2/2004	Licking County	Newark	name not provided	Private	K-8	unknown			18 evaluated on scene (15 students/3 staff), "some" transferred to hospital (no specific number listed)	boiler/heating unit suspected	15 students, 3 staff sickened due to CO buildup, some transferred to hospital	
Midwest	OH	1/6/2017	Champaign County	Urbana	Urbana High School	Public	High school	no	press coverage	250 ppm	More than 12 students taken to hospitals	broken damper on furnace system	More than 44 students treated on scene for symptoms;	

Midwest	OH	10/1/2018	Tuscarawas County	Tuscarawas Township	Tuslaw High School	Public	High school	unknown	press coverage	unknown		contractors replacing roof using gas powered generator used near air handler;	unsupervised contractors using generator on roof to power tools while working on roof replacement; fumes and odors brought into school building while kids/staff on site	
Midwest	OH	1/15/2019	multiple	Pickerington	Ridgeview Junior High	Public	Junior High	unknown	press coverage	unknown	4 adults, 2 students taken to hospital	motor went out on exhaust system allowing CO from hot water heater to get into school	elevated levels of CO found, custodians who checked boiler room symptomatic	
Midwest	OH	10/28/2019	Clark County	Springfield	Clarke-Shawnee Middle/High School	Public	Middle School, High school	no	press coverage	unknown		boiler system	teacher notified administrators she was smelling odorous gases, fire dept was called and their meters notified there was elevated CO within the building; students, staff evacuated	
South	OK	5/4/2009	Tulsa County	Tulsa	Byrd Middle School	Public	Middle	no	press coverage	55 ppm	1 construction worker taken to hospital	gas powered washer in construction area without proper ventilation	Construction Worker began experiencing CO poisoning symptoms, firefighters responded; school teacher sounded the fire alarm to get people to evacuate after bring school nurse	
South	OK	3/28/2012	Marshall County	Madill	Madill Elementary	Public	Elementary	unknown	press coverage	unknown	25 students/staff transported to hospital	cause unknown	School evacuated, 25 people transported to hospital for eval	
South	OK	11/11/2013		Oklahoma City	Lee Elementary School	Public	Elementary	no	press coverage	unknown	10 people treated on scene; 3 students, 3 staff members taken to hospital	recently installed HVAC unit on roof leaked into classroom	Students and staff fall ill, school evacuated due to suspected issue; no detectors on site, responders find elevated CO,	
South	OK	1/18/2018	Carter County	Ardmore	Charles Evans Elementary School	Public	Elementary school	unknown	press coverage	unknown			Part of Charles Evans Elementary School was evacuated after tests revealed higher than normal carbon monoxide levels in older parts of the building.	
South	OK	11/27/2018	Tulsa County	Sand Springs	Clyde Boyd Middle School	Public	Middle school	no	press coverage	unknown	55 children taken to area hospitals; many overnight hospitalizations; 50 children additionally treated on scene	single heater malfunctioning + separate gas leak in pipes	Most of the children were from the same second-grade classroom.	
West	OR	4/16/2019	Lincoln County	Waldport	Crestview Heights School	Public	Elementary	unknown	press coverage	unknown	14 children treated in ER	diesel boilers suspected	School evacuated and cancelled after CO poisoning of students	
Northeast	PA	11/3/2011	Dauphin County	Derry Township	name not provided	Public	High School	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	propane heater in unsealed construction area	1 teacher taken to hospital after becoming sick from construction fumes
Northeast	PA	9/5/2012	York County	Glen Rock	name not provided	Public	Elementary	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012; AP News reference	malfunctioning water heater	Nearly 40 students were sent home with CO exposure
Northeast	PA	10/9/2012	Philadelphia County	Philadelphia	JH Brown Elementary	Public	Elementary	no	press coverage	unknown	50 children, 5 adults treated at hospital	Malfunctioning backup generator (after power outage)	Many of the 577 students evacuated;	
Northeast	PA	9/18/2015	Fayette County	McClellandtown	Albert Gallatin North Middle School	Public	Middle School	unknown	press coverage	unknown	10 students, 2 teachers taken to ER	*CO assumed - no source found	a teacher first contacted the school nurse after some of his students started feeling ill in the library. The nurse then called in paramedics because more children and the teachers started reporting symptoms, including breathing problems, respiratory issues, dizziness, and nausea.	
Northeast	PA	1/26/2018	Philadelphia County	Philadelphia	William Loesche School	Public	Elementary	no	press coverage	unknown	26 children, 4 teachers sent to hospital	a portable generator on the school's roof that construction workers were using to power their tools during roof repairs. Someone had placed it close to the air intake vents.	child became unconscious and wouldn't wake up with smelling salts in 2nd grade class, other students became lethargic; doing major renovations of building during school hours while children on site. Link to Philadelphia Inquirer series	
Northeast	PA	9/14/2018	Neshaminy	Langhorne	Herbert Hoover Elementary	Public	Elementary	unknown	press coverage	unknown		faulty exhaust system on a kitchen water heater	https://www.buckscountycouriertimes.com/news/20180914/high-carbon-monoxide-level-closes-neshaminy-herbert-hoover-elementary-school	
Northeast	PA	2/9/2019	Berks County	Fleetwood	Fleetwood Area Middle School	Public	Middle School	unknown	press coverage	unknown	8 community members practicing for a performance in auditorium taken to hospital; 3 found unconscious when FR arrived on scene	unspecified	community members in school after hours practicing for a performance, people started fainting/getting dizzy, director calls 911	
Northeast	PA	3/3/2020	Franklin County	Chambersburg	South Hamilton Elementary	Public	Elementary	yes	press coverage	unknown		boiler	Firefighters arrived on scene, meeting with building representatives. The alarm panel showed the "machine room" as the source of the leak, according to Franklin County Fire Company. Isolated boilers until source found.	
Northeast	RI	1/28/2005	Washington County	Peace Dale	Peace Dale Elementary School	Public	Elementary	no	press coverage	unknown		Snow clogged heating exhaust vent	520 students/teachers evacuated due to CO; elevated levels of CO found upon emergency responders arriving in response to "a gas smell coming from vent"	
Northeast	RI	5/9/2019	Kent County	East Greenwich	Meadowbrook Farms Elementary School	Public	Elementary	no	press coverage	unknown		cause unknown	children in same classroom all found to have elevated levels of CO in their system; getting sick in class	
South	SC	1/31/2019	PeeDee County	Florence	West Florence High School	Public	High School	unknown	press coverage	unknown	15 people tested positive for carbon monoxide poisoning	unattributed	teachers students repeatedly falling ill in science classroom and surrounding classrooms	
Midwest	SD	2/17/2021	McCook County	Canistota	Canistota School	Public	K-12	unknown	press coverage	40 ppm	25 children and teachers	forklift exhaust, additional gas-based construction equipment being improperly ventilated during construction on school gym while children in classes/staff on site	repeated presence of CO over series of weeks	
South	TN	11/6/2006	Bradley County	Cleveland	name not provided	unknown	Elementary	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	All students evacuated when high levels of CO detected in some classrooms	
South	TN	1/15/2013	Davidson County	Nashville	Drexel Preparatory Academy	Private	Elementary	No	press coverage	unknown	36 kindergarten and 1st graders arrive at hospital (28 of them stay overnight)	hole discovered in heating unit in center of school	children treated in hospital for CO poisoning with elevated levels in system after early school cancellation due to mystery "bug"	
South	TN	11/12/2018	Knox County	Knoxville	Lonsdale Elementary	Public	Elementary	no	press coverage	unknown		leaking flue on gas water heater	haze, weird readings on general alarm panel; emergency services called and found elevated levels of CO in boiler room and other areas of building; prompted evacuation of 300+ students; no detectors required according to building code	
South	TN	2/27/2019	Sumner County	Hendersonville	Children's First Preschool	Private	Daycare/Preschool	no	press coverage	unknown	28 kids and teachers treated at hospital, some remained on oxygen for 24 hours	malfunctioning boiler in toddler area	teachers noticed funny symptoms occurring, called emergency responders	

South	TN	1/31/2020	Shelby County	Cordova	Kate Bond Middle School	Public	Middle	no	press coverage	unknown	4 students hospitalized; 18 treated at scene	"heating unit on roof above classroom leaked CO into building"	originally a medical distress call for "a child having trouble breathing"; when responders appeared on scene, children were definitely exhibiting symptoms of CO poisoning but portable meters were reading negative; however, 2nd sweep by inspectors found source of elevated CO issue
South	TX	10/7/2009	Gray County	Pampa	name not provided	Public	High School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		furnace issue	CO leak forced evac of students
South	TX	11/4/2011	Harris County	Houston	Barnett Stadium (multiple schools at event)	Public	High School	no	press coverage	unknown	22 students treated at hospital	Possible exposure from standing buses or nearby generators	22 students taken to hospital with mysterious illness, at least one treated for CO poisoning
South	TX	1/6/2012	Dallas County	Dallas	Rangel Women's Leadership High School	Public	High School	no	press coverage	unknown		improperly ventilated boiler	School of 500+ evacuated; nearly 1 dozen people complaining of CO symptoms
South	TX	3/4/2015	Dallas County	Dallas	Lakewood Elementary	Public	Elementary	yes	press coverage	unknown	1 staff member and 1 volunteer (both adults) to the hospital, and three others planned to seek medical care on their own.	dead owl blocked one of boilers pipes, CO accumulation in boiler room, add'l parts of bldg	20+ students show signs of CO poisoning; boilers didn't kick on until morning. CO detectors didn't alert; happened multiple times during week
South	TX	4/10/2015	Tarrant County	Fort Worth	Diamond Hill Elementary	Public	Elementary	No	press coverage	unknown	14 people (didn't specify age) being treated at local hospitals due to incident	construction team using gas powered cutting tool	students, staff evacuated;
South	TX	1/28/2016	Jefferson County	Beaumont	Marshall Middle School	Public	Middle School	no	press coverage	400 ppm at source; 100 ppm upon entry to building	175 treated on site; 69 taken to hospitals via ambulance, additional 100 went to hospital on their own after continued illness	occurred "as a result of two different failures" - corrosion that let fire exit the boiler and an inoperative ventilation fan, according to a report from the Texas Department of Licensing and Regulation.	Emergency services were called because a child passed out - wasn't until they were on site that CO was suspected; According to the report, the firebox, which should contain the flame inside the boiler, had deteriorated, likely because of condensation or a leak in the roof. The corroded portion of the firebox allowed the flame to exit the boiler, emitting carbon monoxide into the room.
South	TX	1/12/2018	Jefferson County	Beaumont	Dishman Elementary	Public	Elementary	yes	press coverage	unknown		boiler	alarm sounded, evacuating all students and staff; limited to boiler room area, shutoff until rental boiler could be obtained/
South	TX	1/8/2021	Travis County	Austin	Allison Elementary	Public	Elementary	yes	press coverage	unknown		unidentified source	gas smell, CO alarms alerting prior to student arrivals; staff called 911
West	UT	3/27/2012	Wasatch County	Heber	Heber Valley Elementary School	Public	Elementary	no	press coverage	unknown	1 teacher, 17 students treated at local hospital	construction crew using machinery by open door	separate classes and teachers in school began experiencing CO related illnesses; fire dept responded to a "smoke" alarm, as no CO detectors on site
West	UT	11/8/2013	Uintah County	Salt Lake City	Montezuma Creek Elementary	Public	Elementary School	no	press coverage	300 ppm	40 hospitalized, 3 airlifted	exhaust pipe coming from one of two water heaters had become disconnected at some time venting gas into a mechanical room, the kitchen, and classrooms.	There was an assembly in gymnasium which is located next to the water heaters; School evacuated upon illnesses
West	UT	9/17/2018	Weber County	Ogden	Weber High School	Public	High school	no	press coverage	unknown	2 students taken to hospital	unspecified	elevated levels of CO found in classroom by FD meters, students feeling ill; 20+ treated on scene
West	UT	11/15/2018	Davis County	West Point	West Point Junior High School	Public	Junior High	no	press coverage	unknown	1 student transported to ER	source unidentified	no CO found once FD arrived with detectors, however multiple people exhibiting exposure symptoms in gymnasium area
West	UT	1/10/2019	Uintah County	Salt Lake City	Ashley Elementary School	Public	Elementary	yes	press coverage	unknown		unidentified source in kitchen	
West	UT	12/18/2019	Cache County	Logan	Mt. Logan Middle School	Public	Middle school	yes	press coverage	unknown		art kiln	elevated levels of CO found in art room after kiln use, setting off detectors carbon monoxide issue. Assisted in finding source and ventilated. Verified rest of building had CO free air with 4 gas monitor. Removed boiler from service due to this being the source.
South	VA	12/30/2014	Chesterfield County	Middleton, VA	St. Edward-Epiphany School	Private	Primary to Middle	unknown	Chesterfield County FOIA	unknown		boiler	
South	VA	2/9/2015	Loudoun County	Sterling, VA	Michael & Son Sportplex	Recreational	Recreational care	unknown	Loudoun County FOIA	unknown			
South	VA	4/3/2015	Fairfax County	Chantilly, VA	Westfield High School	Public	High School	unknown	Fairfax Co Fire FOIA	115ppm		Propane-fueled floor buffer	High CO readings reported; entered school to find cleaning crew using propane-fueled floor buffer in main hallways, causing several to feel ill and have to leave the building - elevated readings of 115ppm recorded by emergency responders
South	VA	8/18/2015	Henrico County	Henrico, VA	Tuckahoe Elementary School	Public	Elementary School	yes	Henrico County FOIA	115ppm		construction equipment (wet saw); improper ventilation	Source: construction equipment (wet saw), improper ventilation; EMS 1 with school principal secretary confirmed alarm location with active alarm, visual and audible in door area 021. Upon gaining access to the alarm location construction sounds were noted with a wet saw cutting concrete. Dust and the odor of fuel emissions were present. EMS 1 requested T10 to assist with atmospheric monitoring due to the confined space and location. Reading of 35-115ppm was present just before the effected hall with dust and air borne particle present. EMS 1 with Mrs. Ford stopped to allow HFD crews to stop activity and confirm that the alarm was due to construction. T10 with E08 as back up made entry and evacuated crews with a superintendent Doug Updegrave exiting the structure to explain the construction being completed. He advised the saw was only running 20 minutes with multiple windows open but no force ventilation. He was advised of the CO levels and that corrective actions needed to be completed. Michele Loveland of HCP's 349-249 was contacted by TES staff to advise her of the alarm and levels of CO found. After force ventilation and atmospheric monitoring work were completed. Mr. Updegrave was allowed back into the structure to work. Mr. Updegrave confirmed that all gas powered tools would not be restarted until proper ventilation could be conducted.
South	VA	1/14/2016	Arlington County	Arlington, VA	Cody Child Development Ctr	Private	Daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/9/2016	Arlington County	Arlington, VA	Charles Drew Elementary	Public	Elementary School	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/16/2016	Loudoun County	Chantilly, VA	J Michael Lunsford Middle	Public	Middle School	unknown	Loudoun County FOIA	unknown			
South	VA	4/17/2017	Henrico County	Richmond, VA	Starling Child Care	Private	Daycare	unknown	Henrico County FOIA	unknown		gas water heater	Smell of gas in utility room with gas water heater. Gas Heater turned off and gas secured. Told supervisor to have unit serviced prior to turning back on
South	VA	8/2/2017	Fairfax County	Falls Church, VA	Bailey's Upper Elementary School	Public	Elementary School	yes - alarm panel activated	Fairfax Co Fire FOIA	20 ppm		Cleaning machines being u	Source was cleaning crew (using equipment and solutions) on 3rd floor near elevator lobby; accumulation of CO in the hallways/lobby

South	VA	10/6/2017	Arlington County	Arlington, VA	Inhome daycare	Private	daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/14/2017	City of Chesapeake	Chesapeake	Deep Creek High School	Public	High School	unknown	press coverage	unknown		Two separate natural gas leaks found in rooftop HVAC	Deep Creek High School students/teachers sheltered in different parts of school due to gas odor; firefighters respond find elevated CO
South	VA	1/11/2018	Henrico County	Henrico, VA	Minnieland/Skipwith Academy/Montessor Kids Universe - 3450 Lauderdale Drive	Private	Daycare	no	Henrico County FOIA	100ppm		suspected: kitchen oven	Infant to Pre-K on site; S13 and E16 responded for a report of a gas smell during the last two days at a day care facility. S13 arrived on scene and established command. Met manager at the front door and detected the slightest smell of gas. Manager reported one of the parents had come to him with a concern. S13 began monitoring with the four gas monitor, found carbon monoxide levels of 10- 20 throughout the occupancy with readings of 30 in the gym area. Occupants removed from the gym area. Ventilation initiated, gas appliances were the rooftop heating units, water heater, and two cook stoves in the kitchen area. HVAC company was on scene replacing a draft motor on one of the rooftop units. Monitored the individual ducts for each of the four rooftop units in the occupancy as well as on the roof. Unable to find a significant level of CO from these units. Vent stacks for the hot water heater and hood above the stoves appeared intact and dispersed above the roof. Ran hot water heater and stove for a few minutes and found one of the ovens was producing CO at levels near 100ppm when the oven was opened. The other oven was not producing a noticeable amount of CO but several of the stovetop burners would not light. Shut off gas to both of the stoves and felt that the one oven had been the source of CO. After ventilation, readings had dropped down to about 5 throughout the building. Monitored B and D exposures with readings of 0 found in both. Advised occupants to have stoves repaired or replaced and strongly encouraged them to have CO detectors installed due to the type of occupancy. After ventilation was shut down and all doors had been closed the CO levels did not reproduce. Went back approx. an hour later and monitored the building, highest level was 3ppm in a small closet near the kitchen. All other readings 0 throughout.
South	VA	1/16/2018	Fairfax County	McLean, VA	The Langley School	Private	K-12	yes - battery operated in utility room	Fairfax Co Fire FOIA	unknown		gas fired water heater in utility	called to school due to odorous gas, maintenance found battery operated alarm alerting in utility room; shut down gas fired water heater, advised school to repair/replace
South	VA	2/13/2018	Henrico County	Henrico, VA	Minnieland/Skipwith Academy/Montessor Kids Universe - 3450 Lauderdale Drive	Private	Daycare	yes	Henrico County FOIA	>499ppm		rooftop heating unit	S13 responded to a CO detector activation call. Upon arrival we were met outside the business by the responsible party/manager of the business. She stated she has a CO detector that has been activating and requested assistance with this. The business is a child daycare facility with 30-40 children and adults. The initial investigation immediately found a CO reading at the front door to the business at 49PPM and rising. We immediately evacuated the business, requested an engine company and a fire medic be dispatched to assist on the call. The children were initially staged on the sidewalk outside of the business, in the staff's care, both individually and in cribs. S13 driver made contact with 9 Rounds Fitness club two businesses down from the call location and received permission to place all the occupants in there to get them out of the weather and into a central, controllable location. S13 personnel donned SCBA and began further evaluation of the business. Inside we found the highest reading of 60PPM, on the B side interior wall side and the back corridor. Evaluation of the appliances in the kitchen and water heater found no issues or increased readings. Per the staff, the stoves were new purchases within the last month. S13 B turned off the heat system at this point. E13 was assigned to check utilities to the rear of the structure, and F13 was given the assignment of evaluating the children and staff for any symptoms or medical complaints. No complaints or medical issues were reported or noted. Inside it was noticed that the readings were changing to lower readings following the heat system being shut down. E13 and F13 were assigned to ladder the roof and evaluate the heat systems on the roof. The heat system was turned back on and upon investigating, the center unit on the roof was found to be emitting CO at a level of 238PPM in the general vicinity, and >499 at the unit itself. The heat was again powered off, and the gas service valve to the unit was closed. Ventilation utilizing an electric PPV was initiated. Speaking with the manager of the facility, she advised that the maintenance personnel to the business was notified and would be responding. The property management representative arrived and was briefed on the situation and stated they had a CO issue last month that was determined to be from the stoves, which had been replaced. Ventilation successfully removed the CO to a level of <5PPM throughout the business, where nost readings were 0. Ceiling tiles were also removed to allow for air circulation during ventilation above the drop ceiling. Final evaluation of the CO readings remained consistent with the last low readings after turning the remaining non-malfunctioning heat units back on, and the occupants were allowed to return. The facility maintenance representative arrived and was briefed on our findings. He reported to the roof and evaluated the suspect unit and verified it was properly shut down with no power to it. He advised he would be getting with the property management company to have repairs made. S13 assisted the staff with returning the children and returned to service. FMO arrived and was briefed by S1.
South	VA	4/17/2018	City of Virginia Beach	Virginia Beach	Cox High School	Public	High School	unknown		unknown		Butane canister leaking inside a classroom	Cox High School evacuated
South	VA	5/31/2018	City of Virginia Beach	Virginia Beach, VA	Bow Creek Presbyterian School	Private	Daycare/Preschool	no	City of Virginia Beach FOIA	18ppm		malfunctioning rooftop furnace	L16 received a phone call from the church saying some people smelled natural gas. L16 arrived on scene and no odor of natural gas. L16 performed air monitoring inside the structure. 12-18PPM of CO was noted on the meter in the hallway and classrooms of the pre-school. L16 upgraded the response and assumed command. L16 evacuated the school portion of the structure approximately 50 children and staff to safer location within the structure. FR01 monitored the school hallway and readings were similar to L16. Issue was isolated to a malfunctioning furnace on the roof. Structure was ventilated and monitored again with all levels within normal limits of 0PPM. Furnace was Red Tagged Repair serviced arrived on scene as fire department was clearing. L16 clear. (NO DETECTORS ON SITE)
South	VA	8/2/2018	Fairfax County	Burke, VA	White Oaks Elementary	Public	Elementary School	yes - monitor	Fairfax Co Fire FOIA	30 ppm		acetylene cylinders outside	School under construction; multi-gas monitor started alerting; cross sensitivity of gases coming from gas cylinders outside, turning into building, accumulating in enclosed space where construction crew working

South	VA	11/29/2018	Arlington County	Arlington, VA	NOVA Kindercare	Private	Daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/12/2018	Fairfax County	Vienna, VA	Vienna Adventist Academy	Private	Elementary School	no	Fairfax Co Fire FOIA	70 ppm		roof top HVAC unit	arrived on scene, investigating odor; in gym found odor and meter readings of 70ppm for CO; school evacuated; HVAC unit on roof shut down – vented gym and turned over to maintenance
South	VA	7/16/2019	Fairfax County	Alexandria, VA	Stratford Landing Elementary	Public	Elementary School	yes	Fairfax Co Fire FOIA	90 ppm		motorized floor cleaner in kitchen	dispatched for CO detector activation in kitchen of elementary school; source narrowed down to motorized floor cleaner charging in kitchen using monitors; cleaner was removed and put into open air
South	VA	9/20/2019	Fairfax County	Alexandria, VA	Bush Hill Elementary	Public	Elementary School	yes	Fairfax Co Fire FOIA	60 ppm		cracked heat exchanger in roof	building had been evacuated prior to arrival of emergency teams; met with big maintenance, speculated cracked heat exchanger in one of the rooftop heating units; gas shut off and building turned over to maintenance team after ventilation
South	VA	10/3/2019	Henrico or Chesterfield County	Richmond			Elementary school	unknown		unknown			10 staff members reported feeling ill; school evacuated due to suspected gas leak
South	VA	10/31/2019	Arlington County	Arlington, VA	Arlington Assembly of God	Private	Daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	11/21/2019		Alexandria	GW Middle School	Public	Middle School	unknown		unknown		Roof top heating unit malfunction	GW Middle School evacuated due to suspected gas leak, odor
South	VA	2/20/2020	City of Virginia Beach	Virginia Beach, VA	Kids Town Learning Center	Private	Daycare	no	Virginia Beach FOIA	72ppm after doors and windows opened for several hours and school had been evacuated (6 hours later)		furnace	Engine 9 and Ladder 7 were dispatched to a CO detector activation that had been brought in after symptoms had been occurring for most of day at 4847 Dolton Dr. Engine 9 and Ladder 7 found readings of 72 parts-per-million and an odor of natural gas in the structure. Staff at the location also advised that there were 74 children plus staff at the facility. Engine 9 upgraded the incident to a flammable adding Rescue 2, Battalion 5, and Safety 1 to the incident. Battalion 5 assumed command upon their arrival, and Rescue 2 assisted Ladder 7 with monitoring and ventilating the structure. Members from Engine 9 assisted with moving all occupants to a nearby business. Members from Engine 9 assisted EMS with patient care. Upon Safety 1s arrival, Safety 1 assisted Rescue 2 driver with evaluating occupants by utilizing their Rad 57 devices. Ladder 7 and Rescue 2 were unable to locate the exact source and secured natural gas to the entire building. Once the gas was secured, Ladder 7 ventilated the structure. Ladder 7 and Rescue 2 continued to monitor the atmospheric conditions in the structure until they returned to normal. Engine 9 and Safety 1 transferred all patients to EMS. 50 plus patients were evaluated by crews on scene. 5 adult patients were transported to Sentara Leigh Hospital by EMS with minor symptoms and elevated Rad 57 readings. 7 refusals were obtained by EMS for patients with elevated Rad 57 readings who did not wish to be transported. F
South	VA	2/28/2020	City of Virginia Beach	Virginia Beach, VA	Kids Town Learning Center	Private	Daycare	yes	Virginia Beach FOIA	45 ppm		furnace	E09 dispatched to a possible CO hazard. Upon arrival E09 assumed Command and found the manager on scene who stated she unlocked the doors to open the business for the day and found all of the CO detectors alerting in the building which had been plugged in after incident that occurred week prior. E09 found 23ppm at the front door. L07 arrived and walked the entire structure and found 45 ppm throughout the rest of the building. The cause of the CO was unable to be determined so L07 shut down the main gas valve on the Charlie side of the structure. The owner of the building arrived on scene and was advised of the incident. He stated he had crews coming that day to find and repair the leak. E09 advised the on duty inspector of the incident and he told E09 to place the structure on Fire Watch to advise the FMO office. L07 ventilated the structure and E09 red tagged the main gas shut off. VNG arrived and put a lock on the gas shut off valve. No other hazards were found and the business owner was advised that the building could not be used for normal business until the leak is repaired and the FMO office is notified. E09 and L07 cleared and went back in service.
South	VA	8/7/2020	Fairfax County	Falls Church, VA	Bailey's Elementary School	Public	Elementary School	no	Fairfax Co Fire FOIA	unknown		using gas blower it boiler room	dispatched to possible gas leak due to odor; found workers using gas powered blower to clean floors in boiler room; CO accumulation and odors produced
South	VA	2/17/2021	Fairfax County	Annandale, VA	Poe Middle School	Public	Middle School	yes	Fairfax Co Fire FOIA	375-500 ppm		newly installed but faulty HVAC unit supplying air to rear gymnasium	partially evacuated two-story building; carbon monoxide alarm went off, but did not note location; hazmat and fire teams used gas meters; noting 0 ppm upon entry, 5-7 ppm through hallway/boiler room; 1-ppm in kitchen, and as they move further into the hallway into the school hit 100ppm; 150-375 in hallway surrounding gym; fire alarm pulled to assist in evacuating remainder of property; rear gymnasium found to have 500 ppm using school's CO meter;
Northeast	VT	2/5/2010	Chittenden County	Burlington	name not provided	unknown	Unknown	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		new boiler malfunctioning	Elevated CO levels in boiler room
Northeast	VT	1/6/2011	Windham County	Putney	name not provided	unknown	Elementary/Middle	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		gas leak caused by furnace	11 students, 1 adult. treated for CO poisoning
Midwest	WI	1/7/2009	Milwaukee County	Milwaukee	Oliver Wendell Holmes Elementary	Public	Elementary	unknown	press coverage	unknown		Malfunctioning boiler	Students evacuated due to CO
Midwest	WI	3/22/2018	Waukesha County	Oconomowoc	Oconomowoc High School	Public	High school	unknown	press coverage	unknown	64 students and staff transported via ambulance to local hospitals; additional 40 walk in patients from the school came to ER on their own;	source unknown in gymnasium/auditorium area	additional 72 students/staff assessed on scene for symptoms, did not require transport;
Midwest	WI	1/24/2019	Ozaukee County	Cedarburg	KinderCare	Private	Daycare/Preschool	yes	press coverage	unknown		Malfunctioning furnace/ventilation	80+ students/teachers evacuated safely thanks to CO detectors alerting in multiple areas of property during snowfall
Midwest	WI	7/2/2020	Dane County	Mount Horeb	Hearts & Hands Children's Center	Private	Daycare/Preschool	no, but portable on construction team	press coverage	unknown	5 workers hospitalized; 1 of them in serious condition	propane powered floor machine being used by construction team while children in property	Officials said construction workers were using a propane powered floor machine on the gym floor. They said a carbon monoxide monitor was being used by the crews, but it did not alert them to the rising levels. Officials said a total of 60 people, including 54 students, were inside the center during the incident were tested. None of the students showed symptoms or were hospitalized.
South	WV	12/12/2017	Kanawha County	Charleston	Montrose Elementary	Public	Elementary	no	press coverage	60 ppm		heat exchange box cracked on rooftop heating unit	gym area where students were had 60ppm, nowhere near the unit that was actually malfunctioning which was much higher than that

West	WY	12/30/2014	Fremont County	Fort Washakie	Fort Washakie School	Public	Elementary and middle	no	press coverage	unknown	4 students transported to hospital, others evaluated on scene	source unidentified, but theories based on day's events/conditions/location of elevated CO: a school bus exhaust pipe too close to an intake for the school's air system, snow blocking vents as well	Firefighters were called to the school's gym around 10 a.m. this morning for a report of a possible gas leak. The middle school girls basketball team was practicing and several of them started feeling light-headed, which led to the call. According to radio traffic, one of them passed out.
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Public Input No. 409-NFPA 101-2021 [New Section after 15.3.5.5]

15.3.5.6 Portable Fire Extinguishers.

Portable fire extinguishers shall be provided in accordance with Section 9.9.

Statement of Problem and Substantiation for Public Input

Reason: The concept of trading off portable extinguishers in sprinklered buildings has been largely abandoned by fire protection principles. The National Fire Codes of both NFPA 1 and the ICC- IFC require portable fire extinguishers in all occupancy classes including storage which addresses property protection and property loss as well as, the safety of the building occupants.

A portable fire extinguisher is an effective item of fire protection which allows for small fires to be tackled by the occupants of a building and saves 100s of thousands of dollars in property loss.

It is important to appreciate that while different to official assumptions and desire for evacuation, research shows the public's priorities to be rational and appropriate. The public's experience of fire is vastly different to that of the professionals involved in the planning for and responding to fire.

Some key findings from research studies have been identified and the public's-oriented outcomes include, avoidance of embarrassment, inconvenience, damage to the premises or property, concern for others, pets and possessions and lastly personal injury.

The evidence further identifies that the public is willing and will accept minor consequences in their pursuit of achieving personal humanistic priorities and instinct. Concern for people, pets and possessions are strong and established drivers of behavior in the event of a fire. Therefore, this should be no surprise to see it as an influential feature of most individual's response to a fire.

Limiting a fire to the smallest area within a building is a sensible aspiration.

Official policy and attitudes are most singularly directed at avoiding the risk when the public encounters a fire. This is well meaning but the research has shown that this DOES NOT I REPEAT DOES NOT align with the public's attitude or the ability of the general public.

Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. NFPA 10 states: 5.1.2 The selection of extinguishers shall be independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment. Other codes, and other occupancy chapters have abandoned this concept in recognition of the fact that portable extinguishers are a valuable, cost-effective layer of fire protection, and are intended for a different purpose than sprinklers. To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

A significant amount of data has been collected to support the requirement for portable extinguishers, including: WPI/EKU Study: "Ordinary People and the Effective Operation of Fire Extinguishers", which clearly showed that the vast majority of people who have never used an extinguisher can operate one safely and effectively.

2013 NFPA Report: "U.S. Experience with Sprinklers" reports that there were 48,460 reported structure fires annually in buildings equipped with sprinkler systems between 2007-2011, and 40,440 (83 percent) never grew large enough to activate the system. Based on this report alone, it's clear that people are reacting to small fires and extinguishing them prior to sprinkler activation.

A study by Richard Bukowski in 2014, the life cycle cost of portable fire extinguishers was determined to be between one and a half and four cents per foot annually; if coverage could be maximized to that allowable by code, the cost drops to between a half cent and one cent per foot annually. It's unlikely that any other layer of fire protection is so cost-effective.

Submitter Information Verification

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Street Address:
City:
State:
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Submittal Date: Tue Jun 01 14:52:38 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: The Code is focused on life safety and therefore the committee does not want to encourage staff to attempt using extinguishers, which could delay activation of the fire alarm system and the evacuation of occupants.



Public Input No. 329-NFPA 101-2021 [Section No. 15.4.5]

15.4.5 Alcohol-Based Hand-Rub Dispensers.

Alcohol

Dispensers (Existing Educational Occupancies)

The installation and maintenance of Alcohol-based hand-rub

dispensers shall be protected in accordance with 8

dispensers and the storage of alcohol-based hand rub solutions in accordance with 8.7.3.

1, unless all of the following requirements are met:

- Dispensers shall be installed in rooms or spaces separated from corridors and exits.
 - The maximum individual dispenser fluid capacity shall be as follows:
 - (1) 0.32 gal (1.2 L) for dispensers in rooms
 - (2) 0.53 gal (2.0 L) for dispensers in suites of rooms
 - The dispensers shall be separated from each other by horizontal spacing of not less than 48 in. (1220 mm).
 - Storage of quantities greater than 5 gal (18.9 L) in a single fire compartment shall meet the requirements of NFPA 30.
 - The dispensers shall not be installed over or directly adjacent to an ignition source.
Dispensers installed directly over carpeted floors shall be permitted only in sprinklered rooms or spaces
- 3 shall be permitted .

Statement of Problem and Substantiation for Public Input

Our current health situation with the latest viral outbreak has led to a need to increase the number of alcohol based hand sanitizer dispensers within many different types of occupancies. Although alcohol based hand sanitizer was addressed in this chapter and many other requirements were also located in this chapter, the requirements did not apply to storage of sanitizer when not in use or many other provisions that could be applicable. Providing a pointer to section 8.7.3.3 will provide a direct link to all the requirements needed for safe installation, use, and maintenance of alcohol based hand rub dispensers as well as the storage of any alcohol based hand rub materials not in use.

Currently Robert Upson is also chairing an NFPA 30 task group, and Bruce Johnson is chairing an NFPA 1 task group to address this subject within those standards respectively. So a recommendation should be made to this committee to put forth a committee input and create a task group to review this requirement throughout and ensure correlation with NFPA 1 and NFPA 30 task groups that are already reviewing this.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 316-NFPA 101-2021 [Section No. 8.7.3.3]</u>	
<u>Public Input No. 324-NFPA 101-2021 [New Section after 11.4.3.6]</u>	
<u>Public Input No. 325-NFPA 101-2021 [Section No. 12.4.6]</u>	

[Public Input No. 326-NFPA 101-2021 \[Section No. 13.4.6\]](#)
[Public Input No. 327-NFPA 101-2021 \[Section No. 14.4.5\]](#)
[Public Input No. 330-NFPA 101-2021 \[Section No. 16.4.5\]](#)
[Public Input No. 332-NFPA 101-2021 \[Section No. 16.6.4\]](#)
[Public Input No. 333-NFPA 101-2021 \[Section No. 17.4.5\]](#)
[Public Input No. 334-NFPA 101-2021 \[Section No. 17.6.4\]](#)
[Public Input No. 336-NFPA 101-2021 \[Section No. 18.4.4\]](#)
[Public Input No. 337-NFPA 101-2021 \[Section No. 19.4.4\]](#)
[Public Input No. 339-NFPA 101-2021 \[Section No. 20.4.4\]](#)
[Public Input No. 340-NFPA 101-2021 \[Section No. 21.4.4\]](#)
[Public Input No. 342-NFPA 101-2021 \[Section No. 22.4.7\]](#)
[Public Input No. 344-NFPA 101-2021 \[Section No. 23.4.7\]](#)
[Public Input No. 347-NFPA 101-2021 \[Section No. 26.3.2.1\]](#)
[Public Input No. 349-NFPA 101-2021 \[Section No. 28.4.2\]](#)
[Public Input No. 354-NFPA 101-2021 \[Section No. 29.4.2\]](#)
[Public Input No. 357-NFPA 101-2021 \[Section No. 30.4.3\]](#)
[Public Input No. 360-NFPA 101-2021 \[Section No. 32.2.4\]](#)
[Public Input No. 361-NFPA 101-2021 \[Section No. 32.3.4.2\]](#)
[Public Input No. 363-NFPA 101-2021 \[Section No. 33.2.4\]](#)
[Public Input No. 364-NFPA 101-2021 \[Section No. 33.3.4.2\]](#)
[Public Input No. 365-NFPA 101-2021 \[Section No. 36.4.6\]](#)
[Public Input No. 367-NFPA 101-2021 \[Section No. 37.4.6\]](#)
[Public Input No. 368-NFPA 101-2021 \[Section No. 38.4.4\]](#)
[Public Input No. 369-NFPA 101-2021 \[Section No. 39.4.4\]](#)
[Public Input No. 370-NFPA 101-2021 \[Section No. 40.4.3\]](#)
[Public Input No. 371-NFPA 101-2021 \[Section No. 42.4.3\]](#)

Submitter Information Verification

Submitter Full Name: Kelly Nicoletto
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Submission Date: Tue Jun 01 09:12:43 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6708-NFPA 101-2021](#)
Statement: The TC agrees that the language should refer to 8.7.3.3 for requirements relating to ABHR dispensers.



