Second Revision No. 5137-NFPA 72-2023 [Section No. 3.3.91]

3.3.91 Dwelling Unit.

One or more rooms arranged for complete, independent housekeeping purposes, with space for eating, living, and sleeping; facilities for cooking; and provisions for sanitation. [**5000,** 2024] (SIG-HOU)

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Thu Jul 27 14:35:56 EDT 2023

Committee Statement

Committee Statement: The definition has been revised for correlation with NFPA 5000 in accordance with the extract policy.

Response Message: SR-5137-NFPA 72-2023

Second Revision No. 5129-NFPA 72-2023 [New Section after 29.1.1]

29.1.2

Fuel gas detection and warning equipment shall be installed in accordance with NFPA 715 .

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 19:36:04 EDT 2023

Committee Statement

Committee Statement: NFPA 715 is the new standard for fuel gas detection. This will point the reader to NFPA 715 if the gas to be detected is a fuel gas. If the Committee designates this as new material, please carry over to the next cycle for consideration.

Response Message: SR-5129-NFPA 72-2023

Public Comment No. 5-NFPA 72-2023 [New Section after 29.1.2]

Second Revision No. 5117-NFPA 72-2023 [Section No. 29.4]

29.4 Remote Annunciation.

~~Remote annunciation from single- and multiple-station alarms shall be permitted, provided signals at the remote annunciator properly identify the hazard.~~

29.4.1

Remote annunciation from single- and multiple-station alarms shall be permitted~~, provided~~ if signals at the remote annunciator properly identify the hazard.

29.4.2

Integral or remote devices using listening technologies to send alarm signals from smoke alarms and carbon monoxide alarms to a listed control unit shall not be allowed unless the listening technology is specifically listed for the intended purpose.

29.4.2.1

Supervisory signals shall be permitted to be transmitted from devices using listening technologies to a listed control unit.

Supplemental Information

File Name	Description	Approved
SR_5117_Section_29.4.docx		

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 15:50:57 EDT 2023

Committee Statement

Committee Statement: Currently there are no NFPA, UL, or industry standard requirements for smart speakers and smart home systems that provide "listening" equipment or services that alert remote monitoring centers when a fire-warning, carbon monoxide-warning, and combustible gas-warning alarm have been detected. NFPA 72 requires all devices, combinations of devices, and equipment to be installed in conformity with Chapter 29 to be approved or listed for the purposes for which they are intended. Since remote monitoring centers respond to remote annunciations from the listening equipment or services and potentially dispatch emergency services, manufacturers and service providers need to somehow demonstrate that signals coming from the equipment properly identify the hazard.

Response Message: SR-5117-NFPA 72-2023

Public Comment No. 236-NFPA 72-2023 [Section No. 29.4]

Second Revision No. 5100-NFPA 72-2023 [Section No. 29.5.4]

29.5.4*

Carbon monoxide warning equipment to be installed in residential occupancies shall produce the T4 signal consistent with 18.4.3.2 , and after the initial 4 minutes of alarm the 5-second “off” time shall be permitted to be changed to 60 seconds ± 10 percent.

Submitter Information Verification

Committee: SIG-HOU
Submittal Date: Wed Jul 26 09:54:20 EDT 2023

Committee Statement

Committee Statement: The revised language provides a necessary cross-reference to 18.4.3.2.
Response Message: SR-5100-NFPA 72-2023

Public Comment No. 104-NFPA 72-2023 [Section No. 29.5.4]

Second Revision No. 5108-NFPA 72-2023 [Section No. 29.5.5.2]

29.5.5.2

The voice message shall comply with all of the following:

(1) The voice message is first preceded once by a minimum of eight cycles of the T3 signal.

(2) The voice message periodically interrupts the T3 signal for no longer than 10 seconds, followed by a minimum of two cycles of the T3 signal between each voice message.

(3) The initial eight-cycle period ~~shall~~ is not ~~be~~ required to be repeated.

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 11:32:24 EDT 2023

Committee Statement

Committee Statement: The revision is made for Manual of Style compliance.