Public Input No. 166-NFPA 101-2021 [New Section after 15.7.6]

TITLE OF NEW CONTENT

Type your content here ...

15.7.6.1 Building Security features included in the built environment are to be integrated and must comply with both the life safety features in this chapter and the building's emergency action planning, evacuation planning, and training in accordance with 4.8.

Statement of Problem and Substantiation for Public Input

This change is being submitted on behalf of the SAF-End task group to integrate security and life safety in class room environments. With the increased emphasis on MNS/ECS, it is intended to provide guidance to ensure both life safety and security are considered.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 165-NFPA 101-2021 [Section No. 14.7.6]	
Public Input No. 164-NFPA 101-2021 [Section No. 4.8.2.1]	
Public Input No. 167-NFPA 101-2021 [Section No. 16.7.6]	
Public Input No. 168-NFPA 101-2021 [Section No. 17.7.6]	
Public Input No. 165-NFPA 101-2021 [Section No. 14.7.6]	
Public Input No. 167-NFPA 101-2021 [Section No. 16.7.6]	
Public Input No. 168-NFPA 101-2021 [Section No. 17.7.6]	

Submitter Information Verification

Submitter Full Name: Maria Marks
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Submittal Date: Tue May 18 11:23:11 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6740-NFPA 101-2021](#)

Statement: This change is being submitted on behalf of the SAF-End task group to integrate security and life safety in daycare and educational environments. With the increased emphasis on MNS/ECS, it is intended to provide guidance to ensure both life safety and security are considered.



Public Input No. 287-NFPA 101-2021 [Section No. 16.2.2.2.6]

16.2.2.2.6 Locking of Classroom Doors and Doors to Other Client Care Spaces.

Classroom doors and doors to other client care spaces shall be permitted to be locked to prevent unwanted entry provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged from the egress side without opening the door.
- (2) The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
- (3) The releasing mechanism shall open the door leaf with not more than one releasing motion and shall not require tight grasping, tight pinching, or twisting of the wrist to operate .
- (4) The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (5) Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- (6) The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
- (7) The locking means shall not ~~modify the~~ impair the operation or affect the listing of the door closer, the lockset, panic hardware, or fire exit hardware ~~or impair their operation~~ .
- (8) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (9) The emergency action plan, required by 16.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- (10) Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 16.7.2.

Statement of Problem and Substantiation for Public Input

The revisions in Item 3 are intended to remind the user of this section of the code of this important requirement for the operation of door releasing mechanisms.

The revisions to Item 7 are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

This is an example of a locking device which is lockable from inside the room, and is installed along with a typical lever-operated lockset where the lockset is not lockable from inside the room:
<https://securitech.com/safebolt>.

This is an example of a modification to panic hardware which converts the panic hardware to be lockable from inside the room with a thumb turn: <https://idighardware.com/2021/04/product-update-von-duprin-emergency-secure-lockdown-es/>

Related Public Inputs for This Document

Related Input**Relationship**

[Public Input No. 285-NFPA 101-2021 \[Section No. 14.2.2.2.4\]](#)

[Public Input No. 286-NFPA 101-2021 \[Section No. 15.2.2.2.4\]](#)

[Public Input No. 288-NFPA 101-2021 \[Section No. 17.2.2.2.6\]](#)

[Public Input No. 289-NFPA 101-2021 \[Section No. 38.2.2.2.2\]](#)

[Public Input No. 290-NFPA 101-2021 \[Section No. 39.2.2.2.2\]](#)

Submitter Information Verification

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Submittal Date: Mon May 31 11:49:16 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6756-NFPA 101-2021](#)

Statement: The suggested change to item 3 is not necessary as it's already a requirement under 7.2.1.5.3.3. The revisions to item 7 are an improvement that will clarify the requirement.



Public Input No. 101-NFPA 101-2021 [Section No. 16.2.11.1.1]

16.2.11.1.1

Every room or space normally subject to client occupancy, other than bathrooms, shall have not less than one outside window for emergency rescue that complies with all of the following, unless otherwise permitted by 16.2.11.1.2:

- (1) Such windows shall be openable from the inside without the use of tools and shall provide a clear opening of not less than 20 in. (510 mm) in width, 24 in. (610 mm) in height, and 5.7 ft² (0.5 m²) in area.
- (2) The bottom of the opening shall be not more than 44 in. (1120 mm) above the floor.
- (3) Permanently fixed stairs or ramp are permitted to be used to allow occupants to be within 44 in. of the bottom window will. The clear width of the stairs or ramp shall be at least the width of the window or 36 in. whichever is wider. The stairs or ramp and access thereto shall not be obstructed.
- (4) The clear opening shall allow a rectangular solid, with a width and height that provides not less than the required 5.7 ft² (0.5 m²) opening and a depth of not less than 20 in. (510 mm), to pass fully through the opening.
- (5) Windows for rescue that have a sill height below the adjacent finished ground level shall comply with 24.2.2.3.3(4).

Statement of Problem and Substantiation for Public Input

It is possible that Chapter 16 could be used for occupancy change to an existing building. Sometimes existing window locations may be more than 44 inches off the floor and this language would permit permanent structures (stairs or ramps) to be installed to bring a window for rescue into compliance. The structure would be permanent (unmovable) and required to be unobstructed. This would prevent them from being used for storage or blocked by storage or furnishings.

Windows for rescue could be found in below grade classrooms and there is no reference to requirements related to window wells. This language provides minimum sizing for the window well to permit full opening of the window as well as egress out of the window well. This reference to 24.2 is already made in the day care home section.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 100-NFPA 101-2021 [Section No. 14.2.11.1.1]	
Public Input No. 99-NFPA 101-2021 [Section No. 15.2.11.1.1]	
Public Input No. 102-NFPA 101-2021 [Section No. 17.2.11.1.1]	

Submitter Information Verification

Submitter Full Name: Catherine Stashak
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City:
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Submittal Date: Wed May 05 15:03:25 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: The proposed additions are more appropriately placed in the existing occupancy chapter.



Public Input No. 227-NFPA 101-2021 [Section No. 16.3.4.5]

16.3.4.5 Detection.

A smoke detection system in accordance with Section 9.6 shall be installed in day-care occupancies, other than those housed in one room having at least one door opening directly to the outside at grade plane or to an exterior exit access balcony in accordance with 7.5.3, and such system shall comply with both of the following:

- (1) Detectors shall be installed on each story in front of the doors to the stairways and in the corridors of all floors occupied by the day-care occupancy.
- (2) Detectors shall be installed in lounges, recreation areas, and sleeping rooms in the day-care occupancy.

16.3.4.5.1 Carbon monoxide detection systems

16.3.4.5.1.1

Carbon monoxide detectors in accordance with Section 9.12 shall be provided in new daycare occupancies in the locations specified as follows:

- (1) Carbon monoxide detectors shall be installed on the ceilings of rooms containing permanently installed fuel-burning appliances.
- (2) Carbon monoxide detectors shall be installed centrally located within occupiable spaces served by the first supply air register from a permanently installed, fuel-burning HVAC system.
- (3) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to a communicating attached garage.
- (4) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to an attached garage with a separation wall constructed of gypsum wallboard.

16.3.4.5.1.2

Where carbon monoxide detectors are installed in accordance with 16.3.4.5.1.1 (1), the alarm signal shall be automatically transmitted to an approved on-site location or to an off-premises location in accordance with NFPA 72.

16.3.4.5.1.3

Carbon monoxide detectors as specified in 16.3.4.5.1.1 shall not be required in the following locations:

- (1) Occupiable spaces with communicating attached garages that are open parking structures as defined in 3.3.284.8.4
- (2) Occupiable spaces with communicating attached garages that are mechanically ventilated in accordance with the applicable mechanical code
- (3) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where the garage is an open parking structure as defined in 3.3.284.8.4
- (4) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where the garage is mechanically ventilated in accordance with the mechanical code

Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Unprotected_A_Case_Study_2021_2_.pdf	Case Study created by me to support need for stronger CO protection in schools and daycares, based on 200 publicly-documented incidents.	
CO_Incidences_in_Schools_Working_List_-_Attributed_to_CO_incidents_1_.pdf	Working list of 200 publicly documented incidents of carbon monoxide exposure/poisonings in daycares and schools throughout the U.S. (including the one my children were poisoned at in 2020).	

Statement of Problem and Substantiation for Public Input

Chapter 14, Section 14.3.4.4 mandates the installation of carbon monoxide detectors or alarms in new school construction where there is potential risk for accidental CO poisoning from known sources, such as fuel-burning HVAC systems and attached garage.

But there is equivalent risk for such exposures in existing school properties, as well as in new and existing daycare occupancies – in fact more so.

In existing educational occupancies, the risk of CO poisoning is likely higher due to aging fuel-burning appliances, deteriorating pipes and ducts, and out of date construction.

In new and existing daycare occupancies, CO poisoning could be far more devastating to a developing child – especially when these children are unable to communicate the onset of symptoms, and often sleep on the property itself.

In Virginia, less than 5% of Virginia's 2,100+ public schools were built in 2015 or later, leaving 95% of public school properties without detection requirements unless new systems were installed. Over 90% of the schools I spoke to reported having zero CO detection on site. This didn't include daycares or private schools. That's a lot of students, teachers, and community members left unprotected.

CO exposure is severely underreported in schools due to aging buildings with lack of hardwired connection to emergency services, outdated detection protocols

And due to CO's general ability to mimic other illnesses common in children at all times of year – CO likely isn't on the suspect list when a child complains of headache, stomachache or tiredness.

While I will be submitting research to the NFPA for consideration for stronger protection in Educational and Daycare Occupancies (new or existing), I believe the first step is to make the existing carbon monoxide detection code uniform in any location where children are cared for on a commercial property. I am asking for the committee to approve the revision attached, which makes carbon monoxide detection requirements in New Daycare Occupancies the same as New Educational Occupancies.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 226-NFPA 101-2021 [Section No. 15.3.4.4]	
Public Input No. 226-NFPA 101-2021 [Section No. 15.3.4.4]	
Public Input No. 228-NFPA 101-2021 [Section No. 17.3.4.5]	

Submitter Information Verification

Submitter Full Name: Nikki Zellner

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City:

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Submittal Date: Fri May 28 09:50:52 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6680-NFPA 101-2021](#)

Statement: The TC agrees that CO detection is necessary in daycare occupancies in line with the requirements for new educational occupancies. Further review is needed into the chapter 9 requirements. The TC asks the Correlating Committee to look at the definitions for carbon monoxide alarm and carbon monoxide detector.

Modifications were made to match TC actions on PI's 149, 150, 31, and 32.

Sounding the alarm on the *lack of* and *need for* carbon monoxide protection in educational and daycare occupancies

UNPROTECTED: A CASE STUDY OF CARBON MONOXIDE IN U.S. SCHOOLS AND DAYCARES

Brought to you by
Nikki James Zellner
CarbonMonoxideInSchools.org
In partnership with NCOAA

CarbonMonoxideInSchools.org



NIKKI JAMES ZELLNER
MOM OF SCHOOL CO SURVIVORS



OVERVIEW

In February 2020, my two children, ages 4 and 3, were poisoned by carbon monoxide at their Virginia preschool. Five adults and one child were taken to local hospitals for their injuries. We were lucky, as it could have been lethal. Carbon monoxide is unlike any other public health hazard out there. It is a colorless, odorless, tasteless gas. The danger is real, common and should be treated as such in schools and daycares. And even though the technology is available for detection that can prevent injury to our children, teachers, staff and community members, more often than not our schools aren't using it.

The data in this report is compiled from 200 publicly documented instances of carbon monoxide exposures in U.S. schools and daycares from 2004 - 2021, using press coverage, government testimony and FOIA requested incident reports (in Virginia specifically) as sources.

OBJECTIVE

The objective for this case study is to start a national conversation – that includes and holds accountable all stakeholders – to understand that carbon monoxide exposures and poisonings are happening in U.S. schools and daycares more often than we know. It is impacting a greater number of occupants, stemming from a wider variety of sources, spreaders and situations. The majority of these occupancies are unprotected, due to the *option*, and not requirement, of installing detection on site. Detection regulations need to be reviewed by the very parties that develop the recommendations, but they also need to be understood by the very communities these regulations are meant to protect.

Data related to carbon monoxide exposures and incidents in schools is limited – not because it's not happening, but because it's not being recorded (and therefore reported on). Lack of detection signaling an exposure occurrence, emergency services dispatched to "medical calls" that end up being CO-related, and the option of fire departments reporting to NFIRS are just some of the reasons for this. The largest issue? Carbon monoxide being treated as a non-suspect, instead of a likely candidate, even when group symptoms occur.

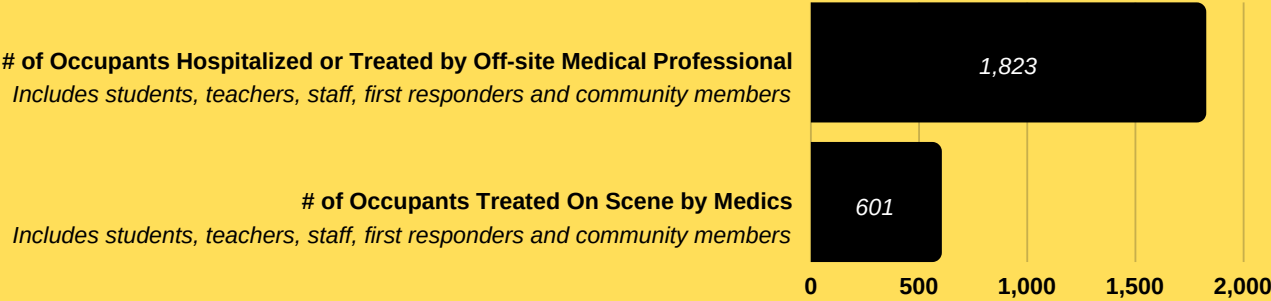
Using the Internet, I was able to find 200 press-reported incidents of carbon monoxide-confirmed exposures and poisonings in U.S. schools and commercial daycares. This data does not include in-home daycares. This data does not include "false alarms" or "malfunctioning/low battery detectors." This data does include discoverable evacuation-only incidents, as well as incidents where injuries were reported. All involved emergency services on scene. Full incident data is available at CarbonMonoxideInSchools.org.

KEY FINDINGS

- **At least 2,400 children, teachers, school staff and community members have been injured** due to carbon monoxide exposure on school properties. There have been zero deaths to date (in this time period), and there were zero instances of "intentional" poisoning (i.e. suicide attempts).
- In schools with known injury-resulting carbon monoxide exposures (versus evacuation only), **the average number of occupants injured was 27** (those requiring hospitalization, treated by an off site medical professional or being treated on scene by first responders). An overwhelming majority of these injuries were sustained by children. The amount injuries that actually occurred but were not documented is unknown.
- While winter months had the highest overall percentage of carbon monoxide exposure incidents in U.S. schools, exposures are happening year round. **Over 54% of incidents occurred in the spring, summer and fall months.**
- States in the Southern region of the United States (*Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington DC, and West Virginia*) **made up 45.5% of school-based carbon monoxide exposure incidents.**
- Public schools (*vs. charter, private or recreational childcare properties*) made up over 75% of all carbon monoxide exposure incidents. **Over half of all carbon monoxide exposure incidents are occurred in properties with elementary students** – a population more vulnerable to the effects of carbon monoxide due to their stage of development.
- **Installed carbon monoxide detection, or the access to portable monitors during the event by school staff, was confirmed in only 22% of the carbon monoxide exposure incidents occurring at schools or daycares.**
- Roughly half of the carbon monoxide exposure incidents at schools and daycares occurred due to an issue with the fuel-burning installed system itself (like boiler, furnace, HVAC system). **In the data compiled, 47.5% of the carbon monoxide exposure incidents occurred due to non-installed fuel burning systems:** idling vehicles, propane or fuel-powered cleaning equipment, construction equipment, portable generators, blocked or damaged exterior ventilation points due to environmental causes, or through unidentifiable sources (known as "chasing the ghost.")
- **The PPM readings (if recorded) related to carbon monoxide exposures in schools and daycares was (and continues to be) severely underreported to the public – only reported in less than 20% of incidents.** Carbon monoxide PPM readings directly correlate to the level of poisoning that occurred on the property. These readings have often dropped by the time first responders have arrived, post-evacuation – due to equipment shut off, or the opening of windows and doors. Clearly documenting where and what levels of PPM are occurring will give all stakeholders a better understanding of the severity of the incident, and help those seeking medical treatment more clearly communicate the volume of poison they were exposed to.

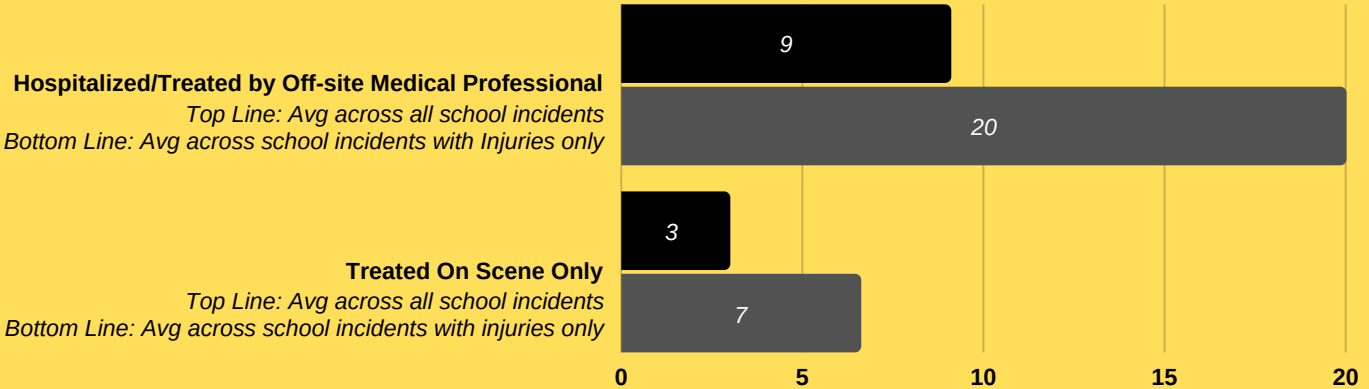
TOTAL NUMBER OF INJURIES REPORTED

WHY THIS IS IMPORTANT: Carbon monoxide exposure in an educational or daycare occupancy has the potential to impact a wide range of occupants, depending on where the source of the CO is coming from, and where the leak or accumulation is occurring. Occupancy in a gymnasium would be far greater than that in a single office, but would likely take longer to accumulate. The data below shows the number of occupants hospitalized, treated by personal physicians immediately following incident. The second row shows the number of people treated on scene only (not transported to hospital or seen by physician). *These numbers do not include total number of teachers, students, staff or community members evacuated from the property or those who may not have been aware they were injured in the short- or long-term by the event itself.*



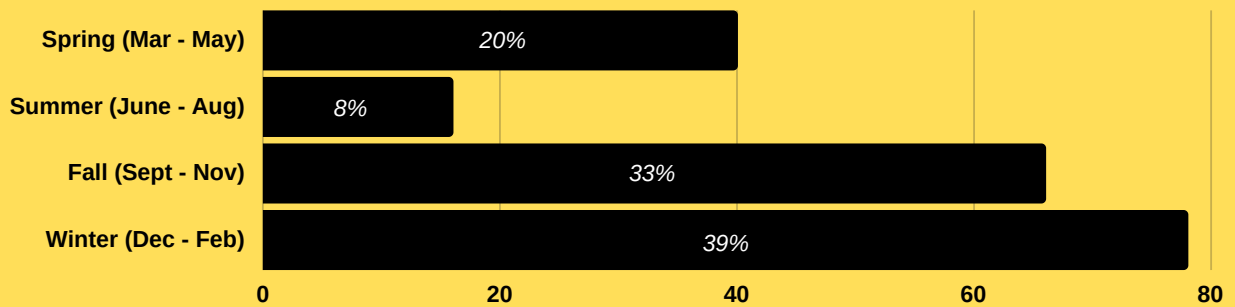
AVERAGE # OF OCCUPANTS INJURED

WHY THIS IS IMPORTANT: Carbon monoxide exposure in a residential occupancy, impacts, on average, one to three people. But in an educational or daycare occupancy, the number of occupants can vary widely. The chart below shows the average number of occupants injured across all school- and commercial daycare-based incidents (including those with zero injuries) as well takes a deeper dive in exploring the average injury count across injury-confirmed incidents only. *Note: Should a mass casualty carbon monoxide event occur, many area hospitals would not have the capability to treat severely injured occupants in hyperbaric chambers if needed, forcing medical transport outside of region or long-term health effects due to lack of local resources.*



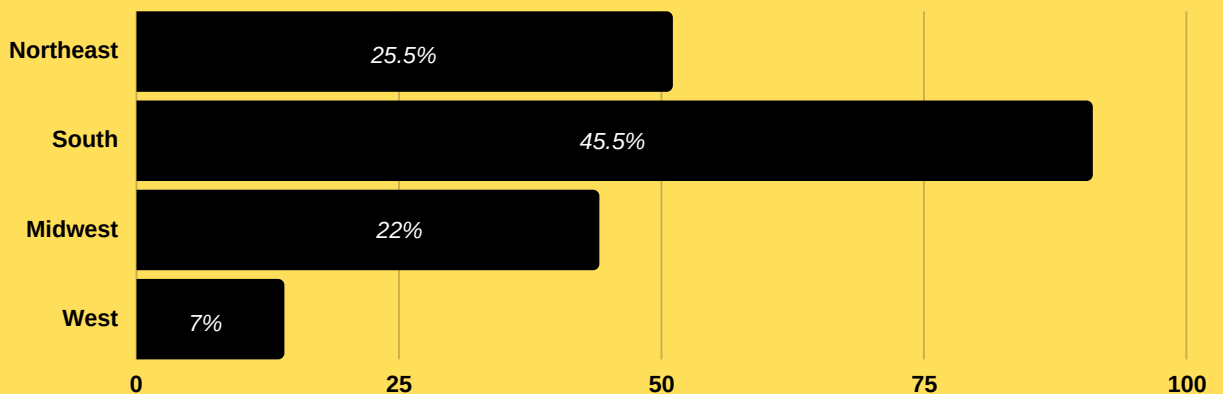
SEASON IN WHICH INCIDENT OCCURRED

WHY THIS IS IMPORTANT: Traditional carbon monoxide awareness marketing is largely centered around the "cold season" in which the majority of residential carbon monoxide incidents occur. But in educational and daycare occupancies, carbon monoxide exposure can happen at any time due to the use of cleaning equipment, construction equipment, property maintenance, transportation proximity and year-round use by students, staff and members of the community. Putting a focus on carbon monoxide education only at a certain time of year could be leaving schools and daycares with the (false) impression they shouldn't suspect carbon monoxide in the warmer months.



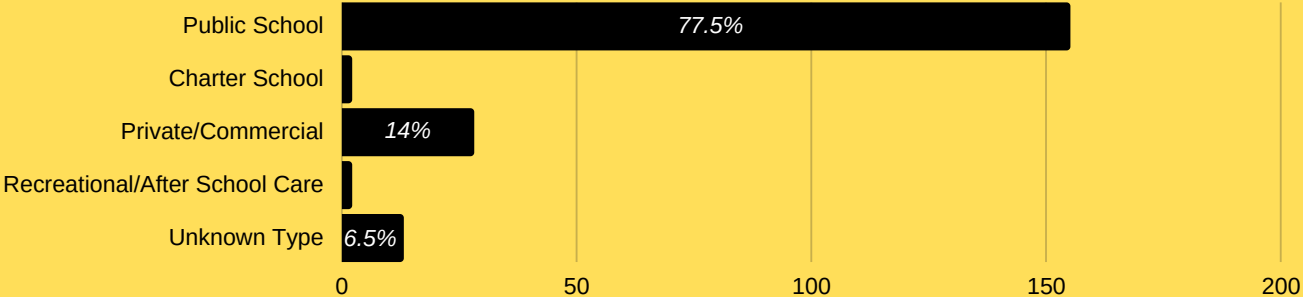
INCIDENTS BY U.S. GEOGRAPHIC REGION

WHY THIS IS IMPORTANT: Carbon monoxide education and awareness is largely focused on, and largely taught in, cold-weather states – as these states are reliant on gas-fueled heating equipment for longer durations throughout the year, and have traditionally been shown to have more residential CO-related incidents. Southern states could be less educated around where, how and when carbon monoxide can impact them in their homes, schools and communities.



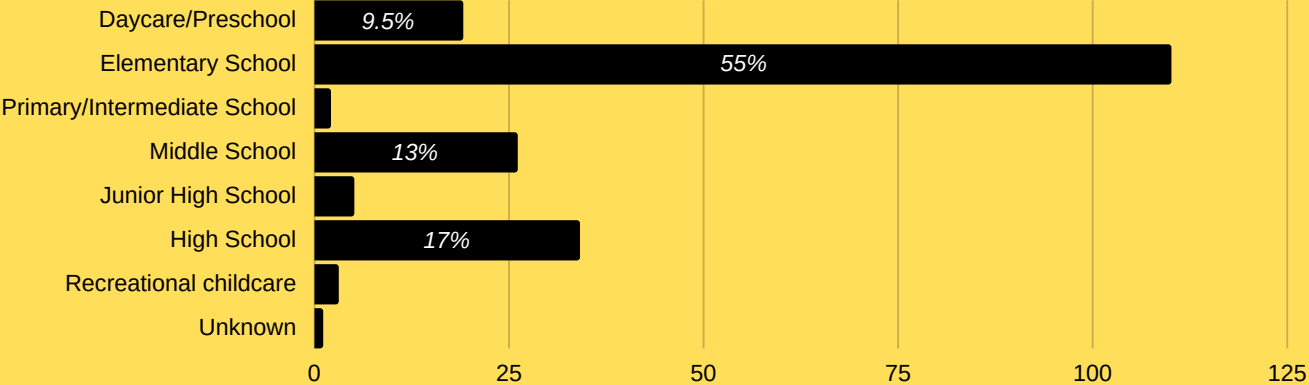
INCIDENTS BY TYPE OF SCHOOL

WHY THIS IS IMPORTANT: Funding sources for school improvements and equipment vary from school to school. Carbon monoxide incidents are occurring primarily in public school systems, which rely heavily on local taxpayer dollars, local fundraising efforts and business support, and government funding. The aging of our public schools, and their equipment, can create higher risk for carbon monoxide incidents throughout the nation. With little to no codes related to carbon monoxide regulation in existing buildings (and in some states new buildings), means inspecting for possible carbon monoxide situations, inclusion of carbon monoxide language in evacuation and emergency training plans, and investing in high quality equipment or detection systems, may not be on the radar.



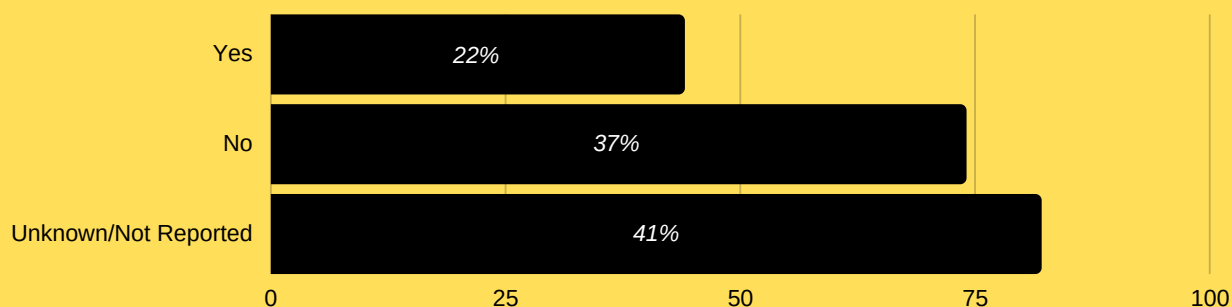
INCIDENTS BY PROPERTY USE (YOUNGEST AGE GROUP ON PROPERTY)

WHY THIS IS IMPORTANT: Carbon monoxide exposure affects different age groups in different ways. Younger children, pregnant mothers, and those with compromised immunity (like asthma or other immune disorders) are the most vulnerable. Children, in particular, experience symptoms more quickly and suffer long-term neurological effects of carbon monoxide poisoning due to their stage of development, faster breathing and increased metabolism. Younger children may not be able to communicate feeling poorly, regularly behave irritably, and regularly nap on the school/daycare property – rendering carbon monoxide a non-suspect in our most critical situations.



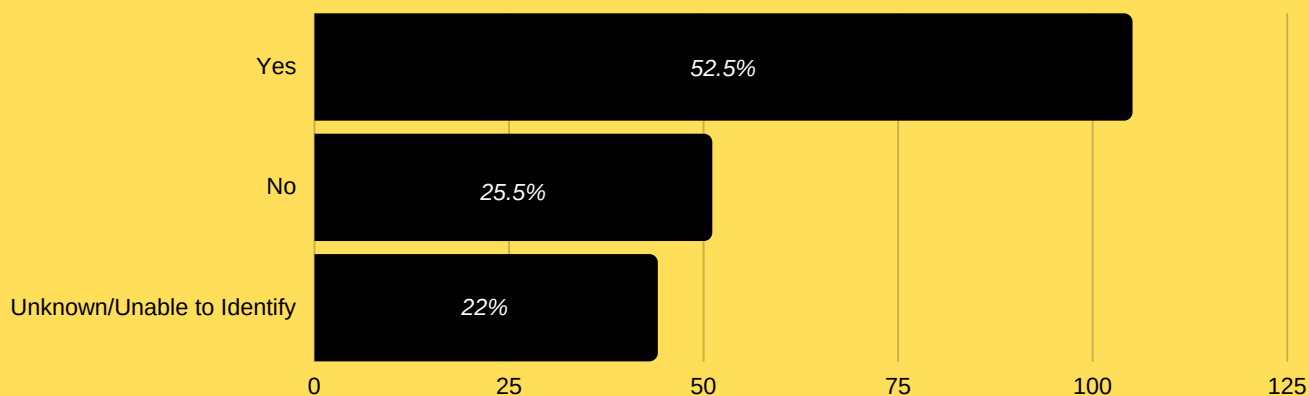
WAS THERE INSTALLED/PORABLE CO DETECTION ON THE PROPERTY?

WHY THIS IS IMPORTANT: Lack of carbon monoxide detection requirements in new and existing schools and daycares are reinforcing the mindset that it's 'optional' to protect occupants from CO exposure on these properties. In the cases where a detector was installed on site, the majority of occupants and first responders were notified early, and able to safely evacuate the property without injury. It's important to note, only 187 injuries (out of 1,823) occurred in a detection-installed occupancy. In one specific detector-installed incident, school administrators thought the newly installed alarms had "tripped" erroneously, and did not contact emergency responders until 2 hours later – resulting in 111 hospitalizations of students and staff members. Detectors prevent injury – when they're listened to, working properly, and installed.



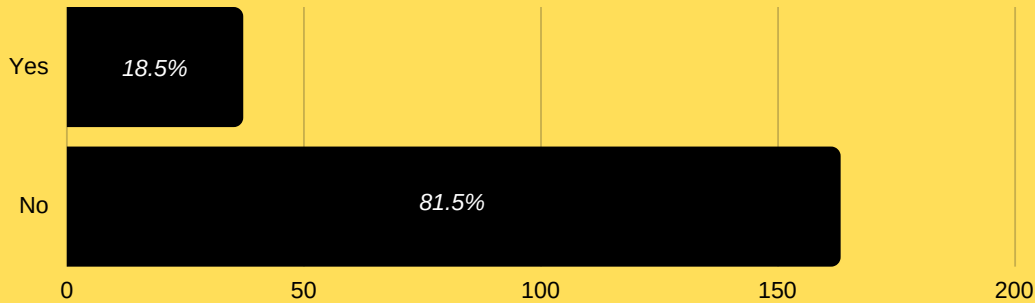
WAS EXPOSURE RELATED TO AN INSTALLED FUEL-BURNING SYSTEM?

WHY THIS IS IMPORTANT: Most legislation, building and fire codes are built around the old language that you only need an installed fuel-burning system, or gas-transporting ventilation system, on site to require carbon monoxide detectors in new or existing school properties. As you can see by this data, at least 25% of these incidents have been confirmed to be related to outside influence – or combustion-producing equipment being brought onto the property (by landscapers, contractors, cleaners) – many times while the school is occupied by students and teachers. The remaining 22% attributed to unidentified sources could be related to installed fuel burning systems, or gas-transport systems, but could just as easily be related to outside influences or portable sources.



WAS THE HIGHEST PPM READING RECORDED & REPORTED TO PUBLIC?

WHY THIS IS IMPORTANT: Carbon monoxide is measured in PPM (parts per million) and short/long term health issues are directly correlated to PPM levels, age, general health of person exposed, as well as length of exposure. PPM identification (and communication) doesn't allow for proper medical care for those who may want to seek it in the short/long term, and doesn't fully communicate the severity of the exposure to the community and stakeholders. Since it can only be measured during the event itself, in/around source as well as where others are experiencing symptoms, it's imperative that a CO gas measuring or detection device is used (and the highest PPM readings are recorded and reported) in every CO exposure situation.



NEWS MAKERS

Not all CO exposure incidents make the news, leading the public (and stakeholders in general) to believe that carbon monoxide in schools isn't an issue. For example, in the State of Virginia, after our CO incident, I only found 4 news-reported cases since 2005. But digging into FOIA request responses from the cities and counties throughout the state, there were over 100 confirmed, documented incidents of carbon monoxide incidents in Virginia schools and daycares. What could that mean for the rest of the nation in regards to reported vs. unreported incidents?

2021: Canistota, SD
Canistota School – 25 children and teachers injured; forklift exhaust and gas-based construction equipment being improperly ventilated during construction on school gym while students/staff on site; had been experiencing CO symptoms for weeks

2014: Girard, IL
North Mac Intermediate – 181 students and teachers hospitalized; 400 ppm; no detection on site; 20+ lawsuits filed claiming serious injury and disfigurement

2015: Chicago, IL
Horace Mann Elementary – 104 students, 7 staff hospitalized; CO detectors alerted at 6:30 a.m., emergency officials weren't notified by administrators until 2 hours later

2013: Salt Lake City, UT
Montezuma Creek Elementary – 40 hospitalized, 3 airlifted; exhaust pipes on water heater disconnected venting gas into mechanical room, kitchen, gymnasium and classrooms

2018: Philadelphia, PA
Loesche Elementary – 28 children, 4 teachers hospitalized; portable generator being used on roof by construction workers during school hours

2016: Beaumont, TX
Marshall Middle – 169 students and teachers seen at area hospitals; 2 separate issues contributed: corrosion let gas exit the boiler; inoperative ventilation fan

2020: Virginia Beach, VA
Kids Town Learning Center – 80+ children and teacher exposed to CO for 5+ hours from leaking furnace; 6 seen at hospital; no detection on site; legislation passed a year later to require CO detection in all schools, daycares

2019: Dutchtown, LA
Dutchtown High – 28 students treated in ER due to zero turn lawnmower operating too close to air intake ventilation

2012: Atlanta, GA
Finch Elementary – 43 students, 10 adults hospitalized; 1700 ppm; no detection on site

UNPROTECTED: REASONS TO CHANGE



REASON 1: A school or daycare building does not need an installed fuel-fired system to have a CO exposure incident that leads to injuries.

While boilers, furnaces and HVAC systems are the number one source of CO incidents in schools, they're not the only source. A growing percentage of emergency CO-related incidents in schools are caused by things like snow- or nest-blocked vents, propane-powered cleaning equipment, idling vehicles and improperly ventilated construction areas using gas-powered equipment.

REASON 2: At this time, most educators and faculty nationwide are not required to complete any kind of carbon monoxide awareness, prevention or situational training.

If there is no installed detection, or if detection devices are malfunctioning, front line staff such as teachers and maintenance teams ARE the only ones who can recognize a CO issue as it's occurring. Teachers will see changes in children's typical behavior and will be the first to see a "group" symptom emerging and where it's happening. It is imperative they know what they're looking for, how to respond, and who to alert when it comes to CO.