Response Message: SR-5108-NFPA 72-2023

Public Comment No. 144-NFPA 72-2023 [Section No. 29.5.5.2]

Second Revision No. 5101-NFPA 72-2023 [Section No. 29.5.9]

29.5.9*

Since hearing ~~deficits~~ disabilities are not always apparent, the responsibility for advising the appropriate person(s) of the existence of this ~~deficit~~ disability shall be that of the party with the hearing ~~deficit~~ disability .

Submitter Information Verification

Committee: SIG-HOU
Submittal Date: Wed Jul 26 10:01:26 EDT 2023

Committee Statement

Committee Statement: The second revision revises the term "deficit" to the appropriate term "disability".
Response Message: SR-5101-NFPA 72-2023

Public Comment No. 44-NFPA 72-2023 [Section No. 29.5.9]

Second Revision No. 5144-NFPA 72-2023 [Section No. 29.5.10]

29.5.10*

~~Notification appliances provided in sleeping rooms and guest rooms for those with hearing loss shall comply with~~ ~~29.5.10.1~~ ~~and~~ ~~29.5.10.2~~ ~~, as applicable.~~ Where low frequency sounders, tactile notification appliances, or both are required in rooms by governing laws, codes, or standards, they shall comply with either of the following:

(1) The low frequency sounders shall have a fundamental frequency of 520 Hz ± 10 percent.

(2) Tactile notification appliances shall meet the requirements of Section 18.10 .

A.29.5.10

~~As an example, governing~~ Governing laws, codes, or standards might require a certain number of accommodations to be equipped for those with hearing loss or other ~~disability~~ disabilities . Based on sleep studies to assess the waking effectiveness of different types of alarm signals, a low-frequency alarm signal with a fundamental frequency of 520 Hz has been shown to provide improved awakening for people with hearing loss when compared to typical alarms from high-frequency piezoelectric sounders used in most smoke alarms (Bruck and Thomas, 2009). Visual alarm signals, such as xenon strobes or LED strobes, have been shown to be ineffective at waking people with mild to severe hearing loss (Thomas and Bruck, 2009; Ashley and Du Bois, 2005).

As for all alarm signals, effectiveness of the installed notification for the specific occupants should be tested by the occupants, if possible. The low-frequency alarm signal can be provided by the sounder in a smoke alarm or by a separate notification appliance. It is not the intent of this section to preclude devices that have been demonstrated, through peer-reviewed research, to awaken occupants with hearing loss as effectively as those using the frequency and amplitude specified in this section.

Low-frequency or tactile notification appliances such as bed shakers have been shown to be effective in waking those with normal hearing to profound hearing loss (CSE NIH report, 2005; Bruck and Thomas, 2009; Bruck, Thomas, and Ball, NFPA RF report, 2007; Ashley and Du Bois, 2005; UL 1971, 2018).

Tactile signaling has been studied and found to be an effective way to alert and notify sleeping persons. However, there are many variables that have not been tested that might affect the reliability of their performance.

Some of the appliance variables include the mass of the appliance, the frequency of vibration, and the throw or displacement of the vibrating mass. Occupant variables that might affect the reporting of test results and the effectiveness of the appliance include the person's age, how long a person has lived with their hearing loss, and what sleep stage the person is experiencing when the appliance operates. The type of mattress might also have an effect of the performance of certain tactile appliances. Mattress variables can include mattress thickness, mattress firmness, memory foam mattresses, pillow top mattresses, water beds, air beds, and motion isolation mattresses. Users of tactile appliances are cautioned to test how well they sense the effect of an appliance.

29.5.10.1 Mild to Severe Hearing Loss.

Notification appliances provided for those with mild to severe hearing loss shall comply with the following:

An audible notification appliance producing a low frequency alarm signal shall be installed in the following situations:

Where required by governing laws, codes, or standards for people with hearing loss

Where provided voluntarily for those with hearing loss

* The low frequency alarm signal output shall comply with both of the following:

A waveform having a fundamental frequency of 520 Hz ± 10 percent

A minimum sound level at the pillow of 75 dBA, or 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater

A.29.5.10.1(2) –

It is not the intent of this section to preclude devices that have been demonstrated through peer-reviewed research to awaken occupants with hearing loss as effectively as those using the frequency and amplitude specified in this section.