REASON 3: A majority of schools throughout the U.S. do not have CO detection on site because they're not required to.

It's been proven that if schools aren't required to do it, they often don't. Budget constraints, aging buildings and equipment, and increasing demands of curriculum and training often mean the CO conversation is left to maintenance personnel and risk managers. However, many staff, parents and community members who occupy these buildings are under the impression their health and life safety are being protected in this aspect as part of fire/hazard building safety.

REASON 4: Current life safety and building code language only requires detectors in schools and daycares to be installed near fuel-burning systems, first air registers, or next to attached garages. This leaves the remaining areas of the property (and therefore the occupants) vulnerable and without carbon monoxide protection should a portable carbon monoxide-producing source be brought on the grounds, or ventilation systems become blocked, disconnected or corrode.

When the layman citizen sees a simple chart that places an X in the states where some form of carbon monoxide detection is required in schools – they are assuming the whole school is protected. In reality, less than 7 states have carbon monoxide regulations and requirements in schools and daycares, and the majority of these regulations only apply to newly constructed (or currently under construction) buildings. They often do not regulate existing (and often aging) properties.

REASON 5: Children are at higher risk than adults when exposed to carbon monoxide and experience more long-term side effects.

Due to their age and current stage of development, children will respond to CO exposure differently than the adults in the room with them. Children have higher metabolism and breathe faster, meaning they will be inhaling and distributing carbon monoxide more often. Their developing minds are still in the growth stage, and exposure to poisonous toxin can change neurological response and organ development for the long term. Younger children, in particular, are unable to communicate physical issues being experienced, and it is not abnormal for them to appear drowsy and fussy.

ACKNOWLEDGEMENTS

I am not a scientist. I am not a researcher. I am not an educator. I'm a mom and a military spouse, and business owner, whose children were poisoned by carbon monoxide at their preschool – a place I incorrectly assumed they were safe. But in light of that experience, I have plunged head first into the world of codes, the world of research, the world of questioning, and the world of advocacy (and, in Virginia, the world of legislative change).

This case study would not have been possible without the team at National Carbon Monoxide Awareness Association. They were the first ones to listen to my story, they were the first to help me understand the science behind and the risks of acute and chronic CO poisoning, and they were instrumental in providing funding for this Case Study project.

Additional thanks to The Jenkins Foundation, the Suffolk and Virginia Beach Fire Departments, the teachers who saved my children, the journalists who are bringing to light the issues of carbon monoxide in schools, and the people who have listened, supported and are taking this conversation to their own schools and public servants. Thanks to the legislators in Virginia who heard our story, and wanted to create change immediately.

And special thanks to my family, who have seen me in front of my computer for hours, after a full day of work – scouring the internet for carbon monoxide stories. Who've watched me wait my turn to testify in front of Code Councils and Senators. Who've watched me cry reading NFIRS reports. This is for you.

ABOUT US

CarbonMonoxideInSchools.org is a free and public resource for concerned citizens, change makers, educators, public servants and journalists. It was designed to help all stakeholders become aware of the issue of CO in schools, learn the language to engage in conversations, give stakeholders the tools to take action, prevent and protect against carbon monoxide exposures in schools. It is my hope it is a space where life- and health-saving conversations start. On the site, you can find resources made specifically for those looking to make a change or bring this conversation to light in their own school or community.

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Unprotected: A Case Study of Carbon Monoxide Incidents in U.S. Schools and Daycares
by Nikki James Zellner
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Carbon monoxide in Schools Report

Working list compiled by Nikki James Zellner, CarbonMonoxideInSchools.org

Updated as of May 26, 2021

REGION	STATE	DATE	COUNTY	CITY	SCHOOL NAME	TYPE OF SCHOOL	PROPERTY USE	DETECTION ON SITE?	INFO OBTAINED THROUGH?	HIGHEST PPM READING?	INJURIES, HOSPITALIZATIONS (IF MENTIONED)	SOURCE/SPREADER (ATTRIBUTED TO)	DESCRIPTION OF INCIDENT/FOIA-NFIRS NOTES
South	AL	12/12/2013	Etowah County	Hokes Bluff	Hokes Bluff Middle School	Public	Middle School	no	press coverage	unknown	17 students, 1 teacher hospitalized	unspecified	
South	AL	10/28/2016	Limestone County	Elkmont	Elkmont High School	Public	High school	no	press coverage	unknown		exhaust fan on oven stopped working	cafeteria workers fell ill
South	AL	3/7/2019	Madison County	Madison	Rainbow Elementary School	Public	Elementary	unknown	press coverage	unknown		Boiler breakdown	600 students evacuated, included special needs; had to completely replace heater and send children to alternate school until it could be procured
South	AL	8/15/2019	Coffee County	New Brockton	New Brockton High School	Public	High School	no	press coverage	unknown	8 students hospitalized	unspecified	according to a student on scene: classmates complained of a headache during first period yesterday, and then she told me during fourth period, which was their P.E. time, that kids started passing out, throwing up, crying, just having all kinds of problems
South	AR	2/10/2005	Benton County	Bentonville	Washington Junior High	Public	Junior High	unknown	press coverage	80 ppm	80 students taken to hospital for treatment via bus, ambulance or parent	Boiler	Authorities noticed after group of students in a classroom complained of illness; 1,000+ students evacuated due to CO exposure, 50 taken to hospital from scene, additional 30 taken to hospital by parents; school paid for all medical costs associated according to article because "it happened on our watch, it's our responsibility"
South	AR	1/30/2008	Mississippi County	Leachville	Buffalo Island Junior High	Public	Junior High	no	press coverage	unknown	20 students, 2 coaches taken to hospital	vents on the school's gymnasium heater were damaged by a storm	boys basketball team practicing in gymnasium, all started feeling symptomatic including coaches
South	AR	11/25/2013	Washington County	Springdale	Central Junior High School	Public	Junior High	unknown	press coverage	unknown		small carbon monoxide leak created by an exhaust pipe that somehow had become disconnected from a fresh-air intake system (new system installed 1 year earlier)	students and teachers moved to different area of school campus; repairs made and school resumed; odor was cause of concern, ahead of any illness
West	CO	10/12/2009	Arapahoe County	Aurora		Public	High School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Boiler	Students sent home for the day after elevated levels of CO discovered
West	CO	9/1/2011	Garfield County	Rifle	Graham Mesa Elementary	Public	Elementary	unknown	press coverage	unknown	2 dozen teachers and students ill	unspecified	School evacuated, nearly 2 dozen teachers and students sick due to "an odor"
West	CO	1/6/2015	El Paso County	Pikes Peak	Pikes Peak Christian School	Private	K-12	unknown	press coverage	unknown		dysfunctional furnace	CO started leaking into vents throughout the school from furnace; school evacuated
West	CO	9/27/2018	Arapahoe County	Aurora	Aurora Elementary School	Public	Elementary	no	press coverage	unknown		Heating unit on roof	Strong odor noticed by staff at 7am ahead of school starting for day, called Fire Dept, brought gas meters and found elevated levels of CO; heating units shut off, source identified, building ventilated, school cancelled for day
West	CO	4/9/2019	Archuleta County	Pagosa Springs	Pagosa Peak Open School	Charter	Elementary	yes	press coverage	158 ppm		boiler leak + leaks within the gas pipes	CO detector alerting prior to school opening, no one allowed into school; boiler leak in mechanical room, 22ppm in areas around school, 158ppm in area in/around boiler; According to Lewicki, not only was the boiler releasing carbon monoxide, but there were also leaks within gas pipes at the school. Those leaks within the gas pipes were discovered by Black Hills Energy when its personnel were checking for the carbon monoxide leak, he explained further.
Northeast	CT	1/4/2011	New Haven County	Waterbury	Barnard School	Public	Elementary	no	press coverage	unknown	40 children taken to hospital	Firefighters determined a rusty hinge on a furnace allowed the carbon monoxide to leak out into the school.	40 children (ages 8-11) hospitalized after CO leak caused illness; Firefighters were initially sent to a medical call at the school around 10:30 a.m. after a student fainted in the lobby, fire officials said. Firefighters determined a rusty hinge on a furnace allowed the carbon monoxide to leak out into the school.
Northeast	CT	4/25/2011	Hartford County	Hartford	name not provided	unknown	High School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		malfunctioning boiler	CO detected in school as students arriving for class
Northeast	CT	3/28/2012	New London County	Waterford	Friendship School	Private	Preschool	unknown	press coverage	unknown		unspecified	Children 3-5 years old; high CO levels found in school serves 500+ preK, Kindergarten students
Northeast	CT	4/12/2013	Tolland County	Tolland	Tolland High School	Public	High School	yes	press coverage	unknown		unspecified	
Northeast	CT	10/19/2016	New Haven County	Cheshire	Highland Elementary School	Public	Elementary	no	press coverage	unknown	several students that fell ill tested high for carbon monoxide.	There was a malfunctioning boiler that was releasing dangerous levels of carbon monoxide. The air handling units, also on the roof were sucking that bad air back into the school. The boiler was last serviced less than a year ago in November of 2015.	
Northeast	CT	4/6/2017	Fairfield County	Bridgeport	Columbus Elementary School	Public	Elementary	no	press coverage	unknown	4 students taken to hospital, 4 others treated by their pediatricians	assumed CO, no traces found at time of FD arrival	illness hit 1 particular classroom all at same time
Northeast	CT	5/7/2018	New Haven County	Hamden	Dunbar Hill Elementary School	Public	Elementary	unknown	press coverage	unknown		*issue with school's equipment	smell of gas prompted call to Fire department, arrived finding elevated levels of CO throughout building; 270+ students and teachers evacuated
South	DC	10/15/2013	DC	Washington	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	7 hospitalized; 20 adults, 56 students treated for exposure	defective boiler	20 adults, 56 students treated for CO exposure; 7 hospitalized in serious condition
South	DC	12/17/2019	DC	Washington	Langdon Elementary School	Public	Elementary	no	press coverage	unknown		*improper combustion in malfunctioning HVAC unit*	

South	FL	6/10/2009	Broward County	Weston	Manatee Bay Elementary	Public	Elementary	no	press coverage	unknown	5 school employees, 2 firefighters hospitalized with CO poisoning	propane-powered machine used for stripping wax floors	Firefighters transported four Broward School employees from Manatee Bay Elementary School over the summer after carbon monoxide sickened workers from a propane-powered floor stripper. A total of seven persons, including two firefighters were hospitalized after breathing the odorless gas.
South	FL	10/4/2010	Miami-Dade	Miami	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	11 sent to hospital	unspecified	11 people sent to hospital due to CO leak in cafeteria
South	FL	8/9/2015	Brevard County	Titusville	Imperial Estates Elementary	Public	Elementary	no	press coverage	unknown	1 student, 2 staff members hospitalized; 41 others symptomatic on site	fan broke in vented hood in cafeteria	Fire officials said carbon monoxide was present with the smell of gas as workers prepared lunch for students, prompting someone to pull a fire alarm. 640 students + staff evacuated from school
South	FL	10/18/2017	Miami-Dade	Miami	Miami Springs Middle School	Public	Middle School	unknown	press coverage	unknown	14 adults taken to hospital	unspecified	emergency personnel were called to Miami Springs Middle School after several workers reported feeling sick in and around the cafeteria
South	FL	1/31/2018	Monroe County	Florida Keys	Sugarloaf Elementary School	Public	Elementary and middle	unknown	press coverage	unknown	3 cafeteria workers treated at scene	improperly ventilated kitchen equipment	only cafeteria area evacuated; children ate lunch in their classrooms while cafeteria being ventilated
South	FL	4/5/2018	Miami-Dade	Miami	Orchard Villa Elementary	Public	Elementary	no	press coverage	unknown	7 cafeteria workers hospitalized	human error; improper ventilation during cooking	department notified when cafeteria workers began falling ill
South	FL	9/19/2018	Miami-Dade	Miami	Carol City Elementary	Public	Elementary	no	press coverage	unknown	3 kids, 2 adults hospitalized; 3 treated at scene	School officials said the issue may have come from a truck that was delivering items to the school.	officials said crews responded to the school after receiving a call about a person not feeling well. When firefighters walked into the school their detectors went off immediately, officials said.
South	FL	10/17/2019	Miami-Dade	North Miami	WJ Bryan Elementary	Public	Elementary	unknown	press coverage	unknown		unnamed source in cafeteria	
South	GA	3/9/2006	Hall County	Gainesville	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		HVAC unit	School evacuated due to high CO levels
South	GA	12/3/2012	Fulton County	Atlanta	Finch Elementary School	Public	Elementary	no	press coverage	1700 ppm	43 students, 10 adults hospitalized	Suspected faulty furnace	43 students, 10 adults sent to hospital after exposure to CO; mild-to-moderate symptoms; CO reading of 1,700 ppm
South	GA	11/25/2019	Fulton County	Atlanta	GATES Academy	Private	Daycare/Preschool	yes	press coverage	unknown	16 children, 3 adults taken to hospital	faulty furnace	emergency services responding to medical call regarding child having seizure; upon arrival found group symptoms; FD meters showed elevated levels of CO w/ out knowing time exposed; school had detectors but they did not alert
Midwest	IA	9/23/2010	Johnson County	Iowa City	name not provided	unknown	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Cleaning crew used unauthorized equipment in improperly ventilated area	Unsafe levels of CO; classes cancelled for day
Midwest	IA	9/8/2018	Black Hawk County	Hudson	Hudson Elementary School	Public	Elementary	yes	press coverage	100 ppm		vent malfunction in kitchen	School cancelled, evacuated after CO detector alerts in kitchen
Midwest	IL	11/5/2012	Cook County	Chicago	Harold Washington Elementary	Public	Elementary	no	press coverage	43 ppm	25 students taken to hospitals	faulty boiler	25 children taken to area hospitals after CO leak; 43 ppm
Midwest	IL	9/15/2014	Macoupin County	Girard	North Mac Intermediate	Public	Middle School	no	press coverage	400 ppm	181 students and teachers (at least 150 students) taken to hospitals	gas water heater - flue broke loose	181 students and teachers, the majority of which were children, taken to hospital after CO leak; lunch teachers fainting randomly; water heater passed inspection earlier in the year; no detection on site; 20 LAWSUITS FILED claiming disability/disfigurement of minors ;
Midwest	IL	10/29/2014	Cook County	Chicago	Harper High School	Public	High school	no	press coverage	unknown	9 students hospitalized	construction crew relining sewers in area; sewage vapors leaked into school	School evacuated and closed due to foreign odor that ended up being CO exposure; 9 students taken to hospital according to Chicago PD
Midwest	IL	10/30/2015	Cook County	Chicago	Prussing Elementary School	Public	Elementary	no	press coverage	unknown	70 children taken to hospital	boiler issue in main bldg	70 children taken to hospitals because of CO fumes at Jefferson Park grammar school in Prussing; one, inactive CO detector in boiler room was unplugged at time; a malfunctioning component on the building's boiler produced more carbon monoxide than normal. A fire door that should have been closed was left open. Claypool said, while a fresh-air door that should have been open was closed. The unplugged carbon monoxide detector was located near the boiler, he said. "Whether the one CO detector in the boiler room was active is less relevant because the boiler room is 60 feet from the main building and 20 feet underground," Arena said. "Begging the question: Who in safety and security thinks that if an alarm goes off where no one can hear it, that somehow makes the building safe and secure?"
Midwest	IL	12/3/2015	Cook County	Chicago	Horace Mann Elementary School	Public	Elementary	yes	press coverage	unknown	104 students, 7 staff hospitalized	unspecified	104 students and seven staff members were hospitalized after a carbon monoxide leak at Horace Mann Elementary in South Chicago; IMPORTANT TO NOTE: "Newly installed carbon monoxide detectors were tripped as school started Thursday at Horace Mann, 8050 S. Chappel Ave., officials said. Though the alarms were tripped as staff entered the school around 6:30 a.m., according to Chicago Teachers Union organizer Curtis Bynum, school administrators didn't contact the fire department until about 8:30."
Midwest	IL	12/21/2016	multiple	Bartlett	Bartlett Elementary School	Public	Elementary	unknown	press coverage	unknown		unspecified	school evacuated;
Midwest	IL	3/16/2017	Kankakee County	Bourbonnais	LeVasseur Elementary	Public	Elementary School	yes	press coverage	unknown	48 students, staff taken to hospitals	School's backup Generator in boiler room had a timer malfunction, causing it to run while staff/students on property; it's exhaust getting sucked into air intake system	350 students and staff evacuated; 48 taken to hospital
Midwest	IL	2/1/2019	Rock Island	Moline	Glenview Middle School	Public	Middle School	yes	press coverage	unknown		water heater malfunction in boiler room	650 students, teachers evacuated safely, responding to alarm
Midwest	IL	2/21/2019	Cook County	Tinley Park	KinderCare	Private	Daycare/ Preschool	no	press coverage	210 ppm	82 staff and students treated on scene by emergency services	hot water heater leak	staff and students falling ill;
Midwest	IL	11/4/2019	Cook County	Chicago	Burnside Academy	Private	Elementary	yes	press coverage	unknown		fauly boiler	early workers arrived to detectors alerting; notified students, other teachers before arrival
Midwest	IN	2/21/2006	Gibson County	Ft Branch	name not provided	unknown	Recreational care	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	523 ppm		furnace?	two girls passed out, emergency authorities alerted; CO levels at 523 ppm GF/613 ppm basement

Midwest	KS	11/30/2005	Ford County	Dodge City	name not provided	unknown	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Cracked heat exchanger	Annex classroom evacuated when teacher/students noticed smell
Midwest	KS	10/29/2014	Cowley County	Dexter	Dexter Elementary School	Public	Elementary	no	press coverage	unknown	18 first and second grade students taken to hospital	defective heat exchanger on the roof heating unit	school librarian was EMT and responded to initial cause of concern in 1st and 2nd grade classes; called emergency services; school evacuated, multiple children started passing out in separate classes
Midwest	KS	5/6/2019	Douglas County	Lawrence	Kennedy Elementary	Public	Elementary	no	press coverage	unknown	3 staff seek medical attention on their own, discover elevated levels of CO in body	Gas-powered hot water heater was not venting properly due to roof repairs. Roofers had covered the piping.	staff member at Kennedy Elementary reported feeling nauseous. She went to the doctor and found she had elevated levels of carbon monoxide. The portion of the building where the complaints came from houses the preschool students ages three to five. Staff members said many of them are special needs students.
South	KY	2/22/2010	Jefferson County	Louisville	Field Elementary School	Public	Elementary	no	press coverage	unknown	13 children, 1 teacher taken to hospital; 30 others treated on scene	officials say exhaust from a gas-powered concrete saw being used by a contractor outside the building spread through the ventilation system.	students reported feeling ill, headaches/nausea
South	LA	10/2/2010	Calcasieu Parish	Lake Charles	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		external conditions impacting inside school	Bldg closed up due to smoke outside/low-lying gof, air quality checked and had elevated CO; school evacuated, 20 evaluated at local hospital
South	LA	9/2/2016	Lafayette Parish	Duson	Charles M Burke Elementary School	Public	Elementary	yes	press coverage	unknown	1 cafeteria worker taken to hospital	unspecified in kitchen area	carbon monoxide meter alerted in cafeteria area
South	LA	9/5/2019	Ascension Parish	Dutchtown	Dutchtown High School	Public	High school	no	press coverage	unknown	28 students treated in ER	large capacity "zero turn" lawnmower with the balky gas tank was being used to cut grass next to an air-conditioning intake vent	nausea, dizziness and headaches experienced as fumes came in through the ventilation system
South	LA	11/6/2019	Caddo Parish	Shreveport	Broadmoor Middle	Public	Middle School	no	press coverage	unknown	13 students transported to hospital	unspecified	CO poisoning assumed because of group symptoms, source not discoverable, accumulation not active by time of emergency response
Northeast	MA	2/17/2005	Middlesex County	Lexington	Lexington High School	Public	High School	no	press coverage	65 ppm		Hole in intake pipe, unlined chimney; intake/exhaust pipes too close	School evacuated twice for CO before sources discovered; buildings not occupiable until issue fixed; has since installed CO detection
Northeast	MA	12/29/2005	Middlesex County	Chilmsford	McCarthy Middle	Public	Middle School	no	press coverage	unknown	4 staff, 4 students sent to hospital	Delivery vehicle idling outside of school	Cluster illness; Test results from 3 patients revealed traces of CO
Northeast	MA	1/11/2007	Worcester County	Fitchburg	name not provided	unknown	Middle School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	7 hospitalized	Boiler was under repair	
Northeast	MA	10/2/2008	Worcester County	Northboro	Marion Zeh Elementary	Public	Elementary	yes	press coverage	unknown	Fire personnel evaluated the school custodian at the scene for carbon monoxide exposure. He was not transported, but fire officials said he later sought medical attention on his own.	Boiler malfunction	Firefighters arriving at the scene found elevated levels of carbon monoxide in the cafeteria area. Wearing air packs to investigate further, firefighters found very high levels of carbon monoxide in the boiler room.
Northeast	MA	3/1/2012	Plymouth County	Marshfield	Marshfield High School	Public	High School	unknown	press coverage	unknown		Water heater malfunction	CO/other fumes drawn back into loading docks by wind; high levels of CO immediately outside, lower levels of CO inside
Northeast	MA	4/3/2014	Worcester County	Douglas	municipal property that cares for kids	Public	Recreational care	no	press coverage	unknown	16 hospitalized	malfunctioning boiler	16 Kindergarten children transported to area hospitals
Northeast	MA	10/9/2015	Middlesex County	Newton	Franklin Elementary	Public	Elementary	no	press coverage	1000ppm		ue to errors made by the heating contractors in the process of installing a new boiler	person found unconscious in boiler room, another ill; meters brought onto scene maxed out
Northeast	MA	10/29/2015	Middlesex County	Lowell	Sullivan Middle School	Public	Middle School	unknown	press coverage	unknown		unspecified	60 students fall ill; all showing symptoms of CO exposure
Northeast	MA	8/30/2018	Hampden County	Monson	Granite Valley Middle School	Public	Middle School	yes	press coverage	unknown		exhaust from a generator that was used by construction workers on the rooftop	high carbon monoxide set off alarm in gym area;
Northeast	MA	12/12/2018	Barnstable County	Mashpee	Quashnet Elementary	Public	Elementary	unknown	press coverage	unknown	5 staff members hospitalized	leaking boiler	school closed for three days while boiler leak repaired;
Northeast	MA	7/18/2019	Essex County	Methuen	Methuen High School	Public	High school	no	press coverage	unknown	1 adult transported to hospital	crews were stripping floors, using freon + humidifier - combo gases	freon canister exploded, detaching from humidifier while stripping floors
Northeast	MA	1/31/2020	Essex County	Marblehead	Coffin Elementary School	Public	Elementary	yes	press coverage	unknown	2 janitors hospitalized	hardwired CO detector malfunctioned and was not alerting after broken fan belt on school's exhaust system	"The building is over 70 years old and is slated to be replaced with new construction. Problems listed in the project's plan include a boiler system that's "increasingly unreliable."
Northeast	MA	12/30/2020	Middlesex County	Waltham	Waltham High School	Public	High school	no	press coverage	200 ppm		boiler	FD responded to a pulled fire alarm, building had self-evacuated; medic requested for onsite treatment; school was on Christmas break but basketball team and some teachers were on site, elevated levels of up to 200ppm found in multiple areas of building, not just boiler area
Northeast	MA	1/5/2016	Middlesex County	Waltham	Henry Whittemore Elementary	Public	Elementary	no	press coverage	135 ppm		boiler	A maintenance worker smelled the odor of natural gas and contacted police. Firefighters responded to the scene and, using a CO meter, discovered a high level of carbon monoxide.
South	MD	9/28/2002	Baltimore County	Middle River	Chase Elementary School	Public	Elementary	no	press coverage	unknown	32 children taken to 3 separate hospitals to accommodate volume	unspecified	"The scare, which started at 10:36 a.m., evoked a science-fiction thriller with pupils falling listlessly to the ground and others rushing nervously to the nurse's office before the entire school was evacuated 25 minutes later."
South	MD	2/8/2011	Baltimore City	Baltimore	Dickey Hill Elementary/Middle	Public	Elementary/Middle	no	press coverage	56 ppm	5 adults, 1 child hospitalized	Malfunctioning steam table	
South	MD	2/15/2011	Baltimore City	Baltimore	Dickey Hill Elementary/Middle	Public	Elementary/Middle	no	press coverage	55 ppm	1 child hospitalized	convection and steam oven used to prepare food, malfunction	6 students ill, 40 others exposed; same school as 2/8 incident
South	MD	2/3/2012	Frederick County	Fredericksburg	name not provided	unknown	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Diesel vehicle stuck in vicinity of individual rooms HVAC system	CO fumes from running vehicle circulated via HVAC; several taken to hospital, diagnosed with CO poisoning

South	MD	2/6/2018	Baltimore City	Baltimore	Hazelwood Elementary/Middle	Public	Elementary/Middle	unknown	press coverage	unknown	boiler	recreation hall and remaining staff evacuated; school after hours being used recreationally by community /students	
South	MD	2/25/2019	Baltimore County	Owings Mills	Shafer Center	Private	K-12	unknown	press coverage	unknown	2 adults hospitalized	heating system malfunction	60 special needs children evacuated; 2 adults hospitalized; FD indicated issue with heater
South	MD	6/6/2019	Baltimore County	Golden Ring	Rosedale Center	Public	High school	unknown	press coverage	unknown	one priority 1 patient, a man, was taken to University of Maryland Medical System's hyperbaric chamber; and two priority 2 patients, a woman and another man, were also taken to UMMS. Priority 1 typical designates patients who are seriously injured but have a higher likelihood of recovery. Neither of these patients were staff members.	leak originated from a piece of auto equipment that was operating at an auto shop in the same complex as the school	
South	MD	11/11/2020	Baltimore City	Baltimore	Franklin Square Elementary/Middle	Public	Elementary/Middle	unknown	press coverage	unknown		unspecified	10 evacuated, elevated levels of CO found inside
Midwest	MI	3/5/2005	Oakland County	Royal Oak	Dondero High School	Public	High School	no		SAFEKIDS Worldwide - Georgia Testimony, February 2012	38 students, teachers and bystanders at a community swimming class were treated for carbon monoxide poisoning; 17 taken to hospital via ambulance, 5 treated in Hyperbaric chamber at hospital; several more arrived to hospital on their own including siblings, parents of those taking class	Furnace	High levels of CO from furnace made way to pool area during community swim lessons; instructors and their 5- to 14-year-old students began throwing up, complaining of headaches and feeling dizzy and nauseated around 9:15 a.m. The building was evacuated, and a parent called 911.
Midwest	MI	5/4/2007	Benzie County	Thompsonville	name not provided	unknown	Elementary	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012		sewer gases/air exchange	School closed after students fell ill - no Co source found on site; incident potentially caused by sewer gases exiting a rooftop vent that were sucked back into building fresh air exchange
Midwest	MI	2/24/2010	Kalamazoo County	Portage	Portage Northern High School	Public	High School	unknown	press coverage	unknown	7 teachers file personal injury lawsuits due to medical issues impacting them since event	Construction equipment suspected - could never find source from any school-based systems	School undergoing renovation; parents complain of illness of children, diagnosed with higher levels of CO in system; at least 7 teachers file lawsuits
Midwest	MI	9/17/2019	Genesee County	Swartz Creek	Morrish Elementary School	Public	Elementary	unknown	press coverage	unknown		boiler	school evacuated from combo gas leak; gas shutoff; ppms brought back to zero before students/staff allowed to return
Midwest	MI	11/25/2019	Oakland County	White Lake Township	Lakeland High School	Public	High school	no	press coverage	70 ppm		discharge from a boiler that was flowing back into the return air system	First responders had responded to the school for unrelated emergency; their wearable CO detectors started alerting to high levels of CO when they were inside the building; school did not have alarms
Midwest	MI	1/26/2021	Van Buren County	Mattawan	Mattawan Consolidated School	Public	Elementary building	yes	press coverage	unknown		unspecified in kitchen area	CO alarm alerting in kitchen, staff and children evacuated to other buildings;
Midwest	MN	10/5/2010	Ramsey County	St. Paul	Como Park Elementary School	Public	Elementary	unknown	press coverage	unknown		boiler leak	School evacuated due to elevated CO levels; 25 evaluated on scene
Midwest	MN	2/7/2014	Brown County	Springfield	Springfield Public School	Public	K-12	unknown	press coverage	unknown	30 students treated at hospital for CO poisoning	unspecific in auditorium	400 school members evacuated, 30 students treated at hospital for CO poisoning after practicing in auditorium
Midwest	MN	10/16/2019	Carlton County	Esko	Lincoln School	Public	Middle School	unknown	press coverage	unknown		unspecified water heater issue	school evacuated
Midwest	MO	3/6/2009	St. Louis County	Ballwin	name not provided	unknown	Elementary	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012		Open air handler door on HVAC system	School evacuated
Midwest	MO	4/3/2012	Cape Girardeau County	Cape Girardeau	Blanchard Elementary	Public	Elementary	yes	press coverage	unknown		Dirt-dobbers (insects) built nest and clogged up an air intake system	School evacuated for second time in a week due to buildup of CO in gym, cafeteria
Midwest	MO	1/13/2014	St. Louis City	St. Louis	Mallinckrodt Elementary	Public	Elementary	yes	press coverage	unknown	water had accumulated in the basement of the school building due to the melting snow. Maintenance workers were using generators to siphon the water out of the basement		maintenance workers running generators indoors, improperly ventilated causing CO accumulation; detection system alerted for safe evacuation
Midwest	MO	12/4/2014	St. Louis City	St. Louis	Nance Elementary	Public	Elementary	unknown	press coverage	unknown	2 students, 1 teacher sent to hospital	boiler malfunction	full evacuation
Midwest	MO	1/5/2015	St. Louis City	St. Louis	Northwest Academy of Law High School	Public	High school	yes	press coverage	unknown		Boiler malfunction	detector started alerting after boiler malfunction; all students evacuated to gymnasium
Midwest	MO	3/6/2019	Callaway County	Williamsburg	Williamsburg Elementary	Public	Elementary	yes	press coverage	unknown		malfunctioning HVAC	front office area started to experience CO symptoms ahead of school starting; meter brought in and found elevated CO levels; school cancelled for day
South	MS	9/8/2010	Marshall County	Holly Springs	HW Byers High School	Public	High School	unknown	press coverage	unknown	5 cafeteria staff hospitalized	vent-a-hood (ventilation hood) not properly removing gas fumes from burners	5 cafeteria workers sent to hospital with CO poisoning; grades 7-12 not on campus at time
West	MT	8/28/2004	Deer Lodge County	Anaconda	Anaconda Job Corps Center	Public	High school	no	press coverage	unknown	20 students (ages 16-24) flown to area hospitals	cracked exhaust pipe on heater	nurse reported finding several overcome with symptoms;
South	NC	11/7/2006	Wake County	Raleigh	name not provided	unknown	Elementary	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012	4 teachers, 1 student taken to hospital	Debris lodged in heating system blocked air intake system	4 teachers, 1 student taken to hospital after complaining of headaches, nausea; remaining students moved to off-site gym
South	NC	10/21/2008	Polk County	Columbus	Virtual Early College	Public	High School	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012	27 students, 5 staff taken to hospital	heating system defect	faulty air flow caused CO accumulation, affecting occupants for over an hour; student passed out while evacuating
South	NC	5/13/2010	Mecklenburg County	Matthews	Crestdale Middle School	Public	Middle	no	press coverage	unknown		Turned out to be propane buffer/janitorial equipment that cleaned floors (after gas leak ruled out by inspections)	Firefighters discover high levels of CO, school cancelled due to suspected gas leak
South	NC	8/28/2014	Mecklenburg County	Charlotte	Coulwood Middle School	Public	Middle School	yes	press coverage	unknown	2 cafeteria workers evaluated on scene; 1 taken to hospital	improper operation of a cafeteria appliance	food inspection team was on site at the time, Co alarm started alerting while on site

South	NC	6/18/2015	Wake County	Cary	East Cary Middle School	Public	Middle School	unknown	press coverage	unknown	10 children, 7 adults treated on scene - 4 of the adults taken to hospital	unspecified	School evacuated; 10 children, 7 adults evaluated by medical professionals after reported CO leak at middle school; 3 adults taken to hospital	
South	NC	5/7/2016	Mecklenburg County	Cornelius	JV Washam Elementary School	Public	elementary	yes	press coverage	100 ppm		malfunctioning kitchen equipment	May 9 CO leak in school cafeteria exposes this had been a several-month issue causing CO symptoms in students over a period of months; detectors alerted multiple times	
South	NC	8/23/2017	Mecklenburg County	Huntersville	Phoenix Montessori Academy	Private	Preschool	yes	press coverage	unknown	1 teacher hospitalized	unattributed	fire department responded to CO alarm	
South	NC	4/3/2019	Durham County	Durham	Research Triangle Academy	Charter	Elementary	unknown	press coverage	unknown		unspecified HVAC-related issue	School evacuated due to elevated CO levels	
South	NC	3/25/2021	Cumberland County	Fayetteville	Brentwood Elementary School	Public	Elementary	no	press coverage	unknown		Faulty kitchen equipment	Assistant fire inspector using meter during inspection found presence of CO in kitchen – hazardous emergency response was signalled in to review ; no injuries	
Midwest	ND	11/7/2018	Cass County	Fargo	The Learning Circle/Baby Bloomers	Private	Daycare/Preschool	unknown	press coverage	unknown	2 adults sent to hospital	construction crew using a gas-powered concrete saw inside a building without ventilation	daycare in building property on different floor; CO levels found in daycare	
Midwest	NE	9/27/2018	Hamilton County	Aurora	Aurora Elementary School	Public	Elementary School	no	press coverage	unknown		malfunctioning air handling unit on roof	Administrators smelled something Thursday morning when arriving at Aurora Elementary School in Aurora. District Superintendent Damon McDonald told The Grand Island Independent that firefighters were called to the school. They used sensors that detected carbon monoxide levels that were too high for anyone to be in the building.	
Midwest	NE	3/8/2019	Lancaster County	Lincoln	Pershing Elementary School	Public	Elementary School	unknown	press coverage	80 ppm		boiler room, specific cause not identified	elevated levels of carbon monoxide found in boiler room	
Northeast	NH	1/29/1994	Sullivan County	Unity	name not provided	Public	Elementary	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	Furnace leak	CO leak in school sickened 25 children and several teachers
Northeast	NH	11/9/2006	Hillsborough County	Litchfield	name not provided	unknown	High School	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	Boiler smokestack and proximity to air intake unit (too close!)	Students sent home after elevated levels of CO detected
Northeast	NH	2/18/2010	Rockingham County	Derry	St. Thomas Aquinas	Private	Elementary	no	press coverage	unknown	21 students and staff members were taken by ambulance to a hospital, and another 10 either went to a hospital on their own or were driven separately.	Ventilation system (3rd floor)	Dozens of students fall ill; school and adjacent church checked for CO levels (30 students and teachers at hospital)	
Northeast	NH	3/6/2012	Belknap County	Meredith	Inter-Lakes High School	Public	High School	yes	press coverage	unknown	students who were ill treated on scene	Misfiring boiler, exhaust/air exchange	Although there are smoke detectors and carbon dioxide detectors throughout the building, Wald said there's only one carbon monoxide detector, located in the boiler room and intended to detect a back-firing boiler. The carbon monoxide was able to bypass that detector by flowing up to the roof and back down into the building.	
Northeast	NH	11/5/2020		Newport	Newport Middle High School	Public	Middle School, High school	no	press coverage	unknown	4 students taken to hospital	car exhaust fumes filled school		
Northeast	NJ	4/6/2017	Gloucester County	Glassboro	Glassboro Intermediate School	Public	Middle School	no	press coverage	unknown	37 students, 3 staff members transported to hospital	boiler exhaust fan failed, allowing fumes to enter the school building.	first responders called to respond to multiple people feeling ill; arrived and found elevated CO levels calling for evacuation of intermediate school to other facilities	
Northeast	NJ	3/19/2018	Bergen County	Lindhurst	Washington School	Public	Elementary	yes	press coverage	unknown		boiler	CO detectors alerted, school evacuated safely prior to issues occurring	
Northeast	NJ	12/12/2018	Ocean County	Brick Township	Midstreams Elementary School	Public	Elementary	yes	press coverage	unknown		malfunctioning boiler	found dangerous levels of carbon monoxide right outside the boiler room and inside the boiler room, recently installed detectors alerted authorities	
Northeast	NJ	1/22/2019	Union County	Elizabeth	Toussaint L'ouverture-Marquis de Lafayette School No. 6.	Public	Elementary	yes	press coverage	unknown		exhaust fan stopped working in boiler room	Elevated levels of CO found in basement, detectors alerted for safe evacuation	
Northeast	NJ	11/27/2019	Bergen County	Saddlebrook	Saddlebrook Daycare	Private	Daycare/Preschool	yes	press coverage	unknown		A propane tank being used by workers in an adjoining storefront	Daycare center's detectors started alerting, prompting evacuation of 20+	
Northeast	NY	4/7/2010	Bronx	Bronx	Hunts Point School	Public	K-12	no	press coverage	unknown		unspecified	Building that houses 4 public schools and 1,500 students evacuated due to elevated levels of CO; first responders were responding to a medical call when their gas detectors activated upon entering buildings	
Northeast	NY	10/10/2013	multiple	Long Island	Camp Avenue Elementary	Public	Elementary	unknown	press coverage	unknown	12 students taken to hospital	Boiler emitting smoke	Boiler started "smoking", making those in surrounding rooms nauseated, ill; fire dept found elevated levels of CO in building	
Northeast	NY	2/14/2014	Queens County	Corona	Leonardo DaVinci Intermediate School	Public	Intermediate	unknown	press coverage	400 ppm		manhole fire in street in front of school caused large amounts of CO to enter the building's basement	happened just as students started to arrive for school; evacuation of all inside	
Northeast	NY	12/1/2015	Queens	Queens	PS 295	Public	Elementary	yes	press coverage	unknown		reading came from the building's basement and electrical room and may have been the result of a smoking manhole nearby	550 students, 100 faculty members evacuated	
Northeast	NY	2/15/2017	City of New York	Staten Island	PS 29	Public	Elementary	unknown	press coverage (video)	unknown		HVAC/boiler unit	680 staff and students evacuated due to reports of high CO inside the building; HVAC/Boiler unit producing gas, odor	
Northeast	NY	1/16/2019	Broome County	Endicott	Union-Endicott High School	Public	High school	yes	press coverage	unknown		unidentified at press time; shop class	alarm sounded in shop area of high school; evacuation of school	
Northeast	NY	1/31/2019	multiple	Long Island	South Grove Elementary	Public	Elementary	no	press coverage	unknown			children sickened, fainting while practicing for performance in gymnasium; elevated CO levels found in bloodwork	
Northeast	NY	3/24/2021	Madison County	Canastota	Roberts Street Elementary School	Public	Elementary	yes	press coverage	unknown		boiler	an issue with one of the boilers at the Roberts Street Elementary School complex triggered the carbon monoxide detectors. Students and staff were immediately evacuated; onsite carbon monoxide detectors are interconnected and the malfunction was caught just as it started.	
Midwest	OH	3/2/2004	Licking County	Newark	name not provided	Private	K-8	unknown			18 evaluated on scene (15 students/3 staff), "some" transferred to hospital (no specific number listed)	SAFEKIDS Worldwide - Georgia Testimony, February 2012	boiler/heating unit suspected	15 students, 3 staff sickened due to CO buildup, some transferred to hospital
Midwest	OH	1/6/2017	Champaign County	Urbana	Urbana High School	Public	High school	no	press coverage	250 ppm	More than 12 students taken to hospitals	broken damper on furnace system	More than 44 students treated on scene for symptoms;	

Midwest	OH	10/1/2018	Tuscarawas County	Tuscarawas Township	Tuslaw High School	Public	High school	unknown	press coverage	unknown		contractors replacing roof using gas powered generator used near air handler;	unsupervised contractors using generator on roof to power tools while working on roof replacement; fumes and odors brought into school building while kids/staff on site	
Midwest	OH	1/15/2019	multiple	Pickerington	Ridgeview Junior High	Public	Junior High	unknown	press coverage	unknown	4 adults, 2 students taken to hospital	motor went out on exhaust system allowing CO from hot water heater to get into school	elevated levels of CO found, custodians who checked boiler room symptomatic	
Midwest	OH	10/28/2019	Clark County	Springfield	Clarke-Shawnee Middle/High School	Public	Middle School, High school	no	press coverage	unknown		boiler system	teacher notified administrators she was smelling odorous gases, fire dept was called and their meters notified there was elevated CO within the building; students, staff evacuated	
South	OK	5/4/2009	Tulsa County	Tulsa	Byrd Middle School	Public	Middle	no	press coverage	55 ppm	1 construction worker taken to hospital	gas powered washer in construction area without proper ventilation	Construction Worker began experiencing CO poisoning symptoms, firefighters responded; school teacher sounded the fire alarm to get people to evacuate after bring school nurse	
South	OK	3/28/2012	Marshall County	Madill	Madill Elementary	Public	Elementary	unknown	press coverage	unknown	25 students/staff transported to hospital	cause unknown	School evacuated, 25 people transported to hospital for eval	
South	OK	11/11/2013		Oklahoma City	Lee Elementary School	Public	Elementary	no	press coverage	unknown	10 people treated on scene; 3 students, 3 staff members taken to hospital	recently installed HVAC unit on roof leaked into classroom	Students and staff fall ill, school evacuated due to suspected issue; no detectors on site, responders find elevated CO,	
South	OK	1/18/2018	Carter County	Ardmore	Charles Evans Elementary School	Public	Elementary school	unknown	press coverage	unknown			Part of Charles Evans Elementary School was evacuated after tests revealed higher than normal carbon monoxide levels in older parts of the building.	
South	OK	11/27/2018	Tulsa County	Sand Springs	Clyde Boyd Middle School	Public	Middle school	no	press coverage	unknown	55 children taken to area hospitals; many overnight hospitalizations; 50 children additionally treated on scene	single heater malfunctioning + separate gas leak in pipes	Most of the children were from the same second-grade classroom.	
West	OR	4/16/2019	Lincoln County	Waldport	Crestview Heights School	Public	Elementary	unknown	press coverage	unknown	14 children treated in ER	diesel boilers suspected	School evacuated and cancelled after CO poisoning of students	
Northeast	PA	11/3/2011	Dauphin County	Derry Township	name not provided	Public	High School	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	propane heater in unsealed construction area	1 teacher taken to hospital after becoming sick from construction fumes
Northeast	PA	9/5/2012	York County	Glen Rock	name not provided	Public	Elementary	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012; AP News reference	malfunctioning water heater	Nearly 40 students were sent home with CO exposure
Northeast	PA	10/9/2012	Philadelphia County	Philadelphia	JH Brown Elementary	Public	Elementary	no	press coverage	unknown	50 children, 5 adults treated at hospital	Malfunctioning backup generator (after power outage)	Many of the 577 students evacuated;	
Northeast	PA	9/18/2015	Fayette County	McClellandtown	Albert Gallatin North Middle School	Public	Middle School	unknown	press coverage	unknown	10 students, 2 teachers taken to ER	*CO assumed - no source found	a teacher first contacted the school nurse after some of his students started feeling ill in the library. The nurse then called in paramedics because more children and the teachers started reporting symptoms, including breathing problems, respiratory issues, dizziness, and nausea.	
Northeast	PA	1/26/2018	Philadelphia County	Philadelphia	William Loesche School	Public	Elementary	no	press coverage	unknown	26 children, 4 teachers sent to hospital	a portable generator on the school's roof that construction workers were using to power their tools during roof repairs. Someone had placed it close to the air intake vents.	child became unconscious and wouldn't wake up with smelling salts in 2nd grade class, other students became lethargic; doing major renovations of building during school hours while children on site. Link to Philadelphia Inquirer series	
Northeast	PA	9/14/2018	Neshaminy	Langhorne	Herbert Hoover Elementary	Public	Elementary	unknown	press coverage	unknown		faulty exhaust system on a kitchen water heater	https://www.buckscountycouriertimes.com/news/20180914/high-carbon-monoxide-level-closes-neshaminy-herbert-hoover-elementary-school	
Northeast	PA	2/9/2019	Berks County	Fleetwood	Fleetwood Area Middle School	Public	Middle School	unknown	press coverage	unknown	8 community members practicing for a performance in auditorium taken to hospital; 3 found unconscious when FR arrived on scene	unspecified	community members in school after hours practicing for a performance, people started fainting/getting dizzy, director calls 911	
Northeast	PA	3/3/2020	Franklin County	Chambersburg	South Hamilton Elementary	Public	Elementary	yes	press coverage	unknown		boiler	Firefighters arrived on scene, meeting with building representatives. The alarm panel showed the "machine room" as the source of the leak, according to Franklin County Fire Company. Isolated boilers until source found.	
Northeast	RI	1/28/2005	Washington County	Peace Dale	Peace Dale Elementary School	Public	Elementary	no	press coverage	unknown		Snow clogged heating exhaust vent	520 students/teachers evacuated due to CO; elevated levels of CO found upon emergency responders arriving in response to "a gas smell coming from vent"	
Northeast	RI	5/9/2019	Kent County	East Greenwich	Meadowbrook Farms Elementary School	Public	Elementary	no	press coverage	unknown		cause unknown	children in same classroom all found to have elevated levels of CO in their system; getting sick in class	
South	SC	1/31/2019	PeeDee County	Florence	West Florence High School	Public	High School	unknown	press coverage	unknown	15 people tested positive for carbon monoxide poisoning	unattributed	teachers students repeatedly falling ill in science classroom and surrounding classrooms	
Midwest	SD	2/17/2021	McCook County	Canistota	Canistota School	Public	K-12	unknown	press coverage	40 ppm	25 children and teachers	forklift exhaust, additional gas-based construction equipment being improperly ventilated during construction on school gym while children in classes/staff on site	repeated presence of CO over series of weeks	
South	TN	11/6/2006	Bradley County	Cleveland	name not provided	unknown	Elementary	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	All students evacuated when high levels of CO detected in some classrooms	
South	TN	1/15/2013	Davidson County	Nashville	Drexel Preparatory Academy	Private	Elementary	No	press coverage	unknown	36 kindergarten and 1st graders arrive at hospital (28 of them stay overnight)	hole discovered in heating unit in center of school	children treated in hospital for CO poisoning with elevated levels in system after early school cancellation due to mystery "bug"	
South	TN	11/12/2018	Knox County	Knoxville	Lonsdale Elementary	Public	Elementary	no	press coverage	unknown		leaking flue on gas water heater	haze, weird readings on general alarm panel; emergency services called and found elevated levels of CO in boiler room and other areas of building; prompted evacuation of 300+ students; no detectors required according to building code	
South	TN	2/27/2019	Sumner County	Hendersonville	Children's First Preschool	Private	Daycare/Preschool	no	press coverage	unknown	28 kids and teachers treated at hospital, some remained on oxygen for 24 hours	malfunctioning boiler in toddler area	teachers noticed funny symptoms occurring, called emergency responders	

South	TN	1/31/2020	Shelby County	Cordova	Kate Bond Middle School	Public	Middle	no	press coverage	unknown	4 students hospitalized; 18 treated at scene	"heating unit on roof above classroom leaked CO into building"	originally a medical distress call for "a child having trouble breathing"; when responders appeared on scene, children were definitely exhibiting symptoms of CO poisoning but portable meters were reading negative; however, 2nd sweep by inspectors found source of elevated CO issue
South	TX	10/7/2009	Gray County	Pampa	name not provided	Public	High School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		furnace issue	CO leak forced evac of students
South	TX	11/4/2011	Harris County	Houston	Barnett Stadium (multiple schools at event)	Public	High School	no	press coverage	unknown	22 students treated at hospital	Possible exposure from standing buses or nearby generators	22 students taken to hospital with mysterious illness, at least one treated for CO poisoning
South	TX	1/6/2012	Dallas County	Dallas	Rangel Women's Leadership High School	Public	High School	no	press coverage	unknown		improperly ventilated boiler	School of 500+ evacuated; nearly 1 dozen people complaining of CO symptoms
South	TX	3/4/2015	Dallas County	Dallas	Lakewood Elementary	Public	Elementary	yes	press coverage	unknown	1 staff member and 1 volunteer (both adults) to the hospital, and three others planned to seek medical care on their own.	dead owl blocked one of boilers pipes, CO accumulation in boiler room, add'l parts of bldg	20+ students show signs of CO poisoning; boilers didn't kick on until morning. CO detectors didn't alert; happened multiple times during week
South	TX	4/10/2015	Tarrant County	Fort Worth	Diamond Hill Elementary	Public	Elementary	No	press coverage	unknown	14 people (didn't specify age) being treated at local hospitals due to incident	construction team using gas powered cutting tool	students, staff evacuated;
South	TX	1/28/2016	Jefferson County	Beaumont	Marshall Middle School	Public	Middle School	no	press coverage	400 ppm at source; 100 ppm upon entry to building	175 treated on site; 69 taken to hospitals via ambulance, additional 100 went to hospital on their own after continued illness	occurred "as a result of two different failures" - corrosion that let fire exit the boiler and an inoperative ventilation fan, according to a report from the Texas Department of Licensing and Regulation.	Emergency services were called because a child passed out - wasn't until they were on site that CO was suspected; According to the report, the firebox, which should contain the flame inside the boiler, had deteriorated, likely because of condensation or a leak in the roof. The corroded portion of the firebox allowed the flame to exit the boiler, emitting carbon monoxide into the room.
South	TX	1/12/2018	Jefferson County	Beaumont	Dishman Elementary	Public	Elementary	yes	press coverage	unknown		boiler	alarm sounded, evacuating all students and staff; limited to boiler room area, shutoff until rental boiler could be obtained/
South	TX	1/8/2021	Travis County	Austin	Allison Elementary	Public	Elementary	yes	press coverage	unknown		unidentified source	gas smell, CO alarms alerting prior to student arrivals; staff called 911
West	UT	3/27/2012	Wasatch County	Heber	Heber Valley Elementary School	Public	Elementary	no	press coverage	unknown	1 teacher, 17 students treated at local hospital	construction crew using machinery by open door	separate classes and teachers in school began experiencing CO related illnesses; fire dept responded to a "smoke" alarm, as no CO detectors on site
West	UT	11/8/2013	Uintah County	Salt Lake City	Montezuma Creek Elementary	Public	Elementary School	no	press coverage	300 ppm	40 hospitalized, 3 airlifted	exhaust pipe coming from one of two water heaters had become disconnected at some time venting gas into a mechanical room, the kitchen, and classrooms.	There was an assembly in gymnasium which is located next to the water heaters; School evacuated upon illnesses
West	UT	9/17/2018	Weber County	Ogden	Weber High School	Public	High school	no	press coverage	unknown	2 students taken to hospital	unspecified	elevated levels of CO found in classroom by FD meters, students feeling ill; 20+ treated on scene
West	UT	11/15/2018	Davis County	West Point	West Point Junior High School	Public	Junior High	no	press coverage	unknown	1 student transported to ER	source unidentified	no CO found once FD arrived with detectors, however multiple people exhibiting exposure symptoms in gymnasium area
West	UT	1/10/2019	Uintah County	Salt Lake City	Ashley Elementary School	Public	Elementary	yes	press coverage	unknown		unidentified source in kitchen	
West	UT	12/18/2019	Cache County	Logan	Mt. Logan Middle School	Public	Middle school	yes	press coverage	unknown		art kiln	elevated levels of CO found in art room after kiln use, setting off detectors carbon monoxide issue. Assisted in finding source and ventilated. Verified rest of building had CO free air with 4 gas monitor. Removed boiler from service due to this being the source.
South	VA	12/30/2014	Chesterfield County	Middleton, VA	St. Edward-Epiphany School	Private	Primary to Middle	unknown	Chesterfield County FOIA	unknown		boiler	
South	VA	2/9/2015	Loudoun County	Sterling, VA	Michael & Son Sportplex	Recreational	Recreational care	unknown	Loudoun County FOIA	unknown			
South	VA	4/3/2015	Fairfax County	Chantilly, VA	Westfield High School	Public	High School	unknown	Fairfax Co Fire FOIA	115ppm		Propane-fueled floor buffer	High CO readings reported; entered school to find cleaning crew using propane-fueled floor buffer in main hallways, causing several to feel ill and have to leave the building - elevated readings of 115ppm recorded by emergency responders
South	VA	8/18/2015	Henrico County	Henrico, VA	Tuckahoe Elementary School	Public	Elementary School	yes	Henrico County FOIA	115ppm		construction equipment (wet saw); improper ventilation	Source: construction equipment (wet saw), improper ventilation; EMS 1 with school principal secretary confirmed alarm location with active alarm, visual and audible in door area 021. Upon gaining access to the alarm location construction sounds were noted with a wet saw cutting concrete. Dust and the odor of fuel emissions were present. EMS 1 requested T10 to assist with atmospheric monitoring due to the confined space and location. Reading of 35-115ppm was present just before the effected hall with dust and air borne particle present. EMS 1 with Mrs. Ford stopped to allow HFD crews to stop activity and confirm that the alarm was due to construction. T10 with E08 as back up made entry and evacuated crews with a superintendent Doug Updegrave exiting the structure to explain the construction being completed. He advised the saw was only running 20 minutes with multiple windows open but no force ventilation. He was advised of the CO levels and that corrective actions needed to be completed. Michele Loveland of HCPS 349-249 was contacted by TES staff to advise her of the alarm and levels of CO found. After force ventilation and atmospheric monitoring work were completed. Mr. Updegrave was allowed back into the structure to work. Mr. Updegrave confirmed that all gas powered tools would not be restarted until proper ventilation could be conducted.
South	VA	1/14/2016	Arlington County	Arlington, VA	Cody Child Development Ctr	Private	Daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/9/2016	Arlington County	Arlington, VA	Charles Drew Elementary	Public	Elementary School	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/16/2016	Loudoun County	Chantilly, VA	J Michael Lunsford Middle	Public	Middle School	unknown	Loudoun County FOIA	unknown			
South	VA	4/17/2017	Henrico County	Richmond, VA	Starling Child Care	Private	Daycare	unknown	Henrico County FOIA	unknown		gas water heater	Smell of gas in utility room with gas water heater. Gas Heater turned off and gas secured. Told supervisor to have unit serviced prior to turning back on
South	VA	8/2/2017	Fairfax County	Falls Church, VA	Bailey's Upper Elementary School	Public	Elementary School	yes - alarm panel activated	Fairfax Co Fire FOIA	20 ppm		Cleaning machines being u	Source was cleaning crew (using equipment and solutions) on 3rd floor near elevator lobby; accumulation of CO in the hallways/lobby

South	VA	10/6/2017	Arlington County	Arlington, VA	Inhome daycare	Private	daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/14/2017	City of Chesapeake	Chesapeake	Deep Creek High School	Public	High School	unknown	press coverage	unknown		Two separate natural gas leaks found in rooftop HVAC	Deep Creek High School students/teachers sheltered in different parts of school due to gas odor; firefighters respond find elevated CO
South	VA	1/11/2018	Henrico County	Henrico, VA	Minnieland/Skipwith Academy/Montessor Kids Universe - 3450 Lauderdale Drive	Private	Daycare	no	Henrico County FOIA	100ppm		suspected: kitchen oven	Infant to Pre-K on site; S13 and E16 responded for a report of a gas smell during the last two days at a day care facility. S13 arrived on scene and established command. Met manager at the front door and detected the slightest smell of gas. Manager reported one of the parents had come to him with a concern. S13 began monitoring with the four gas monitor, found carbon monoxide levels of 10- 20 throughout the occupancy with readings of 30 in the gym area. Occupants removed from the gym area. Ventilation initiated, gas appliances were the rooftop heating units, water heater, and two cook stoves in the kitchen area. HVAC company was on scene replacing a draft motor on one of the rooftop units. Monitored the individual ducts for each of the four rooftop units in the occupancy as well as on the roof. Unable to find a significant level of CO from these units. Vent stacks for the hot water heater and hood above the stoves appeared intact and dispersed above the roof. Ran hot water heater and stove for a few minutes and found one of the ovens was producing CO at levels near 100ppm when the oven was opened. The other oven was not producing a noticeable amount of CO but several of the stovetop burners would not light. Shut off gas to both of the stoves and felt that the one oven had been the source of CO. After ventilation, readings had dropped down to about 5 throughout the building. Monitored B and D exposures with readings of 0 found in both. Advised occupants to have stoves repaired or replaced and strongly encouraged them to have CO detectors installed due to the type of occupancy. After ventilation was shut down and all doors had been closed the CO levels did not reproduce. Went back approx. an hour later and monitored the building, highest level was 3ppm in a small closet near the kitchen. All other readings 0 throughout.
South	VA	1/16/2018	Fairfax County	McLean, VA	The Langley School	Private	K-12	yes - battery operated in utility room	Fairfax Co Fire FOIA	unknown		gas fired water heater in utility	called to school due to odorous gas, maintenance found battery operated alarm alerting in utility room; shut down gas fired water heater, advised school to repair/replace
South	VA	2/13/2018	Henrico County	Henrico, VA	Minnieland/Skipwith Academy/Montessor Kids Universe - 3450 Lauderdale Drive	Private	Daycare	yes	Henrico County FOIA	>499ppm		rooftop heating unit	S13 responded to a CO detector activation call. Upon arrival we were met outside the business by the responsible party/manager of the business. She stated she has a CO detector that has been activating and requested assistance with this. The business is a child daycare facility with 30-40 children and adults. The initial investigation immediately found a CO reading at the front door to the business at 49PPM and rising. We immediately evacuated the business, requested an engine company and a fire medic be dispatched to assist on the call. The children were initially staged on the sidewalk outside of the business, in the staff's care, both individually and in cribs. S13 driver made contact with 9 Rounds Fitness club two businesses down from the call location and received permission to place all the occupants in there to get them out of the weather and into a central, controllable location. S13 personnel donned SCBA and began further evaluation of the business. Inside we found the highest reading of 60PPM, on the B side interior wall side and the back corridor. Evaluation of the appliances in the kitchen and water heater found no issues or increased readings. Per the staff, the stoves were new purchases within the last month. S13 B turned off the heat system at this point. E13 was assigned to check utilities to the rear of the structure, and F13 was given the assignment of evaluating the children and staff for any symptoms or medical complaints. No complaints or medical issues were reported or noted. Inside it was noticed that the readings were changing to lower readings following the heat system being shut down. E13 and F13 were assigned to ladder the roof and evaluate the heat systems on the roof. The heat system was turned back on and upon investigating, the center unit on the roof was found to be emitting CO at a level of 238PPM in the general vicinity, and >499 at the unit itself. The heat was again powered off, and the gas service valve to the unit was closed. Ventilation utilizing an electric PPV was initiated. Speaking with the manager of the facility, she advised that the maintenance personnel to the business was notified and would be responding. The property management representative arrived and was briefed on the situation and stated they had a CO issue last month that was determined to be from the stoves, which had been replaced. Ventilation successfully removed the CO to a level of <5PPM throughout the business, where nost readings were 0. Ceiling tiles were also removed to allow for air circulation during ventilation above the drop ceiling. Final evaluation of the CO readings remained consistent with the last low readings after turning the remaining non-malfunctioning heat units back on, and the occupants were allowed to return. The facility maintenance representative arrived and was briefed on our findings. He reported to the roof and evaluated the suspect unit and verified it was properly shut down with no power to it. He advised he would be getting with the property management company to have repairs made. S13 assisted the staff with returning the children and returned to service. FMO arrived and was briefed by S1.
South	VA	4/17/2018	City of Virginia Beach	Virginia Beach	Cox High School	Public	High School	unknown		unknown		Butane canister leaking inside a classroom	Cox High School evacuated
South	VA	5/31/2018	City of Virginia Beach	Virginia Beach, VA	Bow Creek Presbyterian School	Private	Daycare/Preschool	no	City of Virginia Beach FOIA	18ppm		malfunctioning rooftop furnace	L16 received a phone call from the church saying some people smelled natural gas. L16 arrived on scene and no odor of natural gas. L16 performed air monitoring inside the structure. 12-18PPM of CO was noted on the meter in the hallway and classrooms of the pre-school. L16 upgraded the response and assumed command. L16 evacuated the school portion of the structure approximately 50 children and staff to safer location within the structure. FR01 monitored the school hallway and readings were similar to L16. Issue was isolated to a malfunctioning furnace on the roof. Structure was ventilated and monitored again with all levels within normal limits of 0PPM. Furnace was Red Tagged Repair serviced arrived on scene as fire department was clearing. L16 clear. (NO DETECTORS ON SITE)
South	VA	8/2/2018	Fairfax County	Burke, VA	White Oaks Elementary	Public	Elementary School	yes - monitor	Fairfax Co Fire FOIA	30 ppm		acetylene cylinders outside	School under construction; multi-gas monitor started alerting; cross sensitivity of gases coming from gas cylinders outside, turning into building, accumulating in enclosed space where construction crew working

South	VA	11/29/2018	Arlington County	Arlington, VA	NOVA Kindercare	Private	Daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/12/2018	Fairfax County	Vienna, VA	Vienna Adventist Academy	Private	Elementary School	no	Fairfax Co Fire FOIA	70 ppm		roof top HVAC unit	arrived on scene, investigating odor; in gym found odor and meter readings of 70ppm for CO; school evacuated; HVAC unit on roof shut down – vented gym and turned over to maintenance
South	VA	7/16/2019	Fairfax County	Alexandria, VA	Stratford Landing Elementary	Public	Elementary School	yes	Fairfax Co Fire FOIA	90 ppm		motorized floor cleaner in kitchen	dispatched for CO detector activation in kitchen of elementary school; source narrowed down to motorized floor cleaner charging in kitchen using monitors; cleaner was removed and put into open air
South	VA	9/20/2019	Fairfax County	Alexandria, VA	Bush Hill Elementary	Public	Elementary School	yes	Fairfax Co Fire FOIA	60 ppm		cracked heat exchanger in roof	building had been evacuated prior to arrival of emergency teams; met with big maintenance, speculated cracked heat exchanger in one of the rooftop heating units; gas shut off and building turned over to maintenance team after ventilation
South	VA	10/3/2019	Henrico or Chesterfield County	Richmond			Elementary school	unknown		unknown			10 staff members reported feeling ill; school evacuated due to suspected gas leak
South	VA	10/31/2019	Arlington County	Arlington, VA	Arlington Assembly of God	Private	Daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	11/21/2019		Alexandria	GW Middle School	Public	Middle School	unknown		unknown		Roof top heating unit malfunction	GW Middle School evacuated due to suspected gas leak, odor
South	VA	2/20/2020	City of Virginia Beach	Virginia Beach, VA	Kids Town Learning Center	Private	Daycare	no	Virginia Beach FOIA	72ppm after doors and windows opened for several hours and school had been evacuated (6 hours later)		furnace	Engine 9 and Ladder 7 were dispatched to a CO detector activation that had been brought in after symptoms had been occurring for most of day at 4847 Dolton Dr. Engine 9 and Ladder 7 found readings of 72 parts-per-million and an odor of natural gas in the structure. Staff at the location also advised that there were 74 children plus staff at the facility. Engine 9 upgraded the incident to a flammable adding Rescue 2, Battalion 5, and Safety 1 to the incident. Battalion 5 assumed command upon their arrival, and Rescue 2 assisted Ladder 7 with monitoring and ventilating the structure. Members from Engine 9 assisted with moving all occupants to a nearby business. Members from Engine 9 assisted EMS with patient care. Upon Safety 1s arrival, Safety 1 assisted Rescue 2 driver with evaluating occupants by utilizing their Rad 57 devices. Ladder 7 and Rescue 2 were unable to locate the exact source and secured natural gas to the entire building. Once the gas was secured, Ladder 7 ventilated the structure. Ladder 7 and Rescue 2 continued to monitor the atmospheric conditions in the structure until they returned to normal. Engine 9 and Safety 1 transferred all patients to EMS. 50 plus patients were evaluated by crews on scene. 5 adult patients were transported to Sentara Leigh Hospital by EMS with minor symptoms and elevated Rad 57 readings. 7 refusals were obtained by EMS for patients with elevated Rad 57 readings who did not wish to be transported. F
South	VA	2/28/2020	City of Virginia Beach	Virginia Beach, VA	Kids Town Learning Center	Private	Daycare	yes	Virginia Beach FOIA	45 ppm		furnace	E09 dispatched to a possible CO hazard. Upon arrival E09 assumed Command and found the manager on scene who stated she unlocked the doors to open the business for the day and found all of the CO detectors alerting in the building which had been plugged in after incident that occurred week prior. E09 found 23ppm at the front door. L07 arrived and walked the entire structure and found 45 ppm throughout the rest of the building. The cause of the CO was unable to be determined so L07 shut down the main gas valve on the Charlie side of the structure. The owner of the building arrived on scene and was advised of the incident. He stated he had crews coming that day to find and repair the leak. E09 advised the on duty inspector of the incident and he told E09 to place the structure on Fire Watch to advise the FMO office. L07 ventilated the structure and E09 red tagged the main gas shut off. VNG arrived and put a lock on the gas shut off valve. No other hazards were found and the business owner was advised that the building could not be used for normal business until the leak is repaired and the FMO office is notified. E09 and L07 cleared and went back in service.
South	VA	8/7/2020	Fairfax County	Falls Church, VA	Bailey's Elementary School	Public	Elementary School	no	Fairfax Co Fire FOIA	unknown		using gas blower it boiler room	dispatched to possible gas leak due to odor; found workers using gas powered blower to clean floors in boiler room; CO accumulation and odors produced
South	VA	2/17/2021	Fairfax County	Annandale, VA	Poe Middle School	Public	Middle School	yes	Fairfax Co Fire FOIA	375-500 ppm		newly installed but faulty HVAC unit supplying air to rear gymnasium	partially evacuated two-story building; carbon monoxide alarm went off, but did not note location; hazmat and fire teams used gas meters; noting 0 ppm upon entry, 5-7 ppm through hallway/boiler room; 1-ppm in kitchen, and as they move further into the hallway into the school hit 100ppm; 150-375 in hallway surrounding gym; fire alarm pulled to assist in evacuating remainder of property; rear gymnasium found to have 500 ppm using school's CO meter;
Northeast	VT	2/5/2010	Chittenden County	Burlington	name not provided	unknown	Unknown	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		new boiler malfunctioning	Elevated CO levels in boiler room
Northeast	VT	1/6/2011	Windham County	Putney	name not provided	unknown	Elementary/Middle	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		gas leak caused by furnace	11 students, 1 adult. treated for CO poisoning
Midwest	WI	1/7/2009	Milwaukee County	Milwaukee	Oliver Wendell Holmes Elementary	Public	Elementary	unknown	press coverage	unknown		Malfunctioning boiler	Students evacuated due to CO
Midwest	WI	3/22/2018	Waukesha County	Oconomowoc	Oconomowoc High School	Public	High school	unknown	press coverage	unknown	64 students and staff transported via ambulance to local hospitals; additional 40 walk in patients from the school came to ER on their own;	source unknown in gymnasium/auditorium area	additional 72 students/staff assessed on scene for symptoms, did not require transport;
Midwest	WI	1/24/2019	Ozaukee County	Cedarburg	KinderCare	Private	Daycare/Preschool	yes	press coverage	unknown		Malfunctioning furnace/ventilation	80+ students/teachers evacuated safely thanks to CO detectors alerting in multiple areas of property during snowfall
Midwest	WI	7/2/2020	Dane County	Mount Horeb	Hearts & Hands Children's Center	Private	Daycare/Preschool	no, but portable on construction team	press coverage	unknown	5 workers hospitalized; 1 of them in serious condition	propane powered floor machine being used by construction team while children in property	Officials said construction workers were using a propane powered floor machine on the gym floor. They said a carbon monoxide monitor was being used by the crews, but it did not alert them to the rising levels. Officials said a total of 60 people, including 54 students, were inside the center during the incident were tested. None of the students showed symptoms or were hospitalized.
South	WV	12/12/2017	Kanawha County	Charleston	Montrose Elementary	Public	Elementary	no	press coverage	60 ppm		heat exchange box cracked on rooftop heating unit	gym area where students were had 60ppm, nowhere near the unit that was actually malfunctioning which was much higher than that

West	WY	12/30/2014	Fremont County	Fort Washakie	Fort Washakie School	Public	Elementary and middle	no	press coverage	unknown	4 students transported to hospital, others evaluated on scene	source unidentified, but theories based on day's events/conditions/location of elevated CO: a school bus exhaust pipe too close to an intake for the school's air system, snow blocking vents as well	Firefighters were called to the school's gym around 10 a.m. this morning for a report of a possible gas leak. The middle school girls basketball team was practicing and several of them started feeling light-headed, which led to the call. According to radio traffic, one of them passed out.
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Public Input No. 402-NFPA 101-2021 [New Section after 16.3.5.4]

16.3.5.3 Portable Fire Extinguishers.

Portable fire extinguishers shall be provided in accordance with Section 9.9.

Statement of Problem and Substantiation for Public Input

Reason: The concept of trading off portable extinguishers in sprinklered buildings has been largely abandoned by fire protection principles. The National Fire Codes of both NFPA 1 and the ICC- IFC require portable fire extinguishers in all occupancy classes including storage which addresses property protection and property loss as well as, the safety of the building occupants.

A portable fire extinguisher is an effective item of fire protection which allows for small fires to be tackled by the occupants of a building and saves 100s of thousands of dollars in property loss.

It is important to appreciate that while different to official assumptions and desire for evacuation, research shows the public's priorities to be rational and appropriate. The public's experience of fire is vastly different to that of the professionals involved in the planning for and responding to fire.

Some key findings from research studies have been identified and the public's-oriented outcomes include, avoidance of embarrassment, inconvenience, damage to the premises or property, concern for others, pets and possessions and lastly personal injury.

The evidence further identifies that the public is willing and will accept minor consequences in their pursuit of achieving personal humanistic priorities and instinct. Concern for people, pets and possessions are strong and established drivers of behavior in the event of a fire. Therefore, this should be no surprise to see it as an influential feature of most individual's response to a fire.

Limiting a fire to the smallest area within a building is a sensible aspiration.

Official policy and attitudes are most singularly directed at avoiding the risk when the public encounters a fire. This is well meaning but the research has shown that this DOES NOT I REPEAT DOES NOT align with the publics' attitude or the ability of the general public.

Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. NFPA 10 states: 5.1.2 The selection of extinguishers shall be independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment. Other codes, and other occupancy chapters have abandoned this concept in recognition of the fact that portable extinguishers are a valuable, cost-effective layer of fire protection, and are intended for a different purpose than sprinklers. To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

A significant amount of data has been collected to support the requirement for portable extinguishers, including: WPI/EKU Study: "Ordinary People and the Effective Operation of Fire Extinguishers", which clearly showed that the vast majority of people who have never used an extinguisher can operate one safely and effectively.

2013 NFPA Report: "U.S. Experience with Sprinklers" reports that there were 48,460 reported structure fires annually in buildings equipped with sprinkler systems between 2007-2011, and 40,440 (83 percent) never grew large enough to activate the system. Based on this report alone, it's clear that people are reacting to small fires and extinguishing them prior to sprinkler activation.

A study by Richard Bukowski in 2014, the life cycle cost of portable fire extinguishers was determined to be between one and a half and four cents per foot annually; if coverage could be maximized to that allowable by code, the cost drops to between a half cent and one cent per foot annually. It's unlikely that any other layer of fire protection is so cost-effective.

Submitter Information Verification

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Submittal Date: Tue Jun 01 14:33:43 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: The Code is focused on life safety and therefore the committee does not want to encourage staff to attempt using extinguishers, which could delay activation of the fire alarm system and the evacuation of occupants.



Public Input No. 330-NFPA 101-2021 [Section No. 16.4.5]

16.4.5 Alcohol-Based Hand-Rub Dispensers.

~~Alcohol~~ The installation and maintenance of alcohol -based hand-rub dispensers shall be protected and the storage of alcohol-based hand-rub solutions in accordance with 8.7.3. 4, unless all of the following requirements are met:

- ~~Dispensers shall be installed in rooms or spaces separated from corridors and exits.~~
- ~~The maximum individual dispenser fluid capacity shall be as follows:~~
 - (1) ~~0.32 gal (1.2 L) for dispensers in rooms~~
 - (2) ~~0.53 gal (2.0 L) for dispensers in suites of rooms~~
- ~~The dispensers shall be separated from each other by horizontal spacing of not less than 48 in. (1220 mm).~~
- ~~Storage of quantities greater than 5 gal (18.9 L) in a single fire compartment shall meet the requirements of NFPA 30.~~
- ~~The dispensers shall not be installed over or directly adjacent to an ignition source.~~
Dispensers installed directly over carpeted floors shall be permitted only in sprinklered rooms or spaces 3 shall be permitted .

Statement of Problem and Substantiation for Public Input

Our current health situation with the latest viral outbreak has led to a need to increase the number of alcohol based hand sanitizer dispensers within many different types of occupancies. Although alcohol based hand sanitizer was addressed in this chapter and many other requirements were also located in this chapter, the requirements did not apply to storage of sanitizer when not in use or many other provisions that could be applicable. Providing a pointer to section 8.7.3.3 will provide a direct link to all the requirements needed for safe installation, use, and maintenance of alcohol based hand rub dispensers as well as the storage of any alcohol based hand rub materials not in use.