29.5.10.2* Moderately Severe to Profound Hearing Loss.

Visual notification appliances in accordance with the requirements of 18.5.5.10 and tactile notification appliances in accordance with the requirements of Section 18.10 shall be required for those with moderately severe to profound hearing loss in the following situations:

* Where required by governing laws, codes, or standards for people with hearing loss

A.29.5.10.2(1) –

As an example, governing laws, codes, or standards might require a certain number of accommodations be equipped for those with hearing loss or other disability.

Where provided voluntarily for those with hearing loss

~~**A.29.5.10.2**~~

~~Tactile notification appliances such as bed shakers have been shown to be effective in waking those with normal hearing to profound hearing loss [Ashley et al., 2005, UL 1971, 2018]. Tactile signaling has been studied and found to be an effective way to alert and notify sleeping persons. However, there are many variables that have not been tested that might affect the reliability of their performance. Some of the appliance variables include the mass of the appliance, frequency of vibration, and the throw or displacement of the vibrating mass. Occupant variables that might affect the reporting of test results and the effectiveness of the appliance include the person's age, how long a person has lived with their hearing loss, and what sleep stage the person is experiencing when the appliance operates. The type of mattress might also have an effect of the performance of certain tactile appliances. Mattress variables can include thickness, firmness, memory foam, pillow tops, water beds, air beds, and motion isolation mattresses. Users of tactile appliances should be cautioned to test how well they might sense the effect of the appliance.~~

~~The Code requires both visual notification appliances and tactile appliances. Visual notification appliances can awaken sleeping persons, provide verification that there is a fire alarm condition, and serve to alert persons when they are not in contact with a tactile appliance. See the NFPA Fire Protection Research Foundation report, *Review of Alarm Technologies for Deaf and Hard of Hearing Populations* , August 2021, for further details.~~

Supplemental Information

File Name	Description	Approved
SR_5144_Section_29.5.10_A29.5.10.docx	SR_5144_Section_29.5.10_A29.5.10	

Submitter Information Verification

Committee: SIG-HOU
Submittal Date: Fri Jul 28 00:46:35 EDT 2023

Committee Statement

Committee Statement: This revision provides clear and enforceable language for alerting all people sleeping especially people with hearing loss, school age children, the elderly, and alcohol impaired. Visual appliances were removed from this section because they are covered in 29.5.8. The 75 dB level requirement at the pillow requirement was removed because it was based on requirements only specifying smoke alarms to be installed outside the sleeping areas. Current requirements for smoke alarms to be installed inside the sleeping areas provide the necessary sound level to notify the occupants. The requirements covering level of hearing loss created challenges for the enforcement community. Other revisions are made for compliance with the Manual of Style.

The annex revision adds language to provide clear guidance for alerting all people sleeping especially people with hearing loss, school age children, the elderly and alcohol impaired, also, to correlate and format the annex material accordingly. Annex material regarding audible tactile appliances formerly located in A.29.5.8 has been incorporated into this annex material. Annex material in this section covering visual notification appliances has been relocated as annex material for 29.5.8.

Response Message: SR-5144-NFPA 72-2023

Public Comment No. 16-NFPA 72-2023 [Section No. 29.5.10]

Public Comment No. 18-NFPA 72-2023 [Sections A.29.5.10.1, A.29.5.10.1(2), A.29.5.10.2, A.29.5.1...]

Second Revision No. 5119-NFPA 72-2023 [Section No. 29.7.1.1]

29.7.1.1*

Where ~~required by other governing laws, codes, or standards for a specific type of occupancy~~ installed , listed carbon monoxide alarms ~~or~~ and carbon monoxide detectors shall be ~~installed~~ located as follows:

(1) Outside of each separate dwelling unit sleeping area, within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel

(2) On every occupiable level of a dwelling unit, including basements, excluding attics and crawl spaces

(3) ~~On the ceiling or on the wall with the top of the alarm or detector within 12 in. (300 mm) of the ceiling, when installed in the same room as the permanently installed~~ In all sleeping and guest rooms containing fuel-burning ~~appliances~~ equipment

(4) ~~In accordance with the manufacturer's published instructions~~ Other locations where required by applicable laws, codes, or standards

29.7.1.2*

Each carbon monoxide alarm or carbon monoxide detector shall be located on the wall, ceiling, or other location as specified in the manufacturer's published instructions that accompany the unit.