Currently Robert Upson is also chairing an NFPA 30 task group, and Bruce Johnson is chairing an NFPA 1 task group to address this subject within those standards respectively. So a recommendation should be made to this committee to put forth a committee input and create a task group to review this requirement throughout and ensure correlation with NFPA 1 and NFPA 30 task groups that are already reviewing this.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 316-NFPA 101-2021 [Section No. 8.7.3.3]	
Public Input No. 324-NFPA 101-2021 [New Section after 11.4.3.6]	
Public Input No. 325-NFPA 101-2021 [Section No. 12.4.6]	
Public Input No. 326-NFPA 101-2021 [Section No. 13.4.6]	
Public Input No. 327-NFPA 101-2021 [Section No. 14.4.5]	
Public Input No. 329-NFPA 101-2021 [Section No. 15.4.5]	
Public Input No. 332-NFPA 101-2021 [Section No. 16.6.4]	
Public Input No. 333-NFPA 101-2021 [Section No. 17.4.5]	

[Public Input No. 334-NFPA 101-2021 \[Section No. 17.6.4\]](#)
[Public Input No. 336-NFPA 101-2021 \[Section No. 18.4.4\]](#)
[Public Input No. 337-NFPA 101-2021 \[Section No. 19.4.4\]](#)
[Public Input No. 339-NFPA 101-2021 \[Section No. 20.4.4\]](#)
[Public Input No. 340-NFPA 101-2021 \[Section No. 21.4.4\]](#)
[Public Input No. 342-NFPA 101-2021 \[Section No. 22.4.7\]](#)
[Public Input No. 344-NFPA 101-2021 \[Section No. 23.4.7\]](#)
[Public Input No. 347-NFPA 101-2021 \[Section No. 26.3.2.1\]](#)
[Public Input No. 349-NFPA 101-2021 \[Section No. 28.4.2\]](#)
[Public Input No. 357-NFPA 101-2021 \[Section No. 30.4.3\]](#)
[Public Input No. 360-NFPA 101-2021 \[Section No. 32.2.4\]](#)
[Public Input No. 361-NFPA 101-2021 \[Section No. 32.3.4.2\]](#)
[Public Input No. 363-NFPA 101-2021 \[Section No. 33.2.4\]](#)
[Public Input No. 364-NFPA 101-2021 \[Section No. 33.3.4.2\]](#)
[Public Input No. 365-NFPA 101-2021 \[Section No. 36.4.6\]](#)
[Public Input No. 367-NFPA 101-2021 \[Section No. 37.4.6\]](#)
[Public Input No. 368-NFPA 101-2021 \[Section No. 38.4.4\]](#)
[Public Input No. 369-NFPA 101-2021 \[Section No. 39.4.4\]](#)
[Public Input No. 370-NFPA 101-2021 \[Section No. 40.4.3\]](#)
[Public Input No. 371-NFPA 101-2021 \[Section No. 42.4.3\]](#)

Submitter Information Verification

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Committee: SAF-END

Committee Statement

Resolution: [FR-6709-NFPA 101-2021](#)
Statement: The TC agrees that the language should refer to 8.7.3.3 for requirements relating to ABHR dispensers.



Public Input No. 405-NFPA 101-2021 [New Section after 16.6.3.5]

16.6.3.6 Portable Fire Extinguishers.

Portable fire extinguishers shall be provided in accordance with Section 9.9.

Statement of Problem and Substantiation for Public Input

Reason: The concept of trading off portable extinguishers in sprinklered buildings has been largely abandoned by fire protection principles. The National Fire Codes of both NFPA 1 and the ICC- IFC require portable fire extinguishers in all occupancy classes including storage which addresses property protection and property loss as well as, the safety of the building occupants.

A portable fire extinguisher is an effective item of fire protection which allows for small fires to be tackled by the occupants of a building and saves 100s of thousands of dollars in property loss.

It is important to appreciate that while different to official assumptions and desire for evacuation, research shows the public's priorities to be rational and appropriate. The public's experience of fire is vastly different to that of the professionals involved in the planning for and responding to fire.

Some key findings from research studies have been identified and the public's-oriented outcomes include, avoidance of embarrassment, inconvenience, damage to the premises or property, concern for others, pets and possessions and lastly personal injury.

The evidence further identifies that the public is willing and will accept minor consequences in their pursuit of achieving personal humanistic priorities and instinct. Concern for people, pets and possessions are strong and established drivers of behavior in the event of a fire. Therefore, this should be no surprise to see it as an influential feature of most individual's response to a fire.

Limiting a fire to the smallest area within a building is a sensible aspiration.

Official policy and attitudes are most singularly directed at avoiding the risk when the public encounters a fire. This is well meaning but the research has shown that this DOES NOT I REPEAT DOES NOT align with the publics' attitude or the ability of the general public.

Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. NFPA 10 states: 5.1.2 The selection of extinguishers shall be independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment. Other codes, and other occupancy chapters have abandoned this concept in recognition of the fact that portable extinguishers are a valuable, cost-effective layer of fire protection, and are intended for a different purpose than sprinklers. To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

A significant amount of data has been collected to support the requirement for portable extinguishers, including: WPI/EKU Study: "Ordinary People and the Effective Operation of Fire Extinguishers", which clearly showed that the vast majority of people who have never used an extinguisher can operate one safely and effectively.

2013 NFPA Report: "U.S. Experience with Sprinklers" reports that there were 48,460 reported structure fires annually in buildings equipped with sprinkler systems between 2007-2011, and 40,440 (83 percent) never grew large enough to activate the system. Based on this report alone, it's clear that people are reacting to small fires and extinguishing them prior to sprinkler activation.

A study by Richard Bukowski in 2014, the life cycle cost of portable fire extinguishers was determined to be between one and a half and four cents per foot annually; if coverage could be maximized to that allowable by code, the cost drops to between a half cent and one cent per foot annually. It's unlikely that any other layer of fire protection is so cost-effective.

Submitter Information Verification

Submitter Full Name: Marvin Garriss
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Affiliation: International Fire Marshal's Association - Georgia Chapter
DBA: The Georgia Fire Prevention Association and FEMA
Street Address:
City:
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Zip:
Submittal Date: Tue Jun 01 14:42:36 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: The Code is focused on life safety and therefore the committee does not want to encourage staff to attempt using extinguishers, which could delay activation of the fire alarm system and the evacuation of occupants.



Public Input No. 332-NFPA 101-2021 [Section No. 16.6.4]

16.6.4 Alcohol-Based Hand-Rub Dispensers.

The installation and maintenance of Alcohol-based hand-rub dispensers shall be protected and the storage of alcohol-based hand-rub solutions in accordance with 8.7.3.1, unless all of the following requirements are met:

- ~~Dispensers shall be installed in rooms or spaces separated from corridors, stairways, and exterior doors.~~
- ~~The maximum individual dispenser fluid capacity shall be as follows:~~
 - (1) ~~0.32 gal (1.2 L) for dispensers in rooms~~
 - (2) ~~0.53 gal (2.0 L) for dispensers in suites of rooms~~
- ~~The dispensers shall be separated from each other by horizontal spacing of not less than 48 in. (1220 mm).~~
- ~~Storage of quantities greater than 5 gal (18.9 L) in a single fire compartment shall meet the requirements of NFPA 30.~~
- ~~The dispensers shall not be installed over or directly adjacent to an ignition source.~~
Dispensers installed directly over carpeted floors shall be permitted only in sprinklered rooms or spaces 3 shall be permitted .

Statement of Problem and Substantiation for Public Input

Our current health situation with the latest viral outbreak has led to a need to increase the number of alcohol based hand sanitizer dispensers within many different types of occupancies. Although alcohol based hand sanitizer was addressed in this chapter and many other requirements were also located in this chapter, the requirements did not apply to storage of sanitizer when not in use or many other provisions that could be applicable. Providing a pointer to section 8.7.3.3 will provide a direct link to all the requirements needed for safe installation, use, and maintenance of alcohol based hand rub dispensers as well as the storage of any alcohol based hand rub materials not in use.

Currently Robert Upson is also chairing an NFPA 30 task group, and Bruce Johnson is chairing an NFPA 1 task group to address this subject within those standards respectively. So a recommendation should be made to this committee to put forth a committee input and create a task group to review this requirement throughout and ensure correlation with NFPA 1 and NFPA 30 task groups that are already reviewing this.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 316-NFPA 101-2021 [Section No. 8.7.3.3]	
Public Input No. 324-NFPA 101-2021 [New Section after 11.4.3.6]	
Public Input No. 325-NFPA 101-2021 [Section No. 12.4.6]	
Public Input No. 326-NFPA 101-2021 [Section No. 13.4.6]	
Public Input No. 327-NFPA 101-2021 [Section No. 14.4.5]	
Public Input No. 329-NFPA 101-2021 [Section No. 15.4.5]	
Public Input No. 330-NFPA 101-2021 [Section No. 16.4.5]	

[Public Input No. 333-NFPA 101-2021 \[Section No. 17.4.5\]](#)
[Public Input No. 334-NFPA 101-2021 \[Section No. 17.6.4\]](#)
[Public Input No. 336-NFPA 101-2021 \[Section No. 18.4.4\]](#)
[Public Input No. 337-NFPA 101-2021 \[Section No. 19.4.4\]](#)
[Public Input No. 339-NFPA 101-2021 \[Section No. 20.4.4\]](#)
[Public Input No. 340-NFPA 101-2021 \[Section No. 21.4.4\]](#)
[Public Input No. 342-NFPA 101-2021 \[Section No. 22.4.7\]](#)
[Public Input No. 344-NFPA 101-2021 \[Section No. 23.4.7\]](#)
[Public Input No. 347-NFPA 101-2021 \[Section No. 26.3.2.1\]](#)
[Public Input No. 349-NFPA 101-2021 \[Section No. 28.4.2\]](#)
[Public Input No. 354-NFPA 101-2021 \[Section No. 29.4.2\]](#)
[Public Input No. 357-NFPA 101-2021 \[Section No. 30.4.3\]](#)
[Public Input No. 360-NFPA 101-2021 \[Section No. 32.2.4\]](#)
[Public Input No. 361-NFPA 101-2021 \[Section No. 32.3.4.2\]](#)
[Public Input No. 363-NFPA 101-2021 \[Section No. 33.2.4\]](#)
[Public Input No. 364-NFPA 101-2021 \[Section No. 33.3.4.2\]](#)
[Public Input No. 365-NFPA 101-2021 \[Section No. 36.4.6\]](#)
[Public Input No. 367-NFPA 101-2021 \[Section No. 37.4.6\]](#)
[Public Input No. 368-NFPA 101-2021 \[Section No. 38.4.4\]](#)
[Public Input No. 369-NFPA 101-2021 \[Section No. 39.4.4\]](#)
[Public Input No. 370-NFPA 101-2021 \[Section No. 40.4.3\]](#)
[Public Input No. 371-NFPA 101-2021 \[Section No. 42.4.3\]](#)

Submitter Information Verification

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Submittal Date: Tue Jun 01 09:58:40 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6710-NFPA 101-2021](#)
Statement: The TC agrees that the language should refer to 8.7.3.3 for requirements relating to ABHR dispensers.



Public Input No. 167-NFPA 101-2021 [Section No. 16.7.6]

16.7.6 Integrated Fire Protection and Life Safety Systems.

16.7.6.1 Building security features included in the built environment are to be integrated and must comply with both the life safety features in this chapter and the building's emergency action planning, evacuation planning, and training in accordance with 4.8.

16.7.6.2 Integrated fire protection and life safety systems shall be tested in accordance with 9.11.4.1.

Statement of Problem and Substantiation for Public Input

This change is being submitted on behalf of the SAF-End task group to integrate security and life safety in class room environments. With the increased emphasis on MNS/ECS, it is intended to provide guidance to ensure both life safety and security are considered.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 164-NFPA 101-2021 [Section No. 4.8.2.1]</u>	
<u>Public Input No. 165-NFPA 101-2021 [Section No. 14.7.6]</u>	
<u>Public Input No. 166-NFPA 101-2021 [New Section after 15.7.6]</u>	
<u>Public Input No. 168-NFPA 101-2021 [Section No. 17.7.6]</u>	
<u>Public Input No. 165-NFPA 101-2021 [Section No. 14.7.6]</u>	
<u>Public Input No. 166-NFPA 101-2021 [New Section after 15.7.6]</u>	
<u>Public Input No. 168-NFPA 101-2021 [Section No. 17.7.6]</u>	

Submitter Information Verification

Submitter Full Name: Maria Marks
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Affiliation: SAF-End task group
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Zip:
Submittal Date: Tue May 18 11:32:02 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: FR-6741-NFPA 101-2021

Statement: This change is being submitted on behalf of the SAF-End task group to integrate security and life safety in daycare and educational environments. With the increased emphasis on MNS/ECS, it is intended to provide guidance to ensure both life safety and security are considered.



Public Input No. 288-NFPA 101-2021 [Section No. 17.2.2.2.6]

17.2.2.2.6 Locking of Classroom Doors and Doors to Other Client Care Spaces.

17.2.2.2.6.1

Classroom doors and doors to other client care spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged from the egress side of the door without opening the door.
- (2) The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
- (3)* ~~Two nonsimultaneous~~ releasing motions shall be permitted where approved by the authority having jurisdiction provided the releasing does not require simultaneous operations, and provided the door is not equipped with panic hardware or fire exit hardware.
- (4) The releasing mechanism (s) shall not require tight grasping, tight pinching, or twisting of the wrist to operate.
- (5) The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (6) Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- (7) The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
- (8) The locking means shall not ~~modify the~~ impair the operation of ~~affect the listing of the~~ door closer, the lockset, panic hardware, or fire exit hardware ~~or impair their operation~~.
- (9) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (10) The emergency action plan, required by 17.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- (11) Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 17.7.2.

17.2.2.2.6.2

Where existing classroom doors and doors to client care spaces are replaced, they shall comply with the provisions of 16.2.2.2.6.

Statement of Problem and Substantiation for Public Input

The proposed revisions in Item 3 regarding “not require simultaneous operations” for the two releasing motions is to align with a similar requirement in 7.2.1.5.3.7 (where two releasing motions are permitted). In addition, in Item 3, it’s important to recognize that doors which have panic hardware or fire exit hardware should not be permitted more than one releasing motion.

The addition of new Item 4 is intended to remind the user of this section of the code of this important requirement for the operation of door releasing mechanisms.

The revisions to what was Item 7, now Item 8, are intended to address modifications to door hardware intended to specifically address needs for locking doors from inside of the room. The current language

explicitly prohibits modifications to hardware. However, hardware manufacturers have and are developing modifications to door hardware which complements new and / or existing door hardware.

This is an example of a locking device which is lockable from inside the room, and is installed along with a typical lever-operated lockset where the lockset is not lockable from inside the room:
<https://securitech.com/safebolt>.

This is an example of a modification to panic hardware which converts the panic hardware to be lockable from inside the room with a thumb turn: <https://idighardware.com/2021/04/product-update-von-duprin-emergency-secure-lockdown-es/>

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 285-NFPA 101-2021 [Section No. 14.2.2.2.4]	
Public Input No. 286-NFPA 101-2021 [Section No. 15.2.2.2.4]	
Public Input No. 287-NFPA 101-2021 [Section No. 16.2.2.2.6]	
Public Input No. 289-NFPA 101-2021 [Section No. 38.2.2.2.2]	
Public Input No. 290-NFPA 101-2021 [Section No. 39.2.2.2.2]	

Submitter Information Verification

Submitter Full Name: John Woestman
Organization: Kellen Company
Affiliation: Builders Hardware Manufacturers Association (BHMA)
Street Address:
City:
State:
Zip:
Submittal Date: Mon May 31 11:53:11 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6707-NFPA 101-2021](#)

Statement: The proposed revisions in item 4 would require a wholesale replacement of classroom door locks that is not justified.

The revisions to items 3 and 7 clarify the existing language.



Public Input No. 447-NFPA 101-2021 [Section No. 17.2.2.2.6.1]

17.2.2.2.6.1

Classroom doors and doors to other client care spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged from the egress side of the door without opening the door.
- (2) The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
- (3)* ~~Two nonsimultaneous~~ The releasing motions shall be permitted where approved by the authority having jurisdiction. mechanism shall open the door leaf with not more than one releasing motion.
- (4) The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (5) Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- (6) The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
- (7) The locking means shall not modify the door closer, panic hardware, or fire exit hardware or impair their operation.
- (8) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (9) The emergency action plan, required by 17.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- (10) Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 17.7.2.

Statement of Problem and Substantiation for Public Input

BHMA has long advocated for this foundation of life safety regarding door operations in schools – classroom doors need to be openable for egress with not more than one releasing motion. Permitting doors on classrooms to require up to two releasing motions is contrary to BHMA's long-standing position, and is contrary to the established guidance of the National Association of State Fire Marshals (NASFM).

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 445-NFPA 101-2021 [Section No. 15.2.2.2.4.1]	

Submitter Information Verification

Submitter Full Name: John Woestman
Organization: Kellen Company
Affiliation: Builders Hardware Manufacturers Association (BHMA)
Street Address:

City:

State:

Zip:

Submittal Date: Tue Jun 01 16:40:58 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: Two nonsimultaneous operations are necessary for existing daycare occupancies. The door locking provisions were always intended to be a part of a package or suite of protection strategies, and as such the existing provisions within the code provide an adequate degree of life safety within existing occupancies.



Public Input No. 72-NFPA 101-2021 [Section No. 17.2.2.2.6.1]

17.2.2.2.6.1

Classroom doors and doors to other client care spaces shall be permitted to be locked provided that the locking means is approved and all of the following conditions are met:

- (1) The locking means shall be capable of being engaged from the egress side of the door without opening the door.
- (2) The unlocking and unlatching from the egress side of the door shall be accomplished without the use of a key, tool, or special knowledge or effort.
- (3)* Two nonsimultaneous releasing motions shall be permitted where approved by the authority having jurisdiction.
- (4) Where more than one releasing device is installed on any door, any locking device shall be readily distinguishable as locked.
- (5) The releasing mechanism for unlocking and unlatching shall be located at a height not less than 34 in. (865 mm) and not exceeding 48 in. (1220 mm) above the finished floor.
- (6) Locks, if remotely engaged, shall be unlockable from the egress side of the door without the use of a key, tool, or special knowledge or effort.
- (7) The door shall be capable of being unlocked and opened from outside the room with the necessary key or other credential.
- (8) The locking means shall not modify the door closer, panic hardware, or fire exit hardware or impair their operation.
- (9) Modifications to fire door assemblies, including door hardware, shall be in accordance with NFPA 80.
- (10) The emergency action plan, required by 17.7.1, shall address the use of the locking and unlocking means from both sides of the door.
- (11) Staff shall be drilled in the engagement and release of the locking means, from both sides of the door, as part of the emergency egress drills required by 17.7.2.

Statement of Problem and Substantiation for Public Input

The purpose of this proposal is to clarify the position of locking hardware which is permitted to be installed as a secondary device on doors to classrooms and other instructional spaces and to reduce the possible confusion over the position of such locking hardware to persons seeking to open the door. In an emergency, the operation of such hardware, which may already be unlocked, may actually secure the door and cause a delay in the opening of the door. The wording of this arrangement is taken from Code text which currently exists in Paragraph 7.2.1.5.6.2 (4) regarding key operated locks on certain door assemblies.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 71-NFPA 101-2021 [Section No. 15.2.2.2.4.1]</u>	Similar arrangement for Existing Educational Occupancies.

Submitter Information Verification

Submitter Full Name: Kenneth Bush

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City:

State:

Zip:

Submittal Date: Mon Apr 26 13:56:47 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: The proposed revision would result in a requirement for wholesale replacement of classroom door locks that is not justified.



Public Input No. 102-NFPA 101-2021 [Section No. 17.2.11.1.1]

17.2.11.1.1

Every room or space greater than 250 ft² (23.2 m²) and normally subject to client occupancy shall have not less than one outside window for emergency rescue that complies with all of the following, unless otherwise permitted by 17.2.11.1.2:

- (1) Such windows shall be openable from the inside without the use of tools and shall provide a clear opening of not less than 20 in. (510 mm) in width, 24 in. (610 mm) in height, and 5.7 ft² (0.5 m²) in area.
- (2) The bottom of the opening shall be not more than 44 in. (1120 mm) above the floor
- (3) Permanently fixed stairs or ramp are permitted to be used to allow occupants to be within 44 in. of the bottom window sill. The clear width of the stairs or ramp shall be at least the width of the window or 36 in. whichever is wider. The stairs or ramp and access thereto shall not be obstructed.
- (4) The clear opening shall allow a rectangular solid, with a width and height that provides not less than the required 5.7 ft² (0.5 m²) opening and a depth of not less than 20 in. (510 mm), to pass fully through the opening.
- (5) Windows for rescue that have a sill height below the adjacent finished ground level shall comply with 24.2.2.3.3(4).

Statement of Problem and Substantiation for Public Input

Existing window locations may be more than 44 inches off the floor and this language would permit permanent structures (stairs or ramps) to be installed to bring a window for rescue into compliance. The structure would be permanent (unmovable) and required to be unobstructed. This would prevent them from being used for storage or blocked by storage or furnishings.

Windows for rescue could be found in below grade classrooms and there is no reference to requirements related to window wells. This language provides minimum sizing for the window well to permit full opening of the window as well as egress out of the window well.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 101-NFPA 101-2021 [Section No. 16.2.11.1.1]	
Public Input No. 99-NFPA 101-2021 [Section No. 15.2.11.1.1]	
Public Input No. 100-NFPA 101-2021 [Section No. 14.2.11.1.1]	

Submitter Information Verification

Submitter Full Name: Catherine Stashak
Organization: Office of the Illinois State Fire Marshal
Street Address:
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State:
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Submittal Date: Wed May 05 15:08:27 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6745-NFPA 101-2021](#)

Statement: Existing window locations may be more than 44 inches off the floor and this language would permit permanent structures (stairs or ramps) to be installed to bring a window for rescue into compliance.

Windows for rescue could be found in below grade client occupancies and there is no reference to requirements related to window wells. This language provides minimum sizing for the window well to permit full opening of the window as well as egress out of the window well.

The same revisions were proposed in the existing educational chapter.



Public Input No. 228-NFPA 101-2021 [Section No. 17.3.4.5]

17.3.4.5 Detection.

A smoke detection system in accordance with Section 9.6 shall be installed in day-care occupancies, other than those housed in one room or those housing clients capable of self-preservation where no sleeping facilities are provided, and such system shall comply with both of the following:

- (1) Detectors shall be installed on each story in front of the doors to the stairways and in the corridors of all floors occupied by the day-care occupancy.
- (2) Detectors shall be installed in lounges, recreation areas, and sleeping rooms in the day-care occupancy.

17.3.4.5.1 Carbon monoxide detection systems

Carbon monoxide detectors in accordance with Section 9.12 shall be provided in existing daycare occupancies in the locations specified as follows:

- (1) Carbon monoxide detectors shall be installed on the ceilings of rooms containing permanently installed fuel-burning appliances.
- (2) Carbon monoxide detectors shall be installed centrally located within occupiable spaces served by the first supply air register from a permanently installed, fuel-burning HVAC system.
- (3) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to a communicating attached garage.
- (4) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to an attached garage with a separation wall constructed of gypsum wallboard.

17.3.4.5.2

Where carbon monoxide detectors are installed in accordance with 17.3.4.5.1(1), the alarm signal shall be automatically transmitted to an approved on-site location or to an off-premises location in accordance with NFPA 72.

17.3.4.5.3

Carbon monoxide detectors as specified in 17.3.4.5.1 shall not be required in the following locations:

- (1) Garages
- (2) Occupiable spaces with communicating attached garages that are open parking structures as defined in 3.3.284.8.4
- (3) Occupiable spaces with communicating attached garages that are mechanically ventilated in accordance with the applicable mechanical code
- (4) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where the garage is an open parking structure as defined in 3.3.284.8.4
- (5) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where the garage is mechanically ventilated in accordance with the mechanical code

Additional Proposed Changes

File Name

Description

Approved

Unprotected_A_Case_Study_2021_2_.pdf

Case study (created by me)
compiled from 200 documented
cases of Carbon Monoxide incidents
in schools, daycares in U.S.

CO_Incidences_in_Schools_Working_List_-_Attributed_to_CO_incidents_1_.pdf

Compiled list of 200 incidents of
carbon monoxide incidents in US
schools, daycares – shows sources
(where identified), number of
injuries, dates and types of schools
served

Statement of Problem and Substantiation for Public Input

Chapter 14, Section 14.3.4.4 mandates the installation of carbon monoxide detectors or alarms in new school construction where there is potential risk for accidental CO poisoning from known sources, such as fuel-burning HVAC systems and attached garage.

But there is equivalent risk for such exposures in existing school properties, as well as in new and existing daycare occupancies – in fact more so.

In existing educational occupancies, the risk of CO poisoning is likely higher due to aging fuel-burning appliances, deteriorating pipes and ducts, and out of date construction.

In new and existing daycare occupancies, CO poisoning could be far more devastating to a developing child – especially when these children are unable to communicate the onset of symptoms, and often sleep on the property itself.

In Virginia, less than 5% of Virginia's 2,100+ public schools were built in 2015 or later, leaving 95% of public school properties without detection requirements unless new systems were installed. Over 90% of the schools I spoke to reported having zero CO detection on site. This didn't include daycares or private schools. That's a lot of students, teachers, and community members left unprotected.

CO exposure is severely underreported in schools due to aging buildings with lack of hardwired connection to emergency services, outdated detection protocols

And due to CO's general ability to mimic other illnesses common in children at all times of year – CO likely isn't on the suspect list when a child complains of headache, stomachache or tiredness.

While I will be submitting research to the NFPA for consideration for stronger protection in Educational and Daycare Occupancies (new or existing), I believe the first step is to make the existing carbon monoxide detection code uniform in any location where children are cared for on a commercial property. I am asking for the committee to approve the revision attached, which makes carbon monoxide detection in Existing Daycare Occupancies the same as New Educational Occupancies.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 226-NFPA 101-2021 [Section No. 15.3.4.4]	
Public Input No. 227-NFPA 101-2021 [Section No. 16.3.4.5]	

Submitter Information Verification

Submitter Full Name: Nikki Zellner

Organization:

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State:

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Submittal Date: Fri May 28 10:05:23 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6681-NFPA 101-2021](#)

Statement: The TC agrees that CO detection is necessary in existing daycare occupancies in line with the proposed requirements for new daycare occupancies. Further review is needed into the chapter 9 requirements. The TC asks the Correlating Committee to look at the definitions for carbon monoxide alarm and carbon monoxide detector.

Modifications were made to match TC actions on PI's 149, 150, 31, and 32.

Sounding the alarm on the *lack of* and *need for* carbon monoxide protection in educational and daycare occupancies

UNPROTECTED: A CASE STUDY OF CARBON MONOXIDE IN U.S. SCHOOLS AND DAYCARES

Brought to you by
Nikki James Zellner
CarbonMonoxideInSchools.org
In partnership with NCOAA

CarbonMonoxideInSchools.org



NIKKI JAMES ZELLNER
MOM OF SCHOOL CO SURVIVORS



OVERVIEW

In February 2020, my two children, ages 4 and 3, were poisoned by carbon monoxide at their Virginia preschool. Five adults and one child were taken to local hospitals for their injuries. We were lucky, as it could have been lethal. Carbon monoxide is unlike any other public health hazard out there. It is a colorless, odorless, tasteless gas. The danger is real, common and should be treated as such in schools and daycares. And even though the technology is available for detection that can prevent injury to our children, teachers, staff and community members, more often than not our schools aren't using it.

The data in this report is compiled from 200 publicly documented instances of carbon monoxide exposures in U.S. schools and daycares from 2004 - 2021, using press coverage, government testimony and FOIA requested incident reports (in Virginia specifically) as sources.

OBJECTIVE

The objective for this case study is to start a national conversation – that includes and holds accountable all stakeholders – to understand that carbon monoxide exposures and poisonings are happening in U.S. schools and daycares more often than we know. It is impacting a greater number of occupants, stemming from a wider variety of sources, spreaders and situations. The majority of these occupancies are unprotected, due to the *option*, and not requirement, of installing detection on site. Detection regulations need to be reviewed by the very parties that develop the recommendations, but they also need to be understood by the very communities these regulations are meant to protect.

Data related to carbon monoxide exposures and incidents in schools is limited – not because it's not happening, but because it's not being recorded (and therefore reported on). Lack of detection signaling an exposure occurrence, emergency services dispatched to "medical calls" that end up being CO-related, and the option of fire departments reporting to NFIRS are just some of the reasons for this. The largest issue? Carbon monoxide being treated as a non-suspect, instead of a likely candidate, even when group symptoms occur.

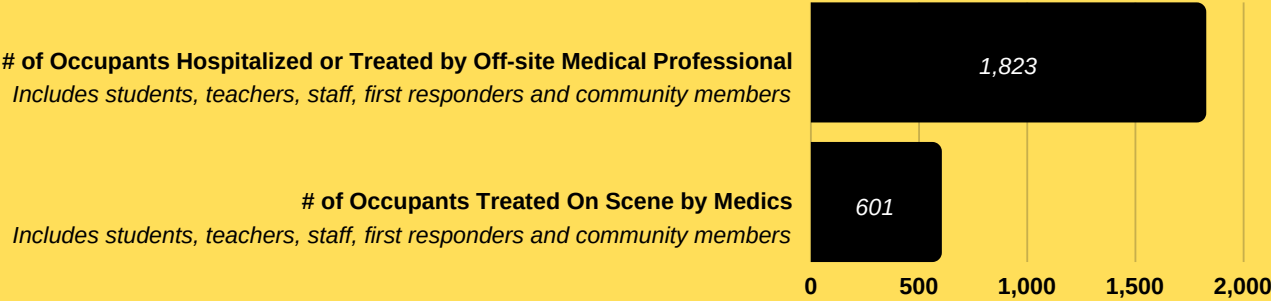
Using the Internet, I was able to find 200 press-reported incidents of carbon monoxide-confirmed exposures and poisonings in U.S. schools and commercial daycares. This data does not include in-home daycares. This data does not include "false alarms" or "malfunctioning/low battery detectors." This data does include discoverable evacuation-only incidents, as well as incidents where injuries were reported. All involved emergency services on scene. Full incident data is available at CarbonMonoxideInSchools.org.

KEY FINDINGS

- **At least 2,400 children, teachers, school staff and community members have been injured** due to carbon monoxide exposure on school properties. There have been zero deaths to date (in this time period), and there were zero instances of "intentional" poisoning (i.e. suicide attempts).
- In schools with known injury-resulting carbon monoxide exposures (versus evacuation only), **the average number of occupants injured was 27** (those requiring hospitalization, treated by an off site medical professional or being treated on scene by first responders). An overwhelming majority of these injuries were sustained by children. The amount injuries that actually occurred but were not documented is unknown.
- While winter months had the highest overall percentage of carbon monoxide exposure incidents in U.S. schools, exposures are happening year round. **Over 54% of incidents occurred in the spring, summer and fall months.**
- States in the Southern region of the United States (*Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington DC, and West Virginia*) **made up 45.5% of school-based carbon monoxide exposure incidents.**
- Public schools (*vs. charter, private or recreational childcare properties*) made up over 75% of all carbon monoxide exposure incidents. **Over half of all carbon monoxide exposure incidents are occurred in properties with elementary students** – a population more vulnerable to the effects of carbon monoxide due to their stage of development.
- **Installed carbon monoxide detection, or the access to portable monitors during the event by school staff, was confirmed in only 22% of the carbon monoxide exposure incidents occurring at schools or daycares.**
- Roughly half of the carbon monoxide exposure incidents at schools and daycares occurred due to an issue with the fuel-burning installed system itself (like boiler, furnace, HVAC system). **In the data compiled, 47.5% of the carbon monoxide exposure incidents occurred due to non-installed fuel burning systems:** idling vehicles, propane or fuel-powered cleaning equipment, construction equipment, portable generators, blocked or damaged exterior ventilation points due to environmental causes, or through unidentifiable sources (known as "chasing the ghost.")
- **The PPM readings (if recorded) related to carbon monoxide exposures in schools and daycares was (and continues to be) severely underreported to the public – only reported in less than 20% of incidents.** Carbon monoxide PPM readings directly correlate to the level of poisoning that occurred on the property. These readings have often dropped by the time first responders have arrived, post-evacuation – due to equipment shut off, or the opening of windows and doors. Clearly documenting where and what levels of PPM are occurring will give all stakeholders a better understanding of the severity of the incident, and help those seeking medical treatment more clearly communicate the volume of poison they were exposed to.

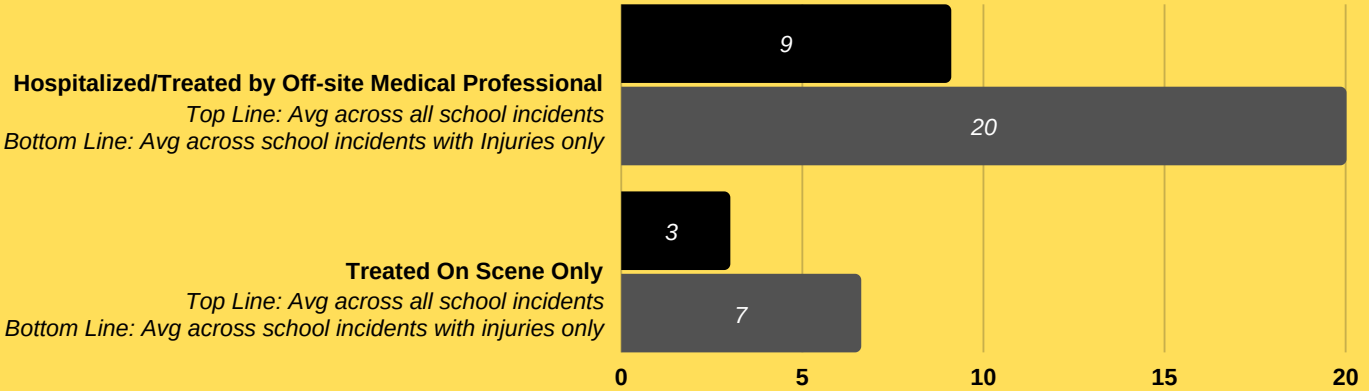
TOTAL NUMBER OF INJURIES REPORTED

WHY THIS IS IMPORTANT: Carbon monoxide exposure in an educational or daycare occupancy has the potential to impact a wide range of occupants, depending on where the source of the CO is coming from, and where the leak or accumulation is occurring. Occupancy in a gymnasium would be far greater than that in a single office, but would likely take longer to accumulate. The data below shows the number of occupants hospitalized, treated by personal physicians immediately following incident. The second row shows the number of people treated on scene only (not transported to hospital or seen by physician). *These numbers do not include total number of teachers, students, staff or community members evacuated from the property or those who may not have been aware they were injured in the short- or long-term by the event itself.*



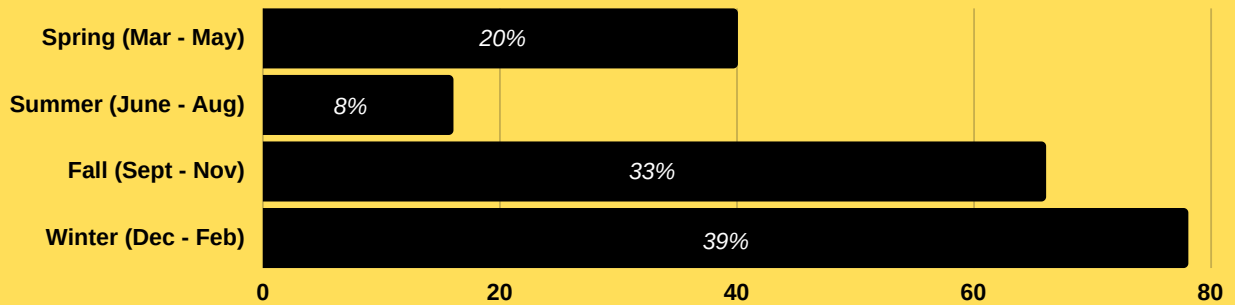
AVERAGE # OF OCCUPANTS INJURED

WHY THIS IS IMPORTANT: Carbon monoxide exposure in a residential occupancy, impacts, on average, one to three people. But in an educational or daycare occupancy, the number of occupants can vary widely. The chart below shows the average number of occupants injured across all school- and commercial daycare-based incidents (including those with zero injuries) as well takes a deeper dive in exploring the average injury count across injury-confirmed incidents only. *Note: Should a mass casualty carbon monoxide event occur, many area hospitals would not have the capability to treat severely injured occupants in hyperbaric chambers if needed, forcing medical transport outside of region or long-term health effects due to lack of local resources.*



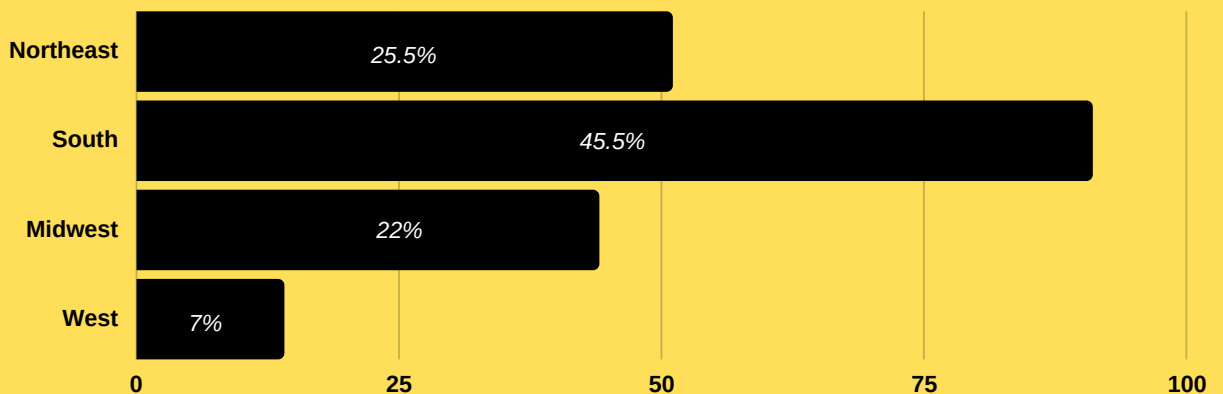
SEASON IN WHICH INCIDENT OCCURRED

WHY THIS IS IMPORTANT: Traditional carbon monoxide awareness marketing is largely centered around the "cold season" in which the majority of residential carbon monoxide incidents occur. But in educational and daycare occupancies, carbon monoxide exposure can happen at any time due to the use of cleaning equipment, construction equipment, property maintenance, transportation proximity and year-round use by students, staff and members of the community. Putting a focus on carbon monoxide education only at a certain time of year could be leaving schools and daycares with the (false) impression they shouldn't suspect carbon monoxide in the warmer months.