A.29.7.1.2

The location for effective performance is not generally dependent on mounting height. The density of carbon monoxide is similar to that of air at room temperature, and carbon monoxide generally mixes readily with air. In a room with fuel-burning equipment, there can be benefit to have a carbon monoxide alarm or carbon monoxide detector mounted high on a wall or the ceiling due to the thermal plume from the equipment.

Supplemental Information

File Name	Description	Approved
SR_5119_Section_29.7.1.1_29.7.1.2_A29.7.1.2.docx		

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 16:17:09 EDT 2023

Committee Statement

Committee Statement: The revision restores the original requirement because it was recognized that the first revision could result in installation problems and was not fully supported by available technical literature. The term "fuel-burning appliances" is not defined. "Fuel-burning equipment" was defined under FR-5006 in the First Draft Report. This change revises the text to match the defined term.

Response Message: SR-5119-NFPA 72-2023

Public Comment No. 12-NFPA 72-2023 [Section No. 29.7.1.1]

Second Revision No. 5102-NFPA 72-2023 [Section No. 29.8.1.2]

29.8.1.2

Where the area addressed in 29.8.1.1(2) is separated from the adjacent living areas by a door, a smoke alarm or smoke detector shall be installed in the following locations:

(1) In the area between the door and the sleeping rooms~~, and additional alarms shall be installed~~

(2) On the living area side of the door as specified by 29.8.1.1 and 29.8.1.3

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 10:14:53 EDT 2023

Committee Statement

Committee Statement: This second revision clarifies the requirement and provides compliance with the Manual of Style relative to the use of "shall be installed" in Item # 1.

Response Message: SR-5102-NFPA 72-2023

Public Comment No. 105-NFPA 72-2023 [Section No. 29.8.1.2]

Second Revision No. 5103-NFPA 72-2023 [Section No. 29.9.3]

29.9.3 Household Fire and Carbon Monoxide Alarm Systems.

Power for household alarm systems shall comply with the following requirements:

(1) Household fire and carbon monoxide alarm systems shall have two independent power sources consisting of a primary source that uses commercial light and power and a secondary source that ~~consists of~~ uses a rechargeable battery.

(2) The secondary source shall be capable of operating the household alarm system for at least 24 hours in the normal condition, followed by 4 minutes of fire alarm or 12 hours of carbon monoxide alarm~~.~~ , and comply with the following conditions:

(a) The secondary power source ~~of the~~ for a household carbon monoxide system shall be capable of operating the system for at least 12 hours of alarm in accordance with 29.5.4.

(b) The secondary power source ~~of~~ for a household carbon monoxide system shall not be required to operate the system for 12 hours of alarm if the power source of carbon monoxide detectors and carbon monoxide audible notification appliances incorporating a low-power radio (wireless) transmitter/transceiver is capable of providing at least 24 hours in the normal condition, followed by 12 hours of alarm.

(3) The secondary power source shall be supervised ~~with a distinctive audible and visible trouble signal~~ so that a distinctive audible and visible trouble signal results upon removal or disconnection of a battery or a low-battery condition.

(4) A rechargeable battery used as a secondary power source shall meet the following criteria:

(a) Be automatically recharged by an ~~ac~~ AC circuit of the commercial light and power source

(b) Be recharged within 48 hours

(c) Provide a distinctive audible trouble signal before the battery is incapable of operating the device(s) for alarm purposes

(5) Low-power wireless systems shall comply with the performance criteria of Section 23.16, except as modified by 29.10.8.1.1.

Supplemental Information

File Name	Description	Approved
SR-5103_Section_29.9.3.docx	Clean copy of SR 5103 for Code Ops.	