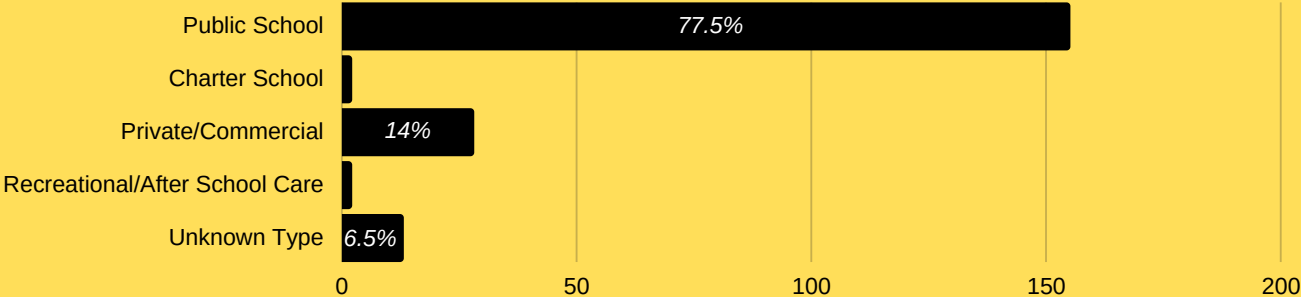
INCIDENTS BY U.S. GEOGRAPHIC REGION

WHY THIS IS IMPORTANT: Carbon monoxide education and awareness is largely focused on, and largely taught in, cold-weather states – as these states are reliant on gas-fueled heating equipment for longer durations throughout the year, and have traditionally been shown to have more residential CO-related incidents. Southern states could be less educated around where, how and when carbon monoxide can impact them in their homes, schools and communities.



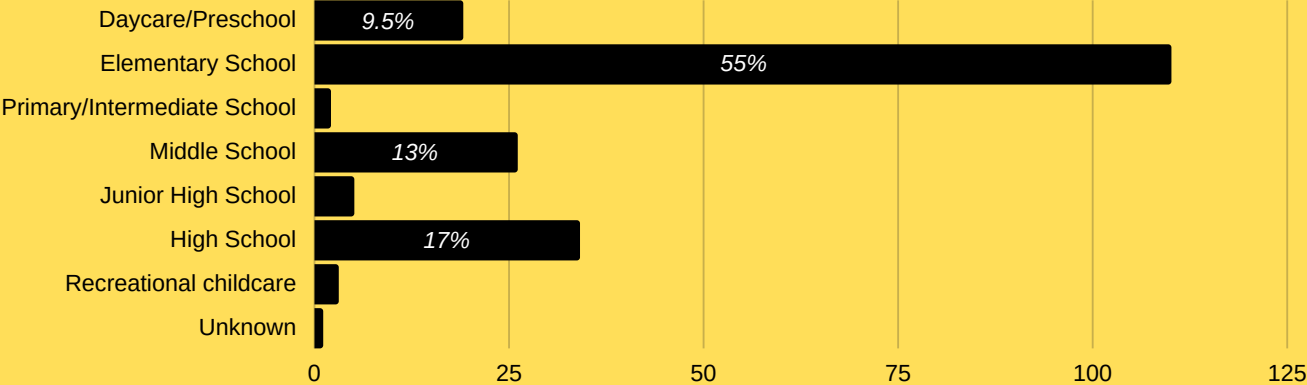
INCIDENTS BY TYPE OF SCHOOL

WHY THIS IS IMPORTANT: Funding sources for school improvements and equipment vary from school to school. Carbon monoxide incidents are occurring primarily in public school systems, which rely heavily on local taxpayer dollars, local fundraising efforts and business support, and government funding. The aging of our public schools, and their equipment, can create higher risk for carbon monoxide incidents throughout the nation. With little to no codes related to carbon monoxide regulation in existing buildings (and in some states new buildings), means inspecting for possible carbon monoxide situations, inclusion of carbon monoxide language in evacuation and emergency training plans, and investing in high quality equipment or detection systems, may not be on the radar.



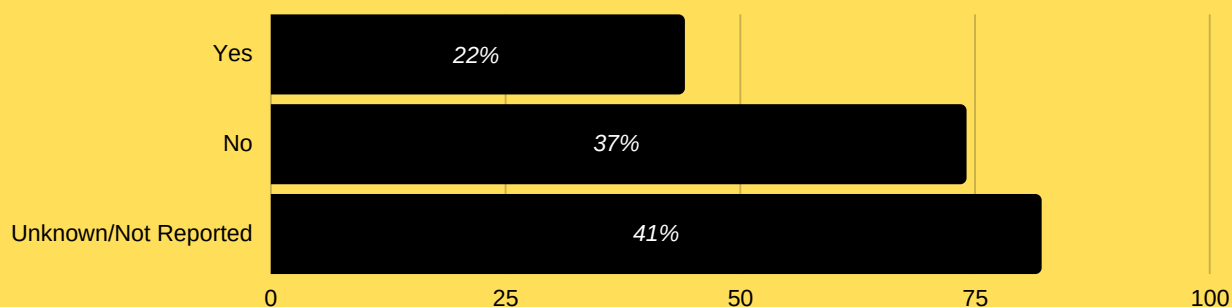
INCIDENTS BY PROPERTY USE (YOUNGEST AGE GROUP ON PROPERTY)

WHY THIS IS IMPORTANT: Carbon monoxide exposure affects different age groups in different ways. Younger children, pregnant mothers, and those with compromised immunity (like asthma or other immune disorders) are the most vulnerable. Children, in particular, experience symptoms more quickly and suffer long-term neurological effects of carbon monoxide poisoning due to their stage of development, faster breathing and increased metabolism. Younger children may not be able to communicate feeling poorly, regularly behave irritably, and regularly nap on the school/daycare property – rendering carbon monoxide a non-suspect in our most critical situations.



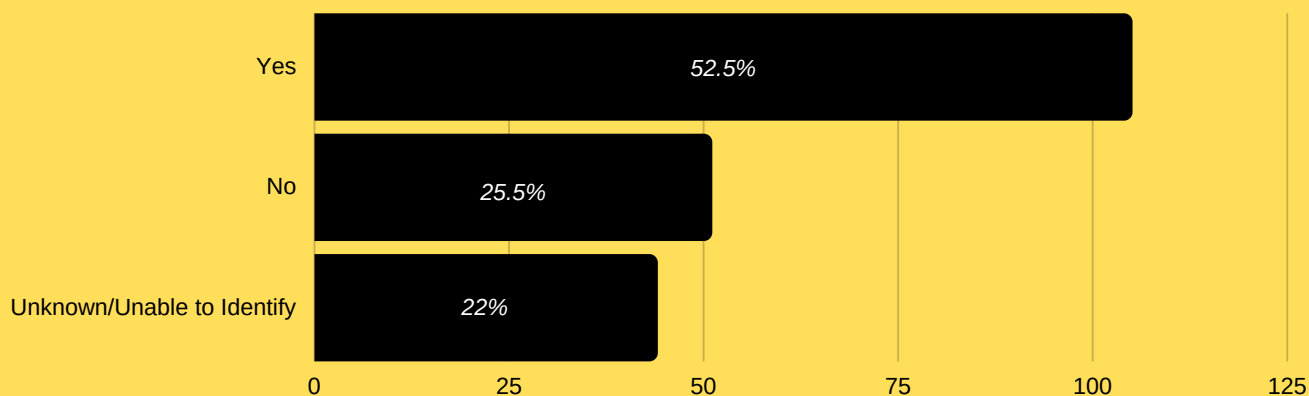
WAS THERE INSTALLED/PORABLE CO DETECTION ON THE PROPERTY?

WHY THIS IS IMPORTANT: Lack of carbon monoxide detection requirements in new and existing schools and daycares are reinforcing the mindset that it's 'optional' to protect occupants from CO exposure on these properties. In the cases where a detector was installed on site, the majority of occupants and first responders were notified early, and able to safely evacuate the property without injury. It's important to note, only 187 injuries (out of 1,823) occurred in a detection-installed occupancy. In one specific detector-installed incident, school administrators thought the newly installed alarms had "tripped" erroneously, and did not contact emergency responders until 2 hours later – resulting in 111 hospitalizations of students and staff members. Detectors prevent injury – when they're listened to, working properly, and installed.



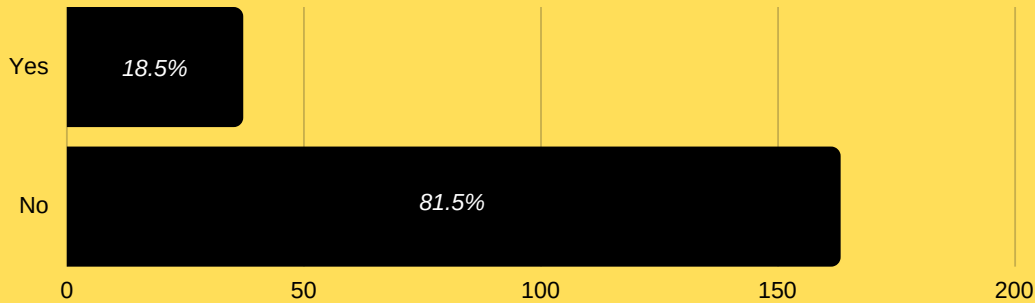
WAS EXPOSURE RELATED TO AN INSTALLED FUEL-BURNING SYSTEM?

WHY THIS IS IMPORTANT: Most legislation, building and fire codes are built around the old language that you only need an installed fuel-burning system, or gas-transporting ventilation system, on site to require carbon monoxide detectors in new or existing school properties. As you can see by this data, at least 25% of these incidents have been confirmed to be related to outside influence – or combustion-producing equipment being brought onto the property (by landscapers, contractors, cleaners) – many times while the school is occupied by students and teachers. The remaining 22% attributed to unidentified sources could be related to installed fuel burning systems, or gas-transport systems, but could just as easily be related to outside influences or portable sources.



WAS THE HIGHEST PPM READING RECORDED & REPORTED TO PUBLIC?

WHY THIS IS IMPORTANT: Carbon monoxide is measured in PPM (parts per million) and short/long term health issues are directly correlated to PPM levels, age, general health of person exposed, as well as length of exposure. PPM identification (and communication) doesn't allow for proper medical care for those who may want to seek it in the short/long term, and doesn't fully communicate the severity of the exposure to the community and stakeholders. Since it can only be measured during the event itself, in/around source as well as where others are experiencing symptoms, it's imperative that a CO gas measuring or detection device is used (and the highest PPM readings are recorded and reported) in every CO exposure situation.



NEWS MAKERS

Not all CO exposure incidents make the news, leading the public (and stakeholders in general) to believe that carbon monoxide in schools isn't an issue. For example, in the State of Virginia, after our CO incident, I only found 4 news-reported cases since 2005. But digging into FOIA request responses from the cities and counties throughout the state, there were over 100 confirmed, documented incidents of carbon monoxide incidents in Virginia schools and daycares. What could that mean for the rest of the nation in regards to reported vs. unreported incidents?

2021: Canistota, SD
Canistota School – 25 children and teachers injured; forklift exhaust and gas-based construction equipment being improperly ventilated during construction on school gym while students/staff on site; had been experiencing CO symptoms for weeks

2014: Girard, IL
North Mac Intermediate – 181 students and teachers hospitalized; 400 ppm; no detection on site; 20+ lawsuits filed claiming serious injury and disfigurement

2015: Chicago, IL
Horace Mann Elementary – 104 students, 7 staff hospitalized; CO detectors alerted at 6:30 a.m., emergency officials weren't notified by administrators until 2 hours later

2013: Salt Lake City, UT
Montezuma Creek Elementary – 40 hospitalized, 3 airlifted; exhaust pipes on water heater disconnected venting gas into mechanical room, kitchen, gymnasium and classrooms

2018: Philadelphia, PA
Loesche Elementary – 28 children, 4 teachers hospitalized; portable generator being used on roof by construction workers during school hours

2016: Beaumont, TX
Marshall Middle – 169 students and teachers seen at area hospitals; 2 separate issues contributed: corrosion let gas exit the boiler; inoperative ventilation fan

2020: Virginia Beach, VA
Kids Town Learning Center – 80+ children and teacher exposed to CO for 5+ hours from leaking furnace; 6 seen at hospital; no detection on site; legislation passed a year later to require CO detection in all schools, daycares

2019: Dutchtown, LA
Dutchtown High – 28 students treated in ER due to zero turn lawnmower operating too close to air intake ventilation

2012: Atlanta, GA
Finch Elementary – 43 students, 10 adults hospitalized; 1700 ppm; no detection on site

UNPROTECTED: REASONS TO CHANGE



REASON 1: A school or daycare building does not need an installed fuel-fired system to have a CO exposure incident that leads to injuries.

While boilers, furnaces and HVAC systems are the number one source of CO incidents in schools, they're not the only source. A growing percentage of emergency CO-related incidents in schools are caused by things like snow- or nest-blocked vents, propane-powered cleaning equipment, idling vehicles and improperly ventilated construction areas using gas-powered equipment.

REASON 2: At this time, most educators and faculty nationwide are not required to complete any kind of carbon monoxide awareness, prevention or situational training.

If there is no installed detection, or if detection devices are malfunctioning, front line staff such as teachers and maintenance teams ARE the only ones who can recognize a CO issue as it's occurring. Teachers will see changes in children's typical behavior and will be the first to see a "group" symptom emerging and where it's happening. It is imperative they know what they're looking for, how to respond, and who to alert when it comes to CO.

REASON 3: A majority of schools throughout the U.S. do not have CO detection on site because they're not required to.

It's been proven that if schools aren't required to do it, they often don't. Budget constraints, aging buildings and equipment, and increasing demands of curriculum and training often mean the CO conversation is left to maintenance personnel and risk managers. However, many staff, parents and community members who occupy these buildings are under the impression their health and life safety are being protected in this aspect as part of fire/hazard building safety.

REASON 4: Current life safety and building code language only requires detectors in schools and daycares to be installed near fuel-burning systems, first air registers, or next to attached garages. This leaves the remaining areas of the property (and therefore the occupants) vulnerable and without carbon monoxide protection should a portable carbon monoxide-producing source be brought on the grounds, or ventilation systems become blocked, disconnected or corrode.

When the layman citizen sees a simple chart that places an X in the states where some form of carbon monoxide detection is required in schools – they are assuming the whole school is protected. In reality, less than 7 states have carbon monoxide regulations and requirements in schools and daycares, and the majority of these regulations only apply to newly constructed (or currently under construction) buildings. They often do not regulate existing (and often aging) properties.

REASON 5: Children are at higher risk than adults when exposed to carbon monoxide and experience more long-term side effects.

Due to their age and current stage of development, children will respond to CO exposure differently than the adults in the room with them. Children have higher metabolism and breathe faster, meaning they will be inhaling and distributing carbon monoxide more often. Their developing minds are still in the growth stage, and exposure to poisonous toxin can change neurological response and organ development for the long term. Younger children, in particular, are unable to communicate physical issues being experienced, and it is not abnormal for them to appear drowsy and fussy.

ACKNOWLEDGEMENTS

I am not a scientist. I am not a researcher. I am not an educator. I'm a mom and a military spouse, and business owner, whose children were poisoned by carbon monoxide at their preschool – a place I incorrectly assumed they were safe. But in light of that experience, I have plunged head first into the world of codes, the world of research, the world of questioning, and the world of advocacy (and, in Virginia, the world of legislative change).

This case study would not have been possible without the team at National Carbon Monoxide Awareness Association. They were the first ones to listen to my story, they were the first to help me understand the science behind and the risks of acute and chronic CO poisoning, and they were instrumental in providing funding for this Case Study project.

Additional thanks to The Jenkins Foundation, the Suffolk and Virginia Beach Fire Departments, the teachers who saved my children, the journalists who are bringing to light the issues of carbon monoxide in schools, and the people who have listened, supported and are taking this conversation to their own schools and public servants. Thanks to the legislators in Virginia who heard our story, and wanted to create change immediately.

And special thanks to my family, who have seen me in front of my computer for hours, after a full day of work – scouring the internet for carbon monoxide stories. Who've watched me wait my turn to testify in front of Code Councils and Senators. Who've watched me cry reading NFIRS reports. This is for you.

ABOUT US

CarbonMonoxideInSchools.org is a free and public resource for concerned citizens, change makers, educators, public servants and journalists. It was designed to help all stakeholders become aware of the issue of CO in schools, learn the language to engage in conversations, give stakeholders the tools to take action, prevent and protect against carbon monoxide exposures in schools. It is my hope it is a space where life- and health-saving conversations start. On the site, you can find resources made specifically for those looking to make a change or bring this conversation to light in their own school or community.

Contact information:

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Unprotected: A Case Study of Carbon Monoxide Incidents in U.S. Schools and Daycares
by Nikki James Zellner
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Carbon monoxide in Schools Report

Working list compiled by Nikki James Zellner, CarbonMonoxideInSchools.org

Updated as of May 26, 2021

REGION	STATE	DATE	COUNTY	CITY	SCHOOL NAME	TYPE OF SCHOOL	PROPERTY USE	DETECTION ON SITE?	INFO OBTAINED THROUGH?	HIGHEST PPM READING?	INJURIES, HOSPITALIZATIONS (IF MENTIONED)	SOURCE/SPREADER (ATTRIBUTED TO)	DESCRIPTION OF INCIDENT/FOIA-NFIRS NOTES
South	AL	12/12/2013	Etowah County	Hokes Bluff	Hokes Bluff Middle School	Public	Middle School	no	press coverage	unknown	17 students, 1 teacher hospitalized	unspecified	
South	AL	10/28/2016	Limestone County	Elkmont	Elkmont High School	Public	High school	no	press coverage	unknown		exhaust fan on oven stopped working	cafeteria workers fell ill
South	AL	3/7/2019	Madison County	Madison	Rainbow Elementary School	Public	Elementary	unknown	press coverage	unknown		Boiler breakdown	600 students evacuated, included special needs; had to completely replace heater and send children to alternate school until it could be procured
South	AL	8/15/2019	Coffee County	New Brockton	New Brockton High School	Public	High School	no	press coverage	unknown	8 students hospitalized	unspecified	according to a student on scene: classmates complained of a headache during first period yesterday, and then she told me during fourth period, which was their P.E. time, that kids started passing out, throwing up, crying, just having all kinds of problems
South	AR	2/10/2005	Benton County	Bentonville	Washington Junior High	Public	Junior High	unknown	press coverage	80 ppm	80 students taken to hospital for treatment via bus, ambulance or parent	Boiler	Authorities noticed after group of students in a classroom complained of illness; 1,000+ students evacuated due to CO exposure, 50 taken to hospital from scene, additional 30 taken to hospital by parents; school paid for all medical costs associated according to article because "it happened on our watch, it's our responsibility"
South	AR	1/30/2008	Mississippi County	Leachville	Buffalo Island Junior High	Public	Junior High	no	press coverage	unknown	20 students, 2 coaches taken to hospital	vents on the school's gymnasium heater were damaged by a storm	boys basketball team practicing in gymnasium, all started feeling symptomatic including coaches
South	AR	11/25/2013	Washington County	Springdale	Central Junior High School	Public	Junior High	unknown	press coverage	unknown		small carbon monoxide leak created by an exhaust pipe that somehow had become disconnected from a fresh-air intake system (new system installed 1 year earlier)	students and teachers moved to different area of school campus; repairs made and school resumed; odor was cause of concern, ahead of any illness
West	CO	10/12/2009	Arapahoe County	Aurora		Public	High School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Boiler	Students sent home for the day after elevated levels of CO discovered
West	CO	9/1/2011	Garfield County	Rifle	Graham Mesa Elementary	Public	Elementary	unknown	press coverage	unknown	2 dozen teachers and students ill	unspecified	School evacuated, nearly 2 dozen teachers and students sick due to "an odor"
West	CO	1/6/2015	El Paso County	Pikes Peak	Pikes Peak Christian School	Private	K-12	unknown	press coverage	unknown		dysfunctional furnace	CO started leaking into vents throughout the school from furnace; school evacuated
West	CO	9/27/2018	Arapahoe County	Aurora	Aurora Elementary School	Public	Elementary	no	press coverage	unknown		Heating unit on roof	Strong odor noticed by staff at 7am ahead of school starting for day, called Fire Dept, brought gas meters and found elevated levels of CO; heating units shut off, source identified, building ventilated, school cancelled for day
West	CO	4/9/2019	Archuleta County	Pagosa Springs	Pagosa Peak Open School	Charter	Elementary	yes	press coverage	158 ppm		boiler leak + leaks within the gas pipes	CO detector alerting prior to school opening, no one allowed into school; boiler leak in mechanical room, 22ppm in areas around school, 158ppm in area in/around boiler; According to Lewicki, not only was the boiler releasing carbon monoxide, but there were also leaks within gas pipes at the school. Those leaks within the gas pipes were discovered by Black Hills Energy when its personnel were checking for the carbon monoxide leak, he explained further.
Northeast	CT	1/4/2011	New Haven County	Waterbury	Barnard School	Public	Elementary	no	press coverage	unknown	40 children taken to hospital	Firefighters determined a rusty hinge on a furnace allowed the carbon monoxide to leak out into the school.	40 children (ages 8-11) hospitalized after CO leak caused illness; Firefighters were initially sent to a medical call at the school around 10:30 a.m. after a student fainted in the lobby, fire officials said. Firefighters determined a rusty hinge on a furnace allowed the carbon monoxide to leak out into the school.
Northeast	CT	4/25/2011	Hartford County	Hartford	name not provided	unknown	High School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		malfunctioning boiler	CO detected in school as students arriving for class
Northeast	CT	3/28/2012	New London County	Waterford	Friendship School	Private	Preschool	unknown	press coverage	unknown		unspecified	Children 3-5 years old; high CO levels found in school serves 500+ preK, Kindergarten students
Northeast	CT	4/12/2013	Tolland County	Tolland	Tolland High School	Public	High School	yes	press coverage	unknown		unspecified	
Northeast	CT	10/19/2016	New Haven County	Cheshire	Highland Elementary School	Public	Elementary	no	press coverage	unknown	several students that fell ill tested high for carbon monoxide.	There was a malfunctioning boiler that was releasing dangerous levels of carbon monoxide. The air handling units, also on the roof were sucking that bad air back into the school. The boiler was last serviced less than a year ago in November of 2015.	
Northeast	CT	4/6/2017	Fairfield County	Bridgeport	Columbus Elementary School	Public	Elementary	no	press coverage	unknown	4 students taken to hospital, 4 others treated by their pediatricians	assumed CO, no traces found at time of FD arrival	illness hit 1 particular classroom all at same time
Northeast	CT	5/7/2018	New Haven County	Hamden	Dunbar Hill Elementary School	Public	Elementary	unknown	press coverage	unknown		*issue with school's equipment	smell of gas prompted call to Fire department, arrived finding elevated levels of CO throughout building; 270+ students and teachers evacuated
South	DC	10/15/2013	DC	Washington	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	7 hospitalized; 20 adults, 56 students treated for exposure	defective boiler	20 adults, 56 students treated for CO exposure; 7 hospitalized in serious condition
South	DC	12/17/2019	DC	Washington	Langdon Elementary School	Public	Elementary	no	press coverage	unknown		*improper combustion in malfunctioning HVAC unit	

South	FL	6/10/2009	Broward County	Weston	Manatee Bay Elementary	Public	Elementary	no	press coverage	unknown	5 school employees, 2 firefighters hospitalized with CO poisoning	propane-powered machine used for stripping wax floors	Firefighters transported four Broward School employees from Manatee Bay Elementary School over the summer after carbon monoxide sickened workers from a propane-powered floor stripper. A total of seven persons, including two firefighters were hospitalized after breathing the odorless gas.
South	FL	10/4/2010	Miami-Dade	Miami	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	11 sent to hospital	unspecified	11 people sent to hospital due to CO leak in cafeteria
South	FL	8/9/2015	Brevard County	Titusville	Imperial Estates Elementary	Public	Elementary	no	press coverage	unknown	1 student, 2 staff members hospitalized; 41 others symptomatic on site	fan broke in vented hood in cafeteria	Fire officials said carbon monoxide was present with the smell of gas as workers prepared lunch for students, prompting someone to pull a fire alarm. 640 students + staff evacuated from school
South	FL	10/18/2017	Miami-Dade	Miami	Miami Springs Middle School	Public	Middle School	unknown	press coverage	unknown	14 adults taken to hospital	unspecified	emergency personnel were called to Miami Springs Middle School after several workers reported feeling sick in and around the cafeteria
South	FL	1/31/2018	Monroe County	Florida Keys	Sugarloaf Elementary School	Public	Elementary and middle	unknown	press coverage	unknown	3 cafeteria workers treated at scene	improperly ventilated kitchen equipment	only cafeteria area evacuated; children ate lunch in their classrooms while cafeteria being ventilated
South	FL	4/5/2018	Miami-Dade	Miami	Orchard Villa Elementary	Public	Elementary	no	press coverage	unknown	7 cafeteria workers hospitalized	human error; improper ventilation during cooking	department notified when cafeteria workers began falling ill
South	FL	9/19/2018	Miami-Dade	Miami	Carol City Elementary	Public	Elementary	no	press coverage	unknown	3 kids, 2 adults hospitalized; 3 treated at scene	School officials said the issue may have come from a truck that was delivering items to the school.	officials said crews responded to the school after receiving a call about a person not feeling well. When firefighters walked into the school their detectors went off immediately, officials said.
South	FL	10/17/2019	Miami-Dade	North Miami	WJ Bryan Elementary	Public	Elementary	unknown	press coverage	unknown		unnamed source in cafeteria	
South	GA	3/9/2006	Hall County	Gainesville	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		HVAC unit	School evacuated due to high CO levels
South	GA	12/3/2012	Fulton County	Atlanta	Finch Elementary School	Public	Elementary	no	press coverage	1700 ppm	43 students, 10 adults hospitalized	Suspected faulty furnace	43 students, 10 adults sent to hospital after exposure to CO; mild-to-moderate symptoms; CO reading of 1,700 ppm
South	GA	11/25/2019	Fulton County	Atlanta	GATES Academy	Private	Daycare/Preschool	yes	press coverage	unknown	16 children, 3 adults taken to hospital	faulty furnace	emergency services responding to medical call regarding child having seizure; upon arrival found group symptoms; FD meters showed elevated levels of CO w/ out knowing time exposed; school had detectors but they did not alert
Midwest	IA	9/23/2010	Johnson County	Iowa City	name not provided	unknown	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Cleaning crew used unauthorized equipment in improperly ventilated area	Unsafe levels of CO; classes cancelled for day
Midwest	IA	9/8/2018	Black Hawk County	Hudson	Hudson Elementary School	Public	Elementary	yes	press coverage	100 ppm		vent malfunction in kitchen	School cancelled, evacuated after CO detector alerts in kitchen
Midwest	IL	11/5/2012	Cook County	Chicago	Harold Washington Elementary	Public	Elementary	no	press coverage	43 ppm	25 students taken to hospitals	faulty boiler	25 children taken to area hospitals after CO leak; 43 ppm
Midwest	IL	9/15/2014	Macoupin County	Girard	North Mac Intermediate	Public	Middle School	no	press coverage	400 ppm	181 students and teachers (at least 150 students) taken to hospitals	gas water heater - flue broke loose	181 students and teachers, the majority of which were children, taken to hospital after CO leak; lunch teachers fainting randomly; water heater passed inspection earlier in the year; no detection on site; 20 LAWSUITS FILED claiming disability/disfigurement of minors ;
Midwest	IL	10/29/2014	Cook County	Chicago	Harper High School	Public	High school	no	press coverage	unknown	9 students hospitalized	construction crew relining sewers in area; sewage vapors leaked into school	School evacuated and closed due to foreign odor that ended up being CO exposure; 9 students taken to hospital according to Chicago PD
Midwest	IL	10/30/2015	Cook County	Chicago	Prussing Elementary School	Public	Elementary	no	press coverage	unknown	70 children taken to hospital	boiler issue in main bldg	70 children taken to hospitals because of CO fumes at Jefferson Park grammar school in Prussing; one, inactive CO detector in boiler room was unplugged at time; a malfunctioning component on the building's boiler produced more carbon monoxide than normal. A fire door that should have been closed was left open. Claypool said, while a fresh-air door that should have been open was closed. The unplugged carbon monoxide detector was located near the boiler, he said. "Whether the one CO detector in the boiler room was active is less relevant because the boiler room is 60 feet from the main building and 20 feet underground," Arena said. "Begging the question: Who in safety and security thinks that if an alarm goes off where no one can hear it, that somehow makes the building safe and secure?"
Midwest	IL	12/3/2015	Cook County	Chicago	Horace Mann Elementary School	Public	Elementary	yes	press coverage	unknown	104 students, 7 staff hospitalized	unspecified	104 students and seven staff members were hospitalized after a carbon monoxide leak at Horace Mann Elementary in South Chicago; IMPORTANT TO NOTE: "Newly installed carbon monoxide detectors were tripped as school started Thursday at Horace Mann, 8050 S. Chappel Ave., officials said. Though the alarms were tripped as staff entered the school around 6:30 a.m., according to Chicago Teachers Union organizer Curtis Bynum, school administrators didn't contact the fire department until about 8:30."
Midwest	IL	12/21/2016	multiple	Bartlett	Bartlett Elementary School	Public	Elementary	unknown	press coverage	unknown		unspecified	school evacuated;
Midwest	IL	3/16/2017	Kankakee County	Bourbonnais	LeVasseur Elementary	Public	Elementary School	yes	press coverage	unknown	48 students, staff taken to hospitals	School's backup Generator in boiler room had a timer malfunction, causing it to run while staff/students on property; it's exhaust getting sucked into air intake system	350 students and staff evacuated; 48 taken to hospital
Midwest	IL	2/1/2019	Rock Island	Moline	Glenview Middle School	Public	Middle School	yes	press coverage	unknown		water heater malfunction in boiler room	650 students, teachers evacuated safely, responding to alarm
Midwest	IL	2/21/2019	Cook County	Tinley Park	KinderCare	Private	Daycare/ Preschool	no	press coverage	210 ppm	82 staff and students treated on scene by emergency services	hot water heater leak	staff and students falling ill;
Midwest	IL	11/4/2019	Cook County	Chicago	Burnside Academy	Private	Elementary	yes	press coverage	unknown		faulty boiler	early workers arrived to detectors alerting; notified students, other teachers before arrival
Midwest	IN	2/21/2006	Gibson County	Ft Branch	name not provided	unknown	Recreational care	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	523 ppm		furnace?	two girls passed out, emergency authorities alerted; CO levels at 523 ppm GF/613 ppm basement

Midwest	KS	11/30/2005	Ford County	Dodge City	name not provided	unknown	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Cracked heat exchanger	Annex classroom evacuated when teacher/students noticed smell
Midwest	KS	10/29/2014	Cowley County	Dexter	Dexter Elementary School	Public	Elementary	no	press coverage	unknown	18 first and second grade students taken to hospital	defective heat exchanger on the roof heating unit	school librarian was EMT and responded to initial cause of concern in 1st and 2nd grade classes; called emergency services; school evacuated, multiple children started passing out in separate classes
Midwest	KS	5/6/2019	Douglas County	Lawrence	Kennedy Elementary	Public	Elementary	no	press coverage	unknown	3 staff seek medical attention on their own, discover elevated levels of CO in body	Gas-powered hot water heater was not venting properly due to roof repairs. Roofers had covered the piping.	staff member at Kennedy Elementary reported feeling nauseous. She went to the doctor and found she had elevated levels of carbon monoxide. The portion of the building where the complaints came from houses the preschool students ages three to five. Staff members said many of them are special needs students.
South	KY	2/22/2010	Jefferson County	Louisville	Field Elementary School	Public	Elementary	no	press coverage	unknown	13 children, 1 teacher taken to hospital; 30 others treated on scene	officials say exhaust from a gas-powered concrete saw being used by a contractor outside the building spread through the ventilation system.	students reported feeling ill, headaches/nausea
South	LA	10/2/2010	Calcasieu Parish	Lake Charles	name not provided	Public	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		external conditions impacting inside school	Bldg closed up due to smoke outside/low-lying gof, air quality checked and had elevated CO; school evacuated, 20 evaluated at local hospital
South	LA	9/2/2016	Lafayette Parish	Duson	Charles M Burke Elementary School	Public	Elementary	yes	press coverage	unknown	1 cafeteria worker taken to hospital	unspecified in kitchen area	carbon monoxide meter alerted in cafeteria area
South	LA	9/5/2019	Ascension Parish	Dutchtown	Dutchtown High School	Public	High school	no	press coverage	unknown	28 students treated in ER	large capacity "zero turn" lawnmower with the balky gas tank was being used to cut grass next to an air-conditioning intake vent	nausea, dizziness and headaches experienced as fumes came in through the ventilation system
South	LA	11/6/2019	Caddo Parish	Shreveport	Broadmoor Middle	Public	Middle School	no	press coverage	unknown	13 students transported to hospital	unspecified	CO poisoning assumed because of group symptoms, source not discoverable, accumulation not active by time of emergency response
Northeast	MA	2/17/2005	Middlesex County	Lexington	Lexington High School	Public	High School	no	press coverage	65 ppm		Hole in intake pipe, unlined chimney; intake/exhaust pipes too close	School evacuated twice for CO before sources discovered; buildings not occupiable until issue fixed; has since installed CO detection
Northeast	MA	12/29/2005	Middlesex County	Chilmsford	McCarthy Middle	Public	Middle School	no	press coverage	unknown	4 staff, 4 students sent to hospital	Delivery vehicle idling outside of school	Cluster illness; Test results from 3 patients revealed traces of CO
Northeast	MA	1/11/2007	Worcester County	Fitchburg	name not provided	unknown	Middle School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown	7 hospitalized	Boiler was under repair	
Northeast	MA	10/2/2008	Worcester County	Northboro	Marion Zeh Elementary	Public	Elementary	yes	press coverage	unknown	Fire personnel evaluated the school custodian at the scene for carbon monoxide exposure. He was not transported, but fire officials said he later sought medical attention on his own.	Boiler malfunction	Firefighters arriving at the scene found elevated levels of carbon monoxide in the cafeteria area. Wearing air packs to investigate further, firefighters found very high levels of carbon monoxide in the boiler room.
Northeast	MA	3/1/2012	Plymouth County	Marshfield	Marshfield High School	Public	High School	unknown	press coverage	unknown		Water heater malfunction	CO/other fumes drawn back into loading docks by wind; high levels of CO immediately outside, lower levels of CO inside
Northeast	MA	4/3/2014	Worcester County	Douglas	municipal property that cares for kids	Public	Recreational care	no	press coverage	unknown	16 hospitalized	malfunctioning boiler	16 Kindergarten children transported to area hospitals
Northeast	MA	10/9/2015	Middlesex County	Newton	Franklin Elementary	Public	Elementary	no	press coverage	1000ppm	2 hospitalized	ue to errors made by the heating contractors in the process of installing a new boiler	person found unconscious in boiler room, another ill; meters brought onto scene maxed out
Northeast	MA	10/29/2015	Middlesex County	Lowell	Sullivan Middle School	Public	Middle School	unknown	press coverage	unknown		unspecified	60 students fall ill; all showing symptoms of CO exposure
Northeast	MA	8/30/2018	Hampden County	Monson	Granite Valley Middle School	Public	Middle School	yes	press coverage	unknown		exhaust from a generator that was used by construction workers on the rooftop	high carbon monoxide set off alarm in gym area;
Northeast	MA	12/12/2018	Barnstable County	Mashpee	Quashnet Elementary	Public	Elementary	unknown	press coverage	unknown	5 staff members hospitalized	leaking boiler	school closed for three days while boiler leak repaired;
Northeast	MA	7/18/2019	Essex County	Methuen	Methuen High School	Public	High school	no	press coverage	unknown	1 adult transported to hospital	crews were stripping floors, using freon + humidifier - combo gases	freon canister exploded, detaching from humidifier while stripping floors
Northeast	MA	1/31/2020	Essex County	Marblehead	Coffin Elementary School	Public	Elementary	yes	press coverage	unknown	2 janitors hospitalized	hardwired CO detector malfunctioned and was not alerting after broken fan belt on school's exhaust system	"The building is over 70 years old and is slated to be replaced with new construction. Problems listed in the project's plan include a boiler system that's "increasingly unreliable."
Northeast	MA	12/30/2020	Middlesex County	Waltham	Waltham High School	Public	High school	no	press coverage	200 ppm		boiler	FD responded to a pulled fire alarm, building had self-evacuated; medic requested for onsite treatment; school was on Christmas break but basketball team and some teachers were on site, elevated levels of up to 200ppm found in multiple areas of building, not just boiler area
Northeast	MA	1/5/2016	Middlesex County	Waltham	Henry Whittemore Elementary	Public	Elementary	no	press coverage	135 ppm		boiler	A maintenance worker smelled the odor of natural gas and contacted police. Firefighters responded to the scene and, using a CO meter, discovered a high level of carbon monoxide.
South	MD	9/28/2002	Baltimore County	Middle River	Chase Elementary School	Public	Elementary	no	press coverage	unknown	32 children taken to 3 separate hospitals to accommodate volume	unspecified	"The scare, which started at 10:36 a.m., evoked a science-fiction thriller with pupils falling listlessly to the ground and others rushing nervously to the nurse's office before the entire school was evacuated 25 minutes later."
South	MD	2/8/2011	Baltimore City	Baltimore	Dickey Hill Elementary/Middle	Public	Elementary/Middle	no	press coverage	56 ppm	5 adults, 1 child hospitalized	Malfunctioning steam table	
South	MD	2/15/2011	Baltimore City	Baltimore	Dickey Hill Elementary/Middle	Public	Elementary/Middle	no	press coverage	55 ppm	1 child hospitalized	convection and steam oven used to prepare food, malfunction	6 students ill, 40 others exposed; same school as 2/8 incident
South	MD	2/3/2012	Frederick County	Fredericksburg	name not provided	unknown	Elementary	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		Diesel vehicle stuck in vicinity of individual rooms HVAC system	CO fumes from running vehicle circulated via HVAC; several taken to hospital, diagnosed with CO poisoning