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 10:25:37 EDT 2023

Committee Statement

Committee Statement: The second revision clarifies the condition under which a distinctive visible or audible trouble signal occurs.

Response Message: SR-5103-NFPA 72-2023

Public Comment No. 190-NFPA 72-2023 [Section No. 29.9.3]

Second Revision No. 5105-NFPA 72-2023 [Section No. 29.9.5.1]

29.9.5.1

Where alarms include a battery that is used as a secondary power source, the following conditions shall be met:

(1) The secondary power source is supervised.

(2) ~~The~~ Supervision of the secondary power source causes a distinctive audible or visible trouble signal upon removal or disconnection of a battery or a low-battery condition.

(3) Acceptable replacement batteries are clearly identified by the manufacturer's name and model number on the unit near the battery compartment.

(4) A rechargeable battery used as a secondary power source meets the following criteria:

(a) ~~Be~~ Is automatically recharged by the primary power source

(b) ~~Be~~ Is recharged within 4 hours where power is provided from a circuit that can be switched on or off by means other than a circuit breaker, or within 48 hours where power is provided from a circuit that cannot be switched on or off by means other than a circuit breaker

(c) Provides a distinctive audible trouble signal before the battery is incapable of operating the device(s) for alarm purposes

(d) At the battery condition at which a trouble signal is obtained, ~~be~~ is capable of producing a fire alarm signal for at least 4 minutes or ~~the~~ a carbon monoxide signal for 12 continuous hours, followed by not less than 7 days of trouble signal operation

(e) Produces an audible trouble signal at least once every minute for 7 consecutive days

Supplemental Information

File Name	Description	Approved
SR_5105_Section_29.9.5.1.docx		

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 10:37:33 EDT 2023

Committee Statement

Committee Statement: The second revision clarifies the requirement.

Response Message: SR-5105-NFPA 72-2023

Public Comment No. 102-NFPA 72-2023 [Section No. 29.9.5.1]

Second Revision No. 5109-NFPA 72-2023 [Section No. 29.10.4.2]

29.10.4.2*

Fixed-temperature alarms or detectors shall comply with both of the following conditions :

(1) Have a temperature rating at least ~~25º~~ 20° F (~~14º~~ 11° C) above the ~~normal ambient~~ maximum expected temperature in the room or space where installed

(2) Not be rated 50°F (28°C) higher than the maximum ~~anticipated ambient~~ expected temperature in the room or space where installed

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 12:00:10 EDT 2023

Committee Statement

Committee Statement: The revision aligns the requirements of this section with those in Chapter 17 and addresses the Manual of Style issue related to temperature.

Response Message: SR-5109-NFPA 72-2023

Public Comment No. 2-NFPA 72-2023 [Section No. 29.10.4.2]

Public Comment No. 157-NFPA 72-2023 [Section No. 29.10.4.2]

Second Revision No. 5135-NFPA 72-2023 [New Section after 29.10.9.1.1]

29.10.9.1.1.1

Remote devices using listening technologies shall not send smoke alarm or carbon monoxide alarm signals directly to a supervising station.

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Thu Jul 27 12:02:46 EDT 2023

Committee Statement

Committee Statement: The revision provides requirements that preclude listening devices from directly sending alarm signals to a supervising station.

Response Message: SR-5135-NFPA 72-2023

Public Comment No. 238-NFPA 72-2023 [Section No. 29.10.9.1.2]

Second Revision No. 5110-NFPA 72-2023 [Section No. 29.10.9.10.4]

29.10.9.10.4

Where a communication or transmission means other than DACT is used, all equipment necessary to transmit an alarm signal shall comply with both of the following conditions :

(1) Be provided with a minimum of 24 hours of secondary power capacity

(2) ~~Report~~ Transmit a specific trouble ~~condition indicating~~ signal upon loss of primary power

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 12:17:58 EDT 2023

Committee Statement

Committee Statement: The revision provides consistency of terminology used in this requirement with terminology used throughout the document.