South	MD	2/6/2018	Baltimore City	Baltimore	Hazelwood Elementary/Middle	Public	Elementary/Middle	unknown	press coverage	unknown	boiler	recreation hall and remaining staff evacuated; school after hours being used recreationally by community /students	
South	MD	2/25/2019	Baltimore County	Owings Mills	Shafer Center	Private	K-12	unknown	press coverage	unknown	2 adults hospitalized	heating system malfunction	60 special needs children evacuated; 2 adults hospitalized; FD indicated issue with heater
South	MD	6/6/2019	Baltimore County	Golden Ring	Rosedale Center	Public	High school	unknown	press coverage	unknown	one priority 1 patient, a man, was taken to University of Maryland Medical System's hyperbaric chamber, and two priority 2 patients, a woman and another man, were also taken to UMMS. Priority 1 typical designates patients who are seriously injured but have a higher likelihood of recovery. Neither of these patients were staff members.	leak originated from a piece of auto equipment that was operating at an auto shop in the same complex as the school	
South	MD	11/11/2020	Baltimore City	Baltimore	Franklin Square Elementary/Middle	Public	Elementary/Middle	unknown	press coverage	unknown		unspecified	10 evacuated, elevated levels of CO found inside
Midwest	MI	3/5/2005	Oakland County	Royal Oak	Dondero High School	Public	High School	no		SAFEKIDS Worldwide - Georgia Testimony, February 2012	38 students, teachers and bystanders at a community swimming class were treated for carbon monoxide poisoning; 17 taken to hospital via ambulance, 5 treated in Hyperbaric chamber at hospital; several more arrived to hospital on their own including siblings, parents of those taking class	Furnace	High levels of CO from furnace made way to pool area during community swim lessons; instructors and their 5- to 14-year-old students began throwing up, complaining of headaches and feeling dizzy and nauseated around 9:15 a.m. The building was evacuated, and a parent called 911.
Midwest	MI	5/4/2007	Benzie County	Thompsonville	name not provided	unknown	Elementary	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012		sewer gases/air exchange	School closed after students fell ill - no Co source found on site; incident potentially caused by sewer gases exiting a rooftop vent that were sucked back into building fresh air exchange
Midwest	MI	2/24/2010	Kalamazoo County	Portage	Portage Northern High School	Public	High School	unknown	press coverage	unknown	7 teachers file personal injury lawsuits due to medical issues impacting them since event	Construction equipment suspected - could never find source from any school-based systems	School undergoing renovation; parents complain of illness of children, diagnosed with higher levels of CO in system; at least 7 teachers file lawsuits
Midwest	MI	9/17/2019	Genesee County	Swartz Creek	Morrish Elementary School	Public	Elementary	unknown	press coverage	unknown		boiler	school evacuated from combo gas leak; gas shutoff; ppms brought back to zero before students/staff allowed to return
Midwest	MI	11/25/2019	Oakland County	White Lake Township	Lakeland High School	Public	High school	no	press coverage	70 ppm		discharge from a boiler that was flowing back into the return air system	First responders had responded to the school for unrelated emergency; their wearable CO detectors started alerting to high levels of CO when they were inside the building; school did not have alarms
Midwest	MI	1/26/2021	Van Buren County	Mattawan	Mattawan Consolidated School	Public	Elementary building	yes	press coverage	unknown		unspecified in kitchen area	CO alarm alerting in kitchen, staff and children evacuated to other buildings;
Midwest	MN	10/5/2010	Ramsey County	St. Paul	Como Park Elementary School	Public	Elementary	unknown	press coverage	unknown		boiler leak	School evacuated due to elevated CO levels; 25 evaluated on scene
Midwest	MN	2/7/2014	Brown County	Springfield	Springfield Public School	Public	K-12	unknown	press coverage	unknown	30 students treated at hospital for CO poisoning	unspecific in auditorium	400 school members evacuated, 30 students treated at hospital for CO poisoning after practicing in auditorium
Midwest	MN	10/16/2019	Carlton County	Esko	Lincoln School	Public	Middle School	unknown	press coverage	unknown		unspecified water heater issue	school evacuated
Midwest	MO	3/6/2009	St. Louis County	Ballwin	name not provided	unknown	Elementary	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012		Open air handler door on HVAC system	School evacuated
Midwest	MO	4/3/2012	Cape Girardeau County	Cape Girardeau	Blanchard Elementary	Public	Elementary	yes	press coverage	unknown		Dirt-dobbers (insects) built nest and clogged up an air intake system	School evacuated for second time in a week due to buildup of CO in gym, cafeteria
Midwest	MO	1/13/2014	St. Louis City	St. Louis	Mallinckrodt Elementary	Public	Elementary	yes	press coverage	unknown	water had accumulated in the basement of the school building due to the melting snow. Maintenance workers were using generators to siphon the water out of the basement		maintenance workers running generators indoors, improperly ventilated causing CO accumulation; detection system alerted for safe evacuation
Midwest	MO	12/4/2014	St. Louis City	St. Louis	Nance Elementary	Public	Elementary	unknown	press coverage	unknown	2 students, 1 teacher sent to hospital	boiler malfunction	full evacuation
Midwest	MO	1/5/2015	St. Louis City	St. Louis	Northwest Academy of Law High School	Public	High school	yes	press coverage	unknown		Boiler malfunction	detector started alerting after boiler malfunction; all students evacuated to gymnasium
Midwest	MO	3/6/2019	Callaway County	Williamsburg	Williamsburg Elementary	Public	Elementary	yes	press coverage	unknown		malfunctioning HVAC	front office area started to experience CO symptoms ahead of school starting; meter brought in and found elevated CO levels; school cancelled for day
South	MS	9/8/2010	Marshall County	Holly Springs	HW Byers High School	Public	High School	unknown	press coverage	unknown	5 cafeteria staff hospitalized	vent-a-hood (ventilation hood) not properly removing gas fumes from burners	5 cafeteria workers sent to hospital with CO poisoning; grades 7-12 not on campus at time
West	MT	8/28/2004	Deer Lodge County	Anaconda	Anaconda Job Corps Center	Public	High school	no	press coverage	unknown	20 students (ages 16-24) flown to area hospitals	cracked exhaust pipe on heater	nurse reported finding several overcome with symptoms;
South	NC	11/7/2006	Wake County	Raleigh	name not provided	unknown	Elementary	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012	4 teachers, 1 student taken to hospital	Debris lodged in heating system blocked air intake system	4 teachers, 1 student taken to hospital after complaining of headaches, nausea; remaining students moved to off-site gym
South	NC	10/21/2008	Polk County	Columbus	Virtual Early College	Public	High School	unknown		SAFEKIDS Worldwide - Georgia Testimony, February 2012	27 students, 5 staff taken to hospital	heating system defect	faulty air flow caused CO accumulation, affecting occupants for over an hour; student passed out while evacuating
South	NC	5/13/2010	Mecklenburg County	Matthews	Crestdale Middle School	Public	Middle	no	press coverage	unknown		Turned out to be propane buffer/janitorial equipment that cleaned floors (after gas leak ruled out by inspections)	Firefighters discover high levels of CO, school cancelled due to suspected gas leak
South	NC	8/28/2014	Mecklenburg County	Charlotte	Coulwood Middle School	Public	Middle School	yes	press coverage	unknown	2 cafeteria workers evaluated on scene; 1 taken to hospital	improper operation of a cafeteria appliance	food inspection team was on site at the time, Co alarm started alerting while on site

South	NC	6/18/2015	Wake County	Cary	East Cary Middle School	Public	Middle School	unknown	press coverage	unknown	10 children, 7 adults treated on scene - 4 of the adults taken to hospital	unspecified	School evacuated; 10 children, 7 adults evaluated by medical professionals after reported CO leak at middle school; 3 adults taken to hospital	
South	NC	5/7/2016	Mecklenburg County	Cornelius	JV Washam Elementary School	Public	elementary	yes	press coverage	100 ppm		malfunctioning kitchen equipment	May 9 CO leak in school cafeteria exposes this had been a several-month issue causing CO symptoms in students over a period of months; detectors alerted multiple times	
South	NC	8/23/2017	Mecklenburg County	Huntersville	Phoenix Montessori Academy	Private	Preschool	yes	press coverage	unknown	1 teacher hospitalized	unattributed	fire department responded to CO alarm	
South	NC	4/3/2019	Durham County	Durham	Research Triangle Academy	Charter	Elementary	unknown	press coverage	unknown		unspecified HVAC-related issue	School evacuated due to elevated CO levels	
South	NC	3/25/2021	Cumberland County	Fayetteville	Brentwood Elementary School	Public	Elementary	no	press coverage	unknown		Faulty kitchen equipment	Assistant fire inspector using meter during inspection found presence of CO in kitchen – hazardous emergency response was signalled in to review ; no injuries	
Midwest	ND	11/7/2018	Cass County	Fargo	The Learning Circle/Baby Bloomers	Private	Daycare/Preschool	unknown	press coverage	unknown	2 adults sent to hospital	construction crew using a gas-powered concrete saw inside a building without ventilation	daycare in building property on different floor; CO levels found in daycare	
Midwest	NE	9/27/2018	Hamilton County	Aurora	Aurora Elementary School	Public	Elementary School	no	press coverage	unknown		malfunctioning air handling unit on roof	Administrators smelled something Thursday morning when arriving at Aurora Elementary School in Aurora. District Superintendent Damon McDonald told The Grand Island Independent that firefighters were called to the school. They used sensors that detected carbon monoxide levels that were too high for anyone to be in the building.	
Midwest	NE	3/8/2019	Lancaster County	Lincoln	Pershing Elementary School	Public	Elementary School	unknown	press coverage	80 ppm		boiler room, specific cause not identified	elevated levels of carbon monoxide found in boiler room	
Northeast	NH	1/29/1994	Sullivan County	Unity	name not provided	Public	Elementary	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	Furnace leak	CO leak in school sickened 25 children and several teachers
Northeast	NH	11/9/2006	Hillsborough County	Litchfield	name not provided	unknown	High School	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	Boiler smokestack and proximity to air intake unit (too close!)	Students sent home after elevated levels of CO detected
Northeast	NH	2/18/2010	Rockingham County	Derry	St. Thomas Aquinas	Private	Elementary	no	press coverage	unknown	21 students and staff members were taken by ambulance to a hospital, and another 10 either went to a hospital on their own or were driven separately.	Ventilation system (3rd floor)	Dozens of students fall ill; school and adjacent church checked for CO levels (30 students and teachers at hospital)	
Northeast	NH	3/6/2012	Belknap County	Meredith	Inter-Lakes High School	Public	High School	yes	press coverage	unknown	students who were ill treated on scene	Misfiring boiler, exhaust/air exchange	Although there are smoke detectors and carbon dioxide detectors throughout the building, Wald said there's only one carbon monoxide detector, located in the boiler room and intended to detect a back-firing boiler. The carbon monoxide was able to bypass that detector by flowing up to the roof and back down into the building.	
Northeast	NH	11/5/2020		Newport	Newport Middle High School	Public	Middle School, High school	no	press coverage	unknown	4 students taken to hospital	car exhaust fumes filled school		
Northeast	NJ	4/6/2017	Gloucester County	Glassboro	Glassboro Intermediate School	Public	Middle School	no	press coverage	unknown	37 students, 3 staff members transported to hospital	boiler exhaust fan failed, allowing fumes to enter the school building.	first responders called to respond to multiple people feeling ill; arrived and found elevated CO levels calling for evacuation of intermediate school to other facilities	
Northeast	NJ	3/19/2018	Bergen County	Lindhurst	Washington School	Public	Elementary	yes	press coverage	unknown		boiler	CO detectors alerted, school evacuated safely prior to issues occurring	
Northeast	NJ	12/12/2018	Ocean County	Brick Township	Midstreams Elementary School	Public	Elementary	yes	press coverage	unknown		malfunctioning boiler	found dangerous levels of carbon monoxide right outside the boiler room and inside the boiler room, recently installed detectors alerted authorities	
Northeast	NJ	1/22/2019	Union County	Elizabeth	Toussaint L'ouverture-Marquis de Lafayette School No. 6.	Public	Elementary	yes	press coverage	unknown		exhaust fan stopped working in boiler room	Elevated levels of CO found in basement, detectors alerted for safe evacuation	
Northeast	NJ	11/27/2019	Bergen County	Saddlebrook	Saddlebrook Daycare	Private	Daycare/Preschool	yes	press coverage	unknown		A propane tank being used by workers in an adjoining storefront	Daycare center's detectors started alerting, prompting evacuation of 20+	
Northeast	NY	4/7/2010	Bronx	Bronx	Hunts Point School	Public	K-12	no	press coverage	unknown		unspecified	Building that houses 4 public schools and 1,500 students evacuated due to elevated levels of CO; first responders were responding to a medical call when their gas detectors activated upon entering buildings	
Northeast	NY	10/10/2013	multiple	Long Island	Camp Avenue Elementary	Public	Elementary	unknown	press coverage	unknown	12 students taken to hospital	Boiler emitting smoke	Boiler started "smoking", making those in surrounding rooms nauseated, ill; fire dept found elevated levels of CO in building	
Northeast	NY	2/14/2014	Queens County	Corona	Leonardo DaVinci Intermediate School	Public	Intermediate	unknown	press coverage	400 ppm		manhole fire in street in front of school caused large amounts of CO to enter the building's basement	happened just as students started to arrive for school; evacuation of all inside	
Northeast	NY	12/1/2015	Queens	Queens	PS 295	Public	Elementary	yes	press coverage	unknown		reading came from the building's basement and electrical room and may have been the result of a smoking manhole nearby	550 students, 100 faculty members evacuated	
Northeast	NY	2/15/2017	City of New York	Staten Island	PS 29	Public	Elementary	unknown	press coverage (video)	unknown		HVAC/boiler unit	680 staff and students evacuated due to reports of high CO inside the building; HVAC/Boiler unit producing gas, odor	
Northeast	NY	1/16/2019	Broome County	Endicott	Union-Endicott High School	Public	High school	yes	press coverage	unknown		unidentified at press time; shop class	alarm sounded in shop area of high school; evacuation of school	
Northeast	NY	1/31/2019	multiple	Long Island	South Grove Elementary	Public	Elementary	no	press coverage	unknown			children sickened, fainting while practicing for performance in gymnasium; elevated CO levels found in bloodwork	
Northeast	NY	3/24/2021	Madison County	Canastota	Roberts Street Elementary School	Public	Elementary	yes	press coverage	unknown		boiler	an issue with one of the boilers at the Roberts Street Elementary School complex triggered the carbon monoxide detectors. Students and staff were immediately evacuated; onsite carbon monoxide detectors are interconnected and the malfunction was caught just as it started.	
Midwest	OH	3/2/2004	Licking County	Newark	name not provided	Private	K-8	unknown			18 evaluated on scene (15 students/3 staff), "some" transferred to hospital (no specific number listed)	SAFEKIDS Worldwide - Georgia Testimony, February 2012	boiler/heating unit suspected	15 students, 3 staff sickened due to CO buildup, some transferred to hospital
Midwest	OH	1/6/2017	Champaign County	Urbana	Urbana High School	Public	High school	no	press coverage	250 ppm	More than 12 students taken to hospitals	broken damper on furnace system	More than 44 students treated on scene for symptoms;	

Midwest	OH	10/1/2018	Tuscarawas County	Tuscarawas Township	Tuslaw High School	Public	High school	unknown	press coverage	unknown		contractors replacing roof using gas powered generator used near air handler;	unsupervised contractors using generator on roof to power tools while working on roof replacement; fumes and odors brought into school building while kids/staff on site	
Midwest	OH	1/15/2019	multiple	Pickerington	Ridgeview Junior High	Public	Junior High	unknown	press coverage	unknown	4 adults, 2 students taken to hospital	motor went out on exhaust system allowing CO from hot water heater to get into school	elevated levels of CO found, custodians who checked boiler room symptomatic	
Midwest	OH	10/28/2019	Clark County	Springfield	Clarke-Shawnee Middle/High School	Public	Middle School, High school	no	press coverage	unknown		boiler system	teacher notified administrators she was smelling odorous gases, fire dept was called and their meters notified there was elevated CO within the building; students, staff evacuated	
South	OK	5/4/2009	Tulsa County	Tulsa	Byrd Middle School	Public	Middle	no	press coverage	55 ppm	1 construction worker taken to hospital	gas powered washer in construction area without proper ventilation	Construction Worker began experiencing CO poisoning symptoms, firefighters responded; school teacher sounded the fire alarm to get people to evacuate after bring school nurse	
South	OK	3/28/2012	Marshall County	Madill	Madill Elementary	Public	Elementary	unknown	press coverage	unknown	25 students/staff transported to hospital	cause unknown	School evacuated, 25 people transported to hospital for eval	
South	OK	11/11/2013		Oklahoma City	Lee Elementary School	Public	Elementary	no	press coverage	unknown	10 people treated on scene; 3 students, 3 staff members taken to hospital	recently installed HVAC unit on roof leaked into classroom	Students and staff fall ill, school evacuated due to suspected issue; no detectors on site, responders find elevated CO,	
South	OK	1/18/2018	Carter County	Ardmore	Charles Evans Elementary School	Public	Elementary school	unknown	press coverage	unknown			Part of Charles Evans Elementary School was evacuated after tests revealed higher than normal carbon monoxide levels in older parts of the building.	
South	OK	11/27/2018	Tulsa County	Sand Springs	Clyde Boyd Middle School	Public	Middle school	no	press coverage	unknown	55 children taken to area hospitals; many overnight hospitalizations; 50 children additionally treated on scene	single heater malfunctioning + separate gas leak in pipes	Most of the children were from the same second-grade classroom.	
West	OR	4/16/2019	Lincoln County	Waldport	Crestview Heights School	Public	Elementary	unknown	press coverage	unknown	14 children treated in ER	diesel boilers suspected	School evacuated and cancelled after CO poisoning of students	
Northeast	PA	11/3/2011	Dauphin County	Derry Township	name not provided	Public	High School	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	propane heater in unsealed construction area	1 teacher taken to hospital after becoming sick from construction fumes
Northeast	PA	9/5/2012	York County	Glen Rock	name not provided	Public	Elementary	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012; AP News reference	malfunctioning water heater	Nearly 40 students were sent home with CO exposure
Northeast	PA	10/9/2012	Philadelphia County	Philadelphia	JH Brown Elementary	Public	Elementary	no	press coverage	unknown	50 children, 5 adults treated at hospital	Malfunctioning backup generator (after power outage)	Many of the 577 students evacuated;	
Northeast	PA	9/18/2015	Fayette County	McClellandtown	Albert Gallatin North Middle School	Public	Middle School	unknown	press coverage	unknown	10 students, 2 teachers taken to ER	*CO assumed - no source found	a teacher first contacted the school nurse after some of his students started feeling ill in the library. The nurse then called in paramedics because more children and the teachers started reporting symptoms, including breathing problems, respiratory issues, dizziness, and nausea.	
Northeast	PA	1/26/2018	Philadelphia County	Philadelphia	William Loesche School	Public	Elementary	no	press coverage	unknown	26 children, 4 teachers sent to hospital	a portable generator on the school's roof that construction workers were using to power their tools during roof repairs. Someone had placed it close to the air intake vents.	child became unconscious and wouldn't wake up with smelling salts in 2nd grade class, other students became lethargic; doing major renovations of building during school hours while children on site. Link to Philadelphia Inquirer series	
Northeast	PA	9/14/2018	Neshaminy	Langhorne	Herbert Hoover Elementary	Public	Elementary	unknown	press coverage	unknown		faulty exhaust system on a kitchen water heater	https://www.buckscountycouriertimes.com/news/20180914/high-carbon-monoxide-level-closes-neshaminy-herbert-hoover-elementary-school	
Northeast	PA	2/9/2019	Berks County	Fleetwood	Fleetwood Area Middle School	Public	Middle School	unknown	press coverage	unknown	8 community members practicing for a performance in auditorium taken to hospital; 3 found unconscious when FR arrived on scene	unspecified	community members in school after hours practicing for a performance, people started fainting/getting dizzy, director calls 911	
Northeast	PA	3/3/2020	Franklin County	Chambersburg	South Hamilton Elementary	Public	Elementary	yes	press coverage	unknown		boiler	Firefighters arrived on scene, meeting with building representatives. The alarm panel showed the "machine room" as the source of the leak, according to Franklin County Fire Company. Isolated boilers until source found.	
Northeast	RI	1/28/2005	Washington County	Peace Dale	Peace Dale Elementary School	Public	Elementary	no	press coverage	unknown		Snow clogged heating exhaust vent	520 students/teachers evacuated due to CO; elevated levels of CO found upon emergency responders arriving in response to "a gas smell coming from vent"	
Northeast	RI	5/9/2019	Kent County	East Greenwich	Meadowbrook Farms Elementary School	Public	Elementary	no	press coverage	unknown		cause unknown	children in same classroom all found to have elevated levels of CO in their system; getting sick in class	
South	SC	1/31/2019	PeeDee County	Florence	West Florence High School	Public	High School	unknown	press coverage	unknown	15 people tested positive for carbon monoxide poisoning	unattributed	teachers students repeatedly falling ill in science classroom and surrounding classrooms	
Midwest	SD	2/17/2021	McCook County	Canistota	Canistota School	Public	K-12	unknown	press coverage	40 ppm	25 children and teachers	forklift exhaust, additional gas-based construction equipment being improperly ventilated during construction on school gym while children in classes/staff on site	repeated presence of CO over series of weeks	
South	TN	11/6/2006	Bradley County	Cleveland	name not provided	unknown	Elementary	unknown				SAFEKIDS Worldwide - Georgia Testimony, February 2012	All students evacuated when high levels of CO detected in some classrooms	
South	TN	1/15/2013	Davidson County	Nashville	Drexel Preparatory Academy	Private	Elementary	No	press coverage	unknown	36 kindergarten and 1st graders arrive at hospital (28 of them stay overnight)	hole discovered in heating unit in center of school	children treated in hospital for CO poisoning with elevated levels in system after early school cancellation due to mystery "bug"	
South	TN	11/12/2018	Knox County	Knoxville	Lonsdale Elementary	Public	Elementary	no	press coverage	unknown		leaking flue on gas water heater	haze, weird readings on general alarm panel; emergency services called and found elevated levels of CO in boiler room and other areas of building; prompted evacuation of 300+ students; no detectors required according to building code	
South	TN	2/27/2019	Sumner County	Hendersonville	Children's First Preschool	Private	Daycare/Preschool	no	press coverage	unknown	28 kids and teachers treated at hospital, some remained on oxygen for 24 hours	malfunctioning boiler in toddler area	teachers noticed funny symptoms occurring, called emergency responders	

South	TN	1/31/2020	Shelby County	Cordova	Kate Bond Middle School	Public	Middle	no	press coverage	unknown	4 students hospitalized; 18 treated at scene	"heating unit on roof above classroom leaked CO into building"	originally a medical distress call for "a child having trouble breathing"; when responders appeared on scene, children were definitely exhibiting symptoms of CO poisoning but portable meters were reading negative; however, 2nd sweep by inspectors found source of elevated CO issue
South	TX	10/7/2009	Gray County	Pampa	name not provided	Public	High School	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		furnace issue	CO leak forced evac of students
South	TX	11/4/2011	Harris County	Houston	Barnett Stadium (multiple schools at event)	Public	High School	no	press coverage	unknown	22 students treated at hospital	Possible exposure from standing buses or nearby generators	22 students taken to hospital with mysterious illness, at least one treated for CO poisoning
South	TX	1/6/2012	Dallas County	Dallas	Rangel Women's Leadership High School	Public	High School	no	press coverage	unknown		improperly ventilated boiler	School of 500+ evacuated; nearly 1 dozen people complaining of CO symptoms
South	TX	3/4/2015	Dallas County	Dallas	Lakewood Elementary	Public	Elementary	yes	press coverage	unknown	1 staff member and 1 volunteer (both adults) to the hospital, and three others planned to seek medical care on their own.	dead owl blocked one of boilers pipes, CO accumulation in boiler room, add'l parts of bldg	20+ students show signs of CO poisoning; boilers didn't kick on until morning. CO detectors didn't alert; happened multiple times during week
South	TX	4/10/2015	Tarrant County	Fort Worth	Diamond Hill Elementary	Public	Elementary	No	press coverage	unknown	14 people (didn't specify age) being treated at local hospitals due to incident	construction team using gas powered cutting tool	students, staff evacuated;
South	TX	1/28/2016	Jefferson County	Beaumont	Marshall Middle School	Public	Middle School	no	press coverage	400 ppm at source; 100 ppm upon entry to building	175 treated on site; 69 taken to hospitals via ambulance, additional 100 went to hospital on their own after continued illness	occurred "as a result of two different failures" - corrosion that let fire exit the boiler and an inoperative ventilation fan, according to a report from the Texas Department of Licensing and Regulation.	Emergency services were called because a child passed out - wasn't until they were on site that CO was suspected; According to the report, the firebox, which should contain the flame inside the boiler, had deteriorated, likely because of condensation or a leak in the roof. The corroded portion of the firebox allowed the flame to exit the boiler, emitting carbon monoxide into the room.
South	TX	1/12/2018	Jefferson County	Beaumont	Dishman Elementary	Public	Elementary	yes	press coverage	unknown		boiler	alarm sounded, evacuating all students and staff; limited to boiler room area, shutoff until rental boiler could be obtained/
South	TX	1/8/2021	Travis County	Austin	Allison Elementary	Public	Elementary	yes	press coverage	unknown		unidentified source	gas smell, CO alarms alerting prior to student arrivals; staff called 911
West	UT	3/27/2012	Wasatch County	Heber	Heber Valley Elementary School	Public	Elementary	no	press coverage	unknown	1 teacher, 17 students treated at local hospital	construction crew using machinery by open door	separate classes and teachers in school began experiencing CO related illnesses; fire dept responded to a "smoke" alarm, as no CO detectors on site
West	UT	11/8/2013	Uintah County	Salt Lake City	Montezuma Creek Elementary	Public	Elementary School	no	press coverage	300 ppm	40 hospitalized, 3 airlifted	exhaust pipe coming from one of two water heaters had become disconnected at some time venting gas into a mechanical room, the kitchen, and classrooms.	There was an assembly in gymnasium which is located next to the water heaters; School evacuated upon illnesses
West	UT	9/17/2018	Weber County	Ogden	Weber High School	Public	High school	no	press coverage	unknown	2 students taken to hospital	unspecified	elevated levels of CO found in classroom by FD meters, students feeling ill; 20+ treated on scene
West	UT	11/15/2018	Davis County	West Point	West Point Junior High School	Public	Junior High	no	press coverage	unknown	1 student transported to ER	source unidentified	no CO found once FD arrived with detectors, however multiple people exhibiting exposure symptoms in gymnasium area
West	UT	1/10/2019	Uintah County	Salt Lake City	Ashley Elementary School	Public	Elementary	yes	press coverage	unknown		unidentified source in kitchen	
West	UT	12/18/2019	Cache County	Logan	Mt. Logan Middle School	Public	Middle school	yes	press coverage	unknown		art kiln	elevated levels of CO found in art room after kiln use, setting off detectors carbon monoxide issue. Assisted in finding source and ventilated. Verified rest of building had CO free air with 4 gas monitor. Removed boiler from service due to this being the source.
South	VA	12/30/2014	Chesterfield County	Middleton, VA	St. Edward-Epiphany School	Private	Primary to Middle	unknown	Chesterfield County FOIA	unknown		boiler	
South	VA	2/9/2015	Loudoun County	Sterling, VA	Michael & Son Sportplex	Recreational	Recreational care	unknown	Loudoun County FOIA	unknown			
South	VA	4/3/2015	Fairfax County	Chantilly, VA	Westfield High School	Public	High School	unknown	Fairfax Co Fire FOIA	115ppm		Propane-fueled floor buffer	High CO readings reported; entered school to find cleaning crew using propane-fueled floor buffer in main hallways, causing several to feel ill and have to leave the building - elevated readings of 115ppm recorded by emergency responders
South	VA	8/18/2015	Henrico County	Henrico, VA	Tuckahoe Elementary School	Public	Elementary School	yes	Henrico County FOIA	115ppm		construction equipment (wet saw); improper ventilation	Source: construction equipment (wet saw), improper ventilation; EMS 1 with school principal secretary confirmed alarm location with active alarm, visual and audible in door area 021. Upon gaining access to the alarm location construction sounds were noted with a wet saw cutting concrete. Dust and the odor of fuel emissions were present. EMS 1 requested T10 to assist with atmospheric monitoring due to the confined space and location. Reading of 35-115ppm was present just before the effected hall with dust and air borne particle present. EMS 1 with Mrs. Ford stopped to allow HFD crews to stop activity and confirm that the alarm was due to construction. T10 with E08 as back up made entry and evacuated crews with a superintendent Doug Updegrave exiting the structure to explain the construction being completed. He advised the saw was only running 20 minutes with multiple windows open but no force ventilation. He was advised of the CO levels and that corrective actions needed to be completed. Michele Loveland of HCPS 349-249 was contacted by TES staff to advise her of the alarm and levels of CO found. After force ventilation and atmospheric monitoring work were completed. Mr. Updegrave was allowed back into the structure to work. Mr. Updegrave confirmed that all gas powered tools would not be restarted until proper ventilation could be conducted.
South	VA	1/14/2016	Arlington County	Arlington, VA	Cody Child Development Ctr	Private	Daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/9/2016	Arlington County	Arlington, VA	Charles Drew Elementary	Public	Elementary School	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/16/2016	Loudoun County	Chantilly, VA	J Michael Lunsford Middle	Public	Middle School	unknown	Loudoun County FOIA	unknown			
South	VA	4/17/2017	Henrico County	Richmond, VA	Starling Child Care	Private	Daycare	unknown	Henrico County FOIA	unknown		gas water heater	Smell of gas in utility room with gas water heater. Gas Heater turned off and gas secured. Told supervisor to have unit serviced prior to turning back on
South	VA	8/2/2017	Fairfax County	Falls Church, VA	Bailey's Upper Elementary School	Public	Elementary School	yes - alarm panel activated	Fairfax Co Fire FOIA	20 ppm		Cleaning machines being u	Source was cleaning crew (using equipment and solutions) on 3rd floor near elevator lobby; accumulation of CO in the hallways/lobby

South	VA	10/6/2017	Arlington County	Arlington, VA	Inhome daycare	Private	daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/14/2017	City of Chesapeake	Chesapeake	Deep Creek High School	Public	High School	unknown	press coverage	unknown		Two separate natural gas leaks found in rooftop HVAC	Deep Creek High School students/teachers sheltered in different parts of school due to gas odor; firefighters respond find elevated CO
South	VA	1/11/2018	Henrico County	Henrico, VA	Minnieland/Skipwith Academy/Montessor Kids Universe - 3450 Lauderdale Drive	Private	Daycare	no	Henrico County FOIA	100ppm		suspected: kitchen oven	Infant to Pre-K on site; S13 and E16 responded for a report of a gas smell during the last two days at a day care facility. S13 arrived on scene and established command. Met manager at the front door and detected the slightest smell of gas. Manager reported one of the parents had come to him with a concern. S13 began monitoring with the four gas monitor, found carbon monoxide levels of 10- 20 throughout the occupancy with readings of 30 in the gym area. Occupants removed from the gym area. Ventilation initiated, gas appliances were the rooftop heating units, water heater, and two cook stoves in the kitchen area. HVAC company was on scene replacing a draft motor on one of the rooftop units. Monitored the individual ducts for each of the four rooftop units in the occupancy as well as on the roof. Unable to find a significant level of CO from these units. Vent stacks for the hot water heater and hood above the stoves appeared intact and dispersed above the roof. Ran hot water heater and stove for a few minutes and found one of the ovens was producing CO at levels near 100ppm when the oven was opened. The other oven was not producing a noticeable amount of CO but several of the stovetop burners would not light. Shut off gas to both of the stoves and felt that the one oven had been the source of CO. After ventilation, readings had dropped down to about 5 throughout the building. Monitored B and D exposures with readings of 0 found in both. Advised occupants to have stoves repaired or replaced and strongly encouraged them to have CO detectors installed due to the type of occupancy. After ventilation was shut down and all doors had been closed the CO levels did not reproduce. Went back approx. an hour later and monitored the building, highest level was 3ppm in a small closet near the kitchen. All other readings 0 throughout.
South	VA	1/16/2018	Fairfax County	McLean, VA	The Langley School	Private	K-12	yes - battery operated in utility room	Fairfax Co Fire FOIA	unknown		gas fired water heater in utility	called to school due to odorous gas, maintenance found battery operated alarm alerting in utility room; shut down gas fired water heater, advised school to repair/replace
South	VA	2/13/2018	Henrico County	Henrico, VA	Minnieland/Skipwith Academy/Montessor Kids Universe - 3450 Lauderdale Drive	Private	Daycare	yes	Henrico County FOIA	>499ppm		rooftop heating unit	S13 responded to a CO detector activation call. Upon arrival we were met outside the business by the responsible party/manager of the business. She stated she has a CO detector that has been activating and requested assistance with this. The business is a child daycare facility with 30-40 children and adults. The initial investigation immediately found a CO reading at the front door to the business at 49PPM and rising. We immediately evacuated the business, requested an engine company and a fire medic be dispatched to assist on the call. The children were initially staged on the sidewalk outside of the business, in the staff's care, both individually and in cribs. S13 driver made contact with 9 Rounds Fitness club two businesses down from the call location and received permission to place all the occupants in there to get them out of the weather and into a central, controllable location. S13 personnel donned SCBA and began further evaluation of the business. Inside we found the highest reading of 60PPM, on the B side interior wall side and the back corridor. Evaluation of the appliances in the kitchen and water heater found no issues or increased readings. Per the staff, the stoves were new purchases within the last month. S13 B turned off the heat system at this point. E13 was assigned to check utilities to the rear of the structure, and F13 was given the assignment of evaluating the children and staff for any symptoms or medical complaints. No complaints or medical issues were reported or noted. Inside it was noticed that the readings were changing to lower readings following the heat system being shut down. E13 and F13 were assigned to ladder the roof and evaluate the heat systems on the roof. The heat system was turned back on and upon investigating, the center unit on the roof was found to be emitting CO at a level of 238PPM in the general vicinity, and >499 at the unit itself. The heat was again powered off, and the gas service valve to the unit was closed. Ventilation utilizing an electric PPV was initiated. Speaking with the manager of the facility, she advised that the maintenance personnel to the business was notified and would be responding. The property management representative arrived and was briefed on the situation and stated they had a CO issue last month that was determined to be from the stoves, which had been replaced. Ventilation successfully removed the CO to a level of <5PPM throughout the business, where nost readings were 0. Ceiling tiles were also removed to allow for air circulation during ventilation above the drop ceiling. Final evaluation of the CO readings remained consistent with the last low readings after turning the remaining non-malfunctioning heat units back on, and the occupants were allowed to return. The facility maintenance representative arrived and was briefed on our findings. He reported to the roof and evaluated the suspect unit and verified it was properly shut down with no power to it. He advised he would be getting with the property management company to have repairs made. S13 assisted the staff with returning the children and returned to service. FMO arrived and was briefed by S1.
South	VA	4/17/2018	City of Virginia Beach	Virginia Beach	Cox High School	Public	High School	unknown		unknown		Butane canister leaking inside a classroom	Cox High School evacuated
South	VA	5/31/2018	City of Virginia Beach	Virginia Beach, VA	Bow Creek Presbyterian School	Private	Daycare/Preschool	no	City of Virginia Beach FOIA	18ppm		malfunctioning rooftop furnace	L16 received a phone call from the church saying some people smelled natural gas. L16 arrived on scene and no odor of natural gas. L16 performed air monitoring inside the structure. 12-18PPM of CO was noted on the meter in the hallway and classrooms of the pre-school. L16 upgraded the response and assumed command. L16 evacuated the school portion of the structure approximately 50 children and staff to safer location within the structure. FR01 monitored the school hallway and readings were similar to L16. Issue was isolated to a malfunctioning furnace on the roof. Structure was ventilated and monitored again with all levels within normal limits of 0PPM. Furnace was Red Tagged Repair serviced arrived on scene as fire department was clearing. L16 clear. (NO DETECTORS ON SITE)
South	VA	8/2/2018	Fairfax County	Burke, VA	White Oaks Elementary	Public	Elementary School	yes - monitor	Fairfax Co Fire FOIA	30 ppm		acetylene cylinders outside	School under construction; multi-gas monitor started alerting; cross sensitivity of gases coming from gas cylinders outside, turning into building, accumulating in enclosed space where construction crew working

South	VA	11/29/2018	Arlington County	Arlington, VA	NOVA Kindercare	Private	Daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	12/12/2018	Fairfax County	Vienna, VA	Vienna Adventist Academy	Private	Elementary School	no	Fairfax Co Fire FOIA	70 ppm		roof top HVAC unit	arrived on scene, investigating odor; in gym found odor and meter readings of 70ppm for CO; school evacuated; HVAC unit on roof shut down – vented gym and turned over to maintenance
South	VA	7/16/2019	Fairfax County	Alexandria, VA	Stratford Landing Elementary	Public	Elementary School	yes	Fairfax Co Fire FOIA	90 ppm		motorized floor cleaner in kitchen	dispatched for CO detector activation in kitchen of elementary school; source narrowed down to motorized floor cleaner charging in kitchen using monitors; cleaner was removed and put into open air
South	VA	9/20/2019	Fairfax County	Alexandria, VA	Bush Hill Elementary	Public	Elementary School	yes	Fairfax Co Fire FOIA	60 ppm		cracked heat exchanger in roof	building had been evacuated prior to arrival of emergency teams; met with big maintenance, speculated cracked heat exchanger in one of the rooftop heating units; gas shut off and building turned over to maintenance team after ventilation
South	VA	10/3/2019	Henrico or Chesterfield County	Richmond			Elementary school	unknown		unknown			10 staff members reported feeling ill; school evacuated due to suspected gas leak
South	VA	10/31/2019	Arlington County	Arlington, VA	Arlington Assembly of God	Private	Daycare	unknown	Arlington County FOIA	unknown			no further info provided other than address, date of CO-related incident
South	VA	11/21/2019		Alexandria	GW Middle School	Public	Middle School	unknown		unknown		Roof top heating unit malfunction	GW Middle School evacuated due to suspected gas leak, odor
South	VA	2/20/2020	City of Virginia Beach	Virginia Beach, VA	Kids Town Learning Center	Private	Daycare	no	Virginia Beach FOIA	72ppm after doors and windows opened for several hours and school had been evacuated (6 hours later)		furnace	Engine 9 and Ladder 7 were dispatched to a CO detector activation that had been brought in after symptoms had been occurring for most of day at 4847 Dolton Dr. Engine 9 and Ladder 7 found readings of 72 parts-per-million and an odor of natural gas in the structure. Staff at the location also advised that there were 74 children plus staff at the facility. Engine 9 upgraded the incident to a flammable adding Rescue 2, Battalion 5, and Safety 1 to the incident. Battalion 5 assumed command upon their arrival, and Rescue 2 assisted Ladder 7 with monitoring and ventilating the structure. Members from Engine 9 assisted with moving all occupants to a nearby business. Members from Engine 9 assisted EMS with patient care. Upon Safety 1s arrival, Safety 1 assisted Rescue 2 driver with evaluating occupants by utilizing their Rad 57 devices. Ladder 7 and Rescue 2 were unable to locate the exact source and secured natural gas to the entire building. Once the gas was secured, Ladder 7 ventilated the structure. Ladder 7 and Rescue 2 continued to monitor the atmospheric conditions in the structure until they returned to normal. Engine 9 and Safety 1 transferred all patients to EMS. 50 plus patients were evaluated by crews on scene. 5 adult patients were transported to Sentara Leigh Hospital by EMS with minor symptoms and elevated Rad 57 readings. 7 refusals were obtained by EMS for patients with elevated Rad 57 readings who did not wish to be transported. F
South	VA	2/28/2020	City of Virginia Beach	Virginia Beach, VA	Kids Town Learning Center	Private	Daycare	yes	Virginia Beach FOIA	45 ppm		furnace	E09 dispatched to a possible CO hazard. Upon arrival E09 assumed Command and found the manager on scene who stated she unlocked the doors to open the business for the day and found all of the CO detectors alerting in the building which had been plugged in after incident that occurred week prior. E09 found 23ppm at the front door. L07 arrived and walked the entire structure and found 45 ppm throughout the rest of the building. The cause of the CO was unable to be determined so L07 shut down the main gas valve on the Charlie side of the structure. The owner of the building arrived on scene and was advised of the incident. He stated he had crews coming that day to find and repair the leak. E09 advised the on duty inspector of the incident and he told E09 to place the structure on Fire Watch to advise the FMO office. L07 ventilated the structure and E09 red tagged the main gas shut off. VNG arrived and put a lock on the gas shut off valve. No other hazards were found and the business owner was advised that the building could not be used for normal business until the leak is repaired and the FMO office is notified. E09 and L07 cleared and went back in service.
South	VA	8/7/2020	Fairfax County	Falls Church, VA	Bailey's Elementary School	Public	Elementary School	no	Fairfax Co Fire FOIA	unknown		using gas blower it boiler room	dispatched to possible gas leak due to odor; found workers using gas powered blower to clean floors in boiler room; CO accumulation and odors produced
South	VA	2/17/2021	Fairfax County	Annandale, VA	Poe Middle School	Public	Middle School	yes	Fairfax Co Fire FOIA	375-500 ppm		newly installed but faulty HVAC unit supplying air to rear gymnasium	partially evacuated two-story building; carbon monoxide alarm went off, but did not note location; hazmat and fire teams used gas meters; noting 0 ppm upon entry, 5-7 ppm through hallway/boiler room; 1-ppm in kitchen, and as they move further into the hallway into the school hit 100ppm; 150-375 in hallway surrounding gym; fire alarm pulled to assist in evacuating remainder of property; rear gymnasium found to have 500 ppm using school's CO meter;
Northeast	VT	2/5/2010	Chittenden County	Burlington	name not provided	unknown	Unknown	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		new boiler malfunctioning	Elevated CO levels in boiler room
Northeast	VT	1/6/2011	Windham County	Putney	name not provided	unknown	Elementary/Middle	unknown	SAFEKIDS Worldwide - Georgia Testimony, February 2012	unknown		gas leak caused by furnace	11 students, 1 adult. treated for CO poisoning
Midwest	WI	1/7/2009	Milwaukee County	Milwaukee	Oliver Wendell Holmes Elementary	Public	Elementary	unknown	press coverage	unknown		Malfunctioning boiler	Students evacuated due to CO
Midwest	WI	3/22/2018	Waukesha County	Oconomowoc	Oconomowoc High School	Public	High school	unknown	press coverage	unknown	64 students and staff transported via ambulance to local hospitals; additional 40 walk in patients from the school came to ER on their own;	source unknown in gymnasium/auditorium area	additional 72 students/staff assessed on scene for symptoms, did not require transport;
Midwest	WI	1/24/2019	Ozaukee County	Cedarburg	KinderCare	Private	Daycare/Preschool	yes	press coverage	unknown		Malfunctioning furnace/ventilation	80+ students/teachers evacuated safely thanks to CO detectors alerting in multiple areas of property during snowfall
Midwest	WI	7/2/2020	Dane County	Mount Horeb	Hearts & Hands Children's Center	Private	Daycare/Preschool	no, but portable on construction team	press coverage	unknown	5 workers hospitalized; 1 of them in serious condition	propane powered floor machine being used by construction team while children in property	Officials said construction workers were using a propane powered floor machine on the gym floor. They said a carbon monoxide monitor was being used by the crews, but it did not alert them to the rising levels. Officials said a total of 60 people, including 54 students, were inside the center during the incident were tested. None of the students showed symptoms or were hospitalized.
South	WV	12/12/2017	Kanawha County	Charleston	Montrose Elementary	Public	Elementary	no	press coverage	60 ppm		heat exchange box cracked on rooftop heating unit	gym area where students were had 60ppm, nowhere near the unit that was actually malfunctioning which was much higher than that

West	WY	12/30/2014	Fremont County	Fort Washakie	Fort Washakie School	Public	Elementary and middle	no	press coverage	unknown	4 students transported to hospital, others evaluated on scene	source unidentified, but theories based on day's events/conditions/location of elevated CO: a school bus exhaust pipe too close to an intake for the school's air system, snow blocking vents as well	Firefighters were called to the school's gym around 10 a.m. this morning for a report of a possible gas leak. The middle school girls basketball team was practicing and several of them started feeling light-headed, which led to the call. According to radio traffic, one of them passed out.
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Public Input No. 399-NFPA 101-2021 [New Section after 17.3.5.4]

17.3.5.5 Portable Fire Extinguishers.

Portable fire extinguishers shall be provided in accordance with Section 9.9.

Statement of Problem and Substantiation for Public Input

Reason: The concept of trading off portable extinguishers in sprinklered buildings has been largely abandoned by fire protection principles. The National Fire Codes of both NFPA 1 and the ICC- IFC require portable fire extinguishers in all occupancy classes including storage which addresses property protection and property loss as well as, the safety of the building occupants.

A portable fire extinguisher is an effective item of fire protection which allows for small fires to be tackled by the occupants of a building and saves 100s of thousands of dollars in property loss.

It is important to appreciate that while different to official assumptions and desire for evacuation, research shows the public's priorities to be rational and appropriate. The public's experience of fire is vastly different to that of the professionals involved in the planning for and responding to fire.

Some key findings from research studies have been identified and the public's-oriented outcomes include, avoidance of embarrassment, inconvenience, damage to the premises or property, concern for others, pets and possessions and lastly personal injury.

The evidence further identifies that the public is willing and will accept minor consequences in their pursuit of achieving personal humanistic priorities and instinct. Concern for people, pets and possessions are strong and established drivers of behavior in the event of a fire. Therefore, this should be no surprise to see it as an influential feature of most individual's response to a fire.

Limiting a fire to the smallest area within a building is a sensible aspiration.

Official policy and attitudes are most singularly directed at avoiding the risk when the public encounters a fire. This is well meaning but the research has shown that this DOES NOT I REPEAT DOES NOT align with the public's attitude or the ability of the general public.

Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. NFPA 10 states: 5.1.2 The selection of extinguishers shall be independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment. Other codes, and other occupancy chapters have abandoned this concept in recognition of the fact that portable extinguishers are a valuable, cost-effective layer of fire protection, and are intended for a different purpose than sprinklers. To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

A significant amount of data has been collected to support the requirement for portable extinguishers, including: WPI/EKU Study: "Ordinary People and the Effective Operation of Fire Extinguishers", which clearly showed that the vast majority of people who have never used an extinguisher can operate one safely and effectively.

2013 NFPA Report: "U.S. Experience with Sprinklers" reports that there were 48,460 reported structure fires annually in buildings equipped with sprinkler systems between 2007-2011, and 40,440 (83 percent) never grew large enough to activate the system. Based on this report alone, it's clear that people are reacting to small fires and extinguishing them prior to sprinkler activation.

A study by Richard Bukowski in 2014, the life cycle cost of portable fire extinguishers was determined to be between one and a half and four cents per foot annually; if coverage could be maximized to that allowable by code, the cost drops to between a half cent and one cent per foot annually. It's unlikely that any other layer of fire protection is so cost-effective.

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Affiliation: The National Association of State Fire Marshals, The International Fire Marshal's Association - Georgia Chapter / The Georgia Fire Prevention Association and FEMA
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City:
State:
Zip:
Submittal Date: Tue Jun 01 14:27:01 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: The Code is focused on life safety and therefore the committee does not want to encourage staff to attempt using extinguishers, which could delay activation of the fire alarm system and the evacuation of occupants.



Public Input No. 333-NFPA 101-2021 [Section No. 17.4.5]

17.4.5 Alcohol-Based Hand-Rub Dispensers.

~~Alcohol The installation and maintenance of Alcohol -based hand-rub dispensers shall be protected in accordance with 8 dispensers and the storage of alcohol-based hand rub solutions in accordance with 8 .7.3. 1, unless all of the following requirements are met:~~

- ~~• Dispensers shall be installed in rooms or spaces separated from corridors and exits.~~
- ~~• The maximum individual dispenser fluid capacity shall be as follows:~~
 - ~~(1) 0.32 gal (1.2 L) for dispensers in rooms~~
 - ~~(2) 0.53 gal (2.0 L) for dispensers in suites of rooms~~
- ~~• The dispensers shall be separated from each other by horizontal spacing of not less than 48 in. (1220 mm).~~
- ~~• Storage of quantities greater than 5 gal (18.9 L) in a single fire compartment shall meet the requirements of NFPA 30.~~
- ~~• The dispensers shall not be installed over or directly adjacent to an ignition source. Dispensers installed directly over carpeted floors shall be permitted only in sprinklered rooms or spaces 3 shall be permitted .~~

Statement of Problem and Substantiation for Public Input

Our current health situation with the latest viral outbreak has led to a need to increase the number of alcohol based hand sanitizer dispensers within many different types of occupancies. Although alcohol based hand sanitizer was addressed in this chapter and many other requirements were also located in this chapter, the requirements did not apply to storage of sanitizer when not in use or many other provisions that could be applicable. Providing a pointer to section 8.7.3.3 will provide a direct link to all the requirements needed for safe installation, use, and maintenance of alcohol based hand rub dispensers as well as the storage of any alcohol based hand rub materials not in use.

Currently Robert Upson is also chairing an NFPA 30 task group, and Bruce Johnson is chairing an NFPA 1 task group to address this subject within those standards respectively. So a recommendation should be made to this committee to put forth a committee input and create a task group to review this requirement throughout and ensure correlation with NFPA 1 and NFPA 30 task groups that are already reviewing this.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 316-NFPA 101-2021 [Section No. 8.7.3.3]	
Public Input No. 324-NFPA 101-2021 [New Section after 11.4.3.6]	
Public Input No. 325-NFPA 101-2021 [Section No. 12.4.6]	
Public Input No. 327-NFPA 101-2021 [Section No. 14.4.5]	
Public Input No. 326-NFPA 101-2021 [Section No. 13.4.6]	
Public Input No. 329-NFPA 101-2021 [Section No. 15.4.5]	
Public Input No. 330-NFPA 101-2021 [Section No. 16.4.5]	
Public Input No. 332-NFPA 101-2021 [Section No. 16.6.4]	

[Public Input No. 334-NFPA 101-2021 \[Section No. 17.6.4\]](#)
[Public Input No. 336-NFPA 101-2021 \[Section No. 18.4.4\]](#)
[Public Input No. 337-NFPA 101-2021 \[Section No. 19.4.4\]](#)
[Public Input No. 339-NFPA 101-2021 \[Section No. 20.4.4\]](#)
[Public Input No. 340-NFPA 101-2021 \[Section No. 21.4.4\]](#)
[Public Input No. 342-NFPA 101-2021 \[Section No. 22.4.7\]](#)
[Public Input No. 344-NFPA 101-2021 \[Section No. 23.4.7\]](#)
[Public Input No. 347-NFPA 101-2021 \[Section No. 26.3.2.1\]](#)
[Public Input No. 349-NFPA 101-2021 \[Section No. 28.4.2\]](#)
[Public Input No. 354-NFPA 101-2021 \[Section No. 29.4.2\]](#)
[Public Input No. 357-NFPA 101-2021 \[Section No. 30.4.3\]](#)
[Public Input No. 360-NFPA 101-2021 \[Section No. 32.2.4\]](#)
[Public Input No. 361-NFPA 101-2021 \[Section No. 32.3.4.2\]](#)
[Public Input No. 363-NFPA 101-2021 \[Section No. 33.2.4\]](#)
[Public Input No. 364-NFPA 101-2021 \[Section No. 33.3.4.2\]](#)
[Public Input No. 365-NFPA 101-2021 \[Section No. 36.4.6\]](#)
[Public Input No. 367-NFPA 101-2021 \[Section No. 37.4.6\]](#)
[Public Input No. 368-NFPA 101-2021 \[Section No. 38.4.4\]](#)
[Public Input No. 369-NFPA 101-2021 \[Section No. 39.4.4\]](#)
[Public Input No. 370-NFPA 101-2021 \[Section No. 40.4.3\]](#)
[Public Input No. 371-NFPA 101-2021 \[Section No. 42.4.3\]](#)

Submitter Information Verification

Submitter Full Name: Kelly Nicoletto
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Submittal Date: Tue Jun 01 10:05:25 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6711-NFPA 101-2021](#)
Statement: The TC agrees that the language should refer to 8.7.3.3 for requirements relating to ABHR dispensers.



Public Input No. 334-NFPA 101-2021 [Section No. 17.6.4]

17.6.4 Alcohol-Based Hand-Rub Dispensers.

~~Alcohol The installation and maintenance of Alcohol -based hand-rub dispensers shall be protected in accordance with 8 dispensers and the storage of alcohol-based hand rub solutions in accordance with 8 .7.3. 1, unless all of the following requirements are met:~~

- ~~• Dispensers shall be installed in rooms or spaces separated from corridors, stairways, and exterior doors.~~
- ~~• The maximum individual dispenser fluid capacity shall be as follows:

 - (1) 0.32 gal (1.2 L) for dispensers in rooms
 - (2) 0.53 gal (2.0 L) for dispensers in suites of rooms~~
- ~~• The dispensers shall be separated from each other by horizontal spacing of not less than 48 in. (1220 mm).~~
- ~~• Storage of quantities greater than 5 gal (18.9 L) in a single fire compartment shall meet the requirements of NFPA 30.~~
- ~~• The dispensers shall not be installed over or directly adjacent to an ignition source. Dispensers installed directly over carpeted floors shall be permitted only in sprinklered rooms or spaces 3 shall be permitted .~~

Statement of Problem and Substantiation for Public Input

Our current health situation with the latest viral outbreak has led to a need to increase the number of alcohol based hand sanitizer dispensers within many different types of occupancies. Although alcohol based hand sanitizer was addressed in this chapter and many other requirements were also located in this chapter, the requirements did not apply to storage of sanitizer when not in use or many other provisions that could be applicable. Providing a pointer to section 8.7.3.3 will provide a direct link to all the requirements needed for safe installation, use, and maintenance of alcohol based hand rub dispensers as well as the storage of any alcohol based hand rub materials not in use.

Currently Robert Upson is also chairing an NFPA 30 task group, and Bruce Johnson is chairing an NFPA 1 task group to address this subject within those standards respectively. So a recommendation should be made to this committee to put forth a committee input and create a task group to review this requirement throughout and ensure correlation with NFPA 1 and NFPA 30 task groups that are already reviewing this.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 316-NFPA 101-2021 [Section No. 8.7.3.3]	
Public Input No. 324-NFPA 101-2021 [New Section after 11.4.3.6]	
Public Input No. 325-NFPA 101-2021 [Section No. 12.4.6]	
Public Input No. 326-NFPA 101-2021 [Section No. 13.4.6]	
Public Input No. 327-NFPA 101-2021 [Section No. 14.4.5]	
Public Input No. 329-NFPA 101-2021 [Section No. 15.4.5]	
Public Input No. 330-NFPA 101-2021 [Section No. 16.4.5]	

[Public Input No. 332-NFPA 101-2021 \[Section No. 16.6.4\]](#)
[Public Input No. 333-NFPA 101-2021 \[Section No. 17.4.5\]](#)
[Public Input No. 336-NFPA 101-2021 \[Section No. 18.4.4\]](#)
[Public Input No. 337-NFPA 101-2021 \[Section No. 19.4.4\]](#)
[Public Input No. 339-NFPA 101-2021 \[Section No. 20.4.4\]](#)
[Public Input No. 340-NFPA 101-2021 \[Section No. 21.4.4\]](#)
[Public Input No. 342-NFPA 101-2021 \[Section No. 22.4.7\]](#)
[Public Input No. 344-NFPA 101-2021 \[Section No. 23.4.7\]](#)
[Public Input No. 347-NFPA 101-2021 \[Section No. 26.3.2.1\]](#)
[Public Input No. 349-NFPA 101-2021 \[Section No. 28.4.2\]](#)
[Public Input No. 354-NFPA 101-2021 \[Section No. 29.4.2\]](#)
[Public Input No. 357-NFPA 101-2021 \[Section No. 30.4.3\]](#)
[Public Input No. 360-NFPA 101-2021 \[Section No. 32.2.4\]](#)
[Public Input No. 363-NFPA 101-2021 \[Section No. 33.2.4\]](#)
[Public Input No. 364-NFPA 101-2021 \[Section No. 33.3.4.2\]](#)
[Public Input No. 365-NFPA 101-2021 \[Section No. 36.4.6\]](#)
[Public Input No. 367-NFPA 101-2021 \[Section No. 37.4.6\]](#)
[Public Input No. 368-NFPA 101-2021 \[Section No. 38.4.4\]](#)
[Public Input No. 369-NFPA 101-2021 \[Section No. 39.4.4\]](#)
[Public Input No. 370-NFPA 101-2021 \[Section No. 40.4.3\]](#)
[Public Input No. 371-NFPA 101-2021 \[Section No. 42.4.3\]](#)

Submitter Information Verification

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Submittal Date: Tue Jun 01 10:08:37 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6712-NFPA 101-2021](#)
Statement: The TC agrees that the language should refer to 8.7.3.3 for requirements relating to ABHR dispensers.



Public Input No. 168-NFPA 101-2021 [Section No. 17.7.6]

17.7.6 Integrated Fire Protection and Life Safety Systems.

17.7.6.1–

Building security features included in the built environment are to be integrated and must comply with both the life safety features in this chapter and the building's emergency action planning, evacuation planning and training in accordance with 4.8.

17.7.6.2

Integrated fire protection and life safety systems shall be tested in accordance with 9.11.4.1.

17.7.6.2 3

Integrated fire protection and life safety systems in high-rise buildings shall be tested in accordance with 9.11.4.2.

Statement of Problem and Substantiation for Public Input

This change is being submitted on behalf of the SAF-End task group to integrate security and life safety in class room environments. With the increased emphasis on MNS/ECS, it is intended to provide guidance to ensure both life safety and security are considered.

Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
Public Input No. 165-NFPA 101-2021 [Section No. 14.7.6]	
Public Input No. 164-NFPA 101-2021 [Section No. 4.8.2.1]	
Public Input No. 166-NFPA 101-2021 [New Section after 15.7.6]	
Public Input No. 167-NFPA 101-2021 [Section No. 16.7.6]	
Public Input No. 165-NFPA 101-2021 [Section No. 14.7.6]	
Public Input No. 166-NFPA 101-2021 [New Section after 15.7.6]	
Public Input No. 167-NFPA 101-2021 [Section No. 16.7.6]	

Submitter Information Verification

Submitter Full Name: Maria Marks
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Submittal Date: Tue May 18 11:36:50 EDT 2021
Committee: SAF-END

Committee Statement

Resolution: [FR-6742-NFPA 101-2021](#)

Statement: This change is being submitted on behalf of the SAF-End task group to integrate security and life safety in daycare and educational environments. With the increased emphasis on MNS/ECS, it is intended to provide guidance to ensure both life safety and security are considered.



Public Input No. 122-NFPA 101-2021 [Section No. A.14.7.2.1]

A.14.7.2.1

The requirements are, of necessity, general in scope, as it is recognized that they apply to all types of educational occupancies as well as conditions of occupancies, such as truant schools; schools for ~~the mentally handicapped students with intellectual~~ , vision- ~~impaired~~ , hearing ~~impaired~~ , and speech ~~impaired~~ disabilities ; and public schools. It is fully recognized that no one code can meet all the conditions of the various buildings involved, and it will be necessary for site administrators to issue supplements to these requirements, but all supplements should be consistent with these requirements.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

We used following resources to develop our input:

- “Guidelines for Writing About People with Disabilities” ADA National Network at <https://adata.org/factsheet/ADANN-writing>
- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org/style-guide/>
- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>

Submitter Information Verification

Submitter Full Name: Marsha Mazz

Organization: United Spinal Association

Affiliation: Representing the DARAC Advisory Committee

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Submittal Date: Thu May 06 13:10:21 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6701-NFPA 101-2021](#)

Statement: The TC agrees with the NFPA Disability Access Review and Advisory Committee (DARAC) requests for an update to the terminology used to describe individuals with disabilities.



Public Input No. 123-NFPA 101-2021 [Section No. A.15.7.2.1]

A.15.7.2.1

The requirements are, of necessity, general in scope, as it is recognized that they apply to all types of educational occupancies as well as conditions of occupancies, such as truant schools; schools for ~~the mentally handicapped students with intellectual~~ , vision- ~~impaired~~ , hearing ~~impaired~~ , and speech ~~impaired~~ disabilities ; and public schools. It is fully recognized that no one code can meet all the conditions of the various buildings involved, and it will be necessary for site administrators to issue supplements to these requirements, but all supplements should be consistent with these requirements.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

We used following resources to develop our input:

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- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org/style-guide/>
- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>

Submitter Information Verification

Submitter Full Name: Marsha Mazz

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Submittal Date: Thu May 06 13:13:06 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6714-NFPA 101-2021](#)

Statement: The TC agrees with the NFPA Disability Access Review and Advisory Committee (DARAC) requests for an update to the terminology used to describe individuals with disabilities.



Public Input No. 124-NFPA 101-2021 [Section No. A.16.7.1]

A.16.7.1

The requirements are, of necessity, general in scope, because it is recognized that they apply to all types of day-care occupancies as well as conditions of occupancies, such as truant day-care occupancies; occupancies for the mentally handicapped persons with intellectual, vision impaired, hearing impaired, and speech impaired disabilities; adult day-care; care of infants; and day-care occupancies. It is fully recognized that no one code can meet all the conditions of the various buildings involved, and it will be necessary for site administrators, through the written fire emergency response plan, to issue supplements to these requirements; however, all supplements should be consistent with these requirements. Additionally, it is recommended that fire safety be a part of the educational programs of the occupancy for clients.

Fire emergency response plans need to be written and made available to all employees, including temporary or substitute staff, so that all employees know what is expected of them during a fire emergency. The elements needed in the written plan should be identified in coordination with the authority having jurisdiction.

The facility fire emergency response plan might be a module of a facility disaster plan that covers other emergencies.

The proper safeguarding of clients during a fire emergency requires prompt and effective response by the facility employees in accordance with the fire emergency response plan. Duties covered under the plan should be assigned by position rather than by employee name. Such assignment ensures that, in the absence of an employee, the duties of the position will be performed by a substitute or temporary employee assigned to the position. Temporary or substitute employees should be instructed in advance regarding their duties under the plan for the position to which they are assigned.

Written fire emergency response plans should include, but should not be limited to, information for employees regarding methods and devices available for alerting occupants of a fire emergency. Employees should know how the fire department is to be alerted. Even where automatic systems are expected to alert the fire department, the written plan should provide for backup alerting procedures by staff. Other responses of employees to a fire emergency should include the following:

- (1) Removal of clients in immediate danger to areas of safety, as set forth in the plan
- (2) Methods of using building features to confine the fire and its byproducts to the room or area of origin
- (3) Control of actions and behaviors of clients during removal or evacuation activities and at predetermined safe assembly areas

The written plan should state clearly the facility policy regarding the actions staff are to take or not take to extinguish a fire. It should also incorporate the emergency egress and relocation drill procedures set forth in 16.7.2.

For additional guidance on emergency action plans, see *NFPA 1600*. This standard establishes a common set of criteria for disaster management, emergency management, and business continuity programs.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements

that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

We used following resources to develop our input:

- “Guidelines for Writing About People with Disabilities” ADA National Network at <https://adata.org/factsheet/ADANN-writing>
- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org/style-guide/>
- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>

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Submission Date: Thu May 06 13:15:07 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6715-NFPA 101-2021](#)

Statement: The TC agrees with the NFPA Disability Access Review and Advisory Committee (DARAC) requests for an update to the terminology used to describe individuals with disabilities.



Public Input No. 125-NFPA 101-2021 [Section No. A.16.7.2.1]

A.16.7.2.1

The requirements are, of necessity, general in scope, because it is recognized that they apply to all types of day-care occupancies as well as conditions of occupancies, such as truant day-care occupancies; and day-care occupancies for the mentally handicapped persons with intellectual, vision-impaired, hearing impaired, and speech impaired disabilities. It is fully recognized that no one code can meet all the conditions of the various buildings involved, and it will be necessary for site administrators to issue supplements to these requirements, but all supplements should be consistent with these requirements.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

We used following resources to develop our input:

- “Guidelines for Writing About People with Disabilities” ADA National Network at <https://adata.org/factsheet/ADANN-writing>
- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org/style-guide/>
- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>

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Submittal Date: Thu May 06 13:18:16 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6716-NFPA 101-2021](#)

Statement: The TC agrees with the NFPA Disability Access Review and Advisory Committee (DARAC) requests for an update to the terminology used to describe individuals with disabilities.



Public Input No. 126-NFPA 101-2021 [Section No. A.17.7.1]

A.17.7.1

The requirements are, of necessity, general in scope, because it is recognized that they apply to all types of day-care occupancies as well as conditions of occupancies, such as truant day-care occupancies; occupancies for the mentally handicapped persons with intellectual, vision impaired, hearing-impaired, and speech impaired disabilities; adult day-care; care of infants; and day-care occupancies. It is fully recognized that no one code can meet all the conditions of the various buildings involved, and it will be necessary for site administrators, through the written fire emergency response plan, to issue supplements to these requirements; however, all supplements should be consistent with these requirements. Additionally, it is recommended that fire safety be a part of the educational programs of the occupancy for clients.

Fire emergency response plans need to be written and made available to all employees, including temporary or substitute staff, so that all employees know what is expected of them during a fire emergency. The elements needed in the written plan should be identified in coordination with the authority having jurisdiction.

The facility fire emergency response plan might be a module of a facility disaster plan that covers other emergencies.

The proper safeguarding of clients during a fire emergency requires prompt and effective response by the facility employees in accordance with the fire emergency response plan. Duties covered under the plan should be assigned by position rather than by employee name. Such assignment ensures that, in the absence of an employee, the duties of the position will be performed by a substitute or temporary employee assigned to the position. Temporary or substitute employees should be instructed in advance regarding their duties under the plan for the position to which they are assigned.

Written fire emergency response plans should include, but should not be limited to, information for employees about methods and devices available for alerting occupants of a fire emergency. Employees should know how the fire department is to be alerted. Even where automatic systems are expected to alert the fire department, the written plan should provide for backup alerting procedures by staff. Other responses of employees to a fire emergency should include the following:

- (1) Removal of clients in immediate danger to areas of safety, as set forth in the plan
- (2) Methods of using building features to confine the fire and its byproducts to the room or area of origin
- (3) Control of actions and behaviors of clients during removal or evacuation activities and at predetermined safe assembly areas

The written plan should state clearly the facility policy regarding the actions staff are to take or not take to extinguish a fire. It should also incorporate the emergency egress and relocation drill procedures set forth in 17.7.2.

For additional guidance on emergency action plans, see *NFPA 1600*. This standard establishes a common set of criteria for disaster management, emergency management, and business continuity programs.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements

that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

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- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org/style-guide/>
- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>

Submitter Information Verification

Submitter Full Name: Marsha Mazz

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State:

Zip:

Submittal Date: Thu May 06 13:20:38 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6717-NFPA 101-2021](#)

Statement: The TC agrees with the NFPA Disability Access Review and Advisory Committee (DARAC) requests for an update to the terminology used to describe individuals with disabilities.



Public Input No. 127-NFPA 101-2021 [Section No. A.17.7.2.1]

A.17.7.2.1

The requirements are, of necessity, general in scope, because it is recognized that they apply to all types of day-care occupancies as well as conditions of occupancies, such as truant day-care occupancies; and day-care occupancies for the mentally handicapped persons with intellectual , vision- impaired , hearing- impaired , and speech impaired disabilities . It is fully recognized that no one code can meet all the conditions of the various buildings involved, and it will be necessary for site administrators to issue supplements to these requirements, but all supplements should be consistent with these requirements.

Statement of Problem and Substantiation for Public Input

The NFPA Disability Access Review and Advisory Committee (DARAC) requests an update to the terminology used to describe individuals with disabilities. In general, we suggest using “people first” language to avoid characterizing a person or group of persons entirely by their disability. Also, where possible, we recommend substituting the appropriate technical term when describing building elements that are accessible to individuals with disabilities, rather than describing the element as being “for” such people. For example, we would say “accessible parking” instead of “handicap parking”. The substitute terms we recommend are found to be more acceptable to the disability community and its supporters and, therefore, demonstrate greater respect.

We used following resources to develop our input:

- “Guidelines for Writing About People with Disabilities” ADA National Network at <https://adata.org/factsheet/ADANN-writing>
- “Disability Style Guide” National Center on Disability and Journalism at <https://ncdj.org/style-guide/>
- “Resources for Reporters Writing About Blindness and Vision Loss” American Foundation for the Blind at <https://www.afb.org/news-publications/press-room/reporter-resources-writing-about-blindness-vision-loss>
- “Five Tips for Writing About People with Disabilities” Adaptive Sports Center at <https://www.adaptivesports.org/blog/announcements/five-tips-writing-about-people-disabilities>
- “Fact Sheet: Drug Addiction and Federal Disability Rights Laws” U.S. Department of Health and Hum Services: Office for Civil Rights at <https://www.hhs.gov/sites/default/files/drug-addiction-aand-federal-disability-rights-laws-fact-sheet.pdf>
- “People First Language” District of Columbia Office of Disability Rights at <https://odr.dc.gov/page/people-first-language>

Submitter Information Verification

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Organization: United Spinal Association

Affiliation: Representing the DARAC Advisory Committee

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Submittal Date: Thu May 06 13:22:50 EDT 2021

Committee: SAF-END

Committee Statement

Resolution: [FR-6718-NFPA 101-2021](#)

Statement: The TC agrees with the NFPA Disability Access Review and Advisory Committee (DARAC) requests for an update to the terminology used to describe individuals with disabilities.