Response Message: SR-5110-NFPA 72-2023

Public Comment No. 158-NFPA 72-2023 [Section No. 29.10.9.10.4]

Second Revision No. 5113-NFPA 72-2023 [Section No. 29.11.1.4.2]

29.11.1.4.2

The supplier or installing contractor shall provide the system owner or other responsible parties with information noting the following requirements :

(1) ~~Unless otherwise recommended by the manufacturer's published instructions,~~ Replace smoke alarms and carbon monoxide alarms ~~are replaced when they~~ that fail to respond to tests.

(2) ~~Smoke~~ Replace smoke alarms and carbon monoxide alarms ~~do not remain in~~ that have been in service longer than 10 years from the date of manufacture unless otherwise ~~provided by~~ stated in the manufacturer's published instructions.

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 12:51:20 EDT 2023

Committee Statement

Committee Statement: The second revision addresses Manual of Style structure requirements and clarifies the requirement.

Response Message: SR-5113-NFPA 72-2023

Public Comment No. 160-NFPA 72-2023 [Section No. 29.11.1.4.2]

Second Revision No. 5146-NFPA 72-2023 [Section No. 29.11.3.4]

29.11.3.4 Specific Location Requirements.

The installation of smoke alarms and smoke detectors shall comply with the following requirements:

(1) Smoke alarms and smoke detectors shall not be located where ambient conditions, including humidity and temperature, are outside the limits specified by the manufacturer's published instructions.

(2) Smoke alarms and smoke detectors shall not be located within unfinished attics or garages or in other spaces where temperatures can fall below 40°F (4.4°C) or exceed 100°F (38°C).

(3)* Where the mounting surface could become considerably warmer or cooler than the room, such as a poorly insulated ceiling below an unfinished attic or an exterior wall, smoke alarms and smoke detectors shall be mounted on an inside wall.

(4)* Smoke alarms and smoke detectors shall not be installed between 10 ft (3.0 m) and 20 ft (6.1 m) along a horizontal flow path from a stationary or fixed cooking appliance unless the devices are listed for resistance to common nuisance sources from cooking in accordance with ~~the 8th edition of~~ UL 217, *Smoke Alarms*, ~~the 7th edition of~~ or UL 268, *Smoke*

Detectors for Fire Alarm Systems~~, or subsequent editions~~ .

A.29.11.3.4(4)

As ~~per annex material located~~ noted in A.29.8.1, it is not normally recommended that smoke alarms or smoke detectors be placed in or near kitchen spaces. This section of the ~~code~~ Code provides guidelines for safe installation if ~~a need exists~~ it is necessary to install a smoke alarm or smoke detector in a residential kitchen space or cooking area.

~~Within~~ For the purposes of this ~~Code section~~ annex material , a fixed cooking appliance is any appliance that is intended to be permanently connected electrically to the wiring system or the fuel source. A stationary cooking appliance is any appliance that is intended to be fastened in place or located in a dedicated space, and is connected to the supply circuit or fuel source.

~~Smoke~~ Historically, smoke alarms and smoke detectors ~~that are currently available to consumers are~~ have been susceptible to particles released into the air during normal cooking procedures. If smoke alarms and smoke detectors are placed too close to the area where the cooking source originates, ~~a high level of~~ nuisance alarms can occur more often than if they're placed further away . Frequent nuisance alarms can result in an occupant disabling the smoke alarm or smoke detector. New test standards for common nuisance sources from cooking should reduce the susceptibility of smoke alarms to nuisance alarms and therefore reduce the disabling of devices. UL 217, *Smoke Alarms* , and UL 268, *Smoke Detectors for Fire Alarm Systems* , have added new performance tests designed to reduce susceptibility of smoke alarms and smoke detectors to nuisance sources from normal cooking. Smoke alarms complying with these UL standards will be listed "for resistance to common nuisance sources from cooking" and are suitable for installation at distances from cooking appliances outlined in this Code.

Nuisance alarm studies have shown that ~~commercially available residential~~ smoke alarms and smoke detectors are susceptible to nuisance ~~alarms~~ sources from cooking when installed too close to cooking appliances. As the horizontal distance between the smoke alarm or smoke detector~~s~~ and the cooking appliance increases, the frequency of nuisance alarms decreases. ~~Smoke~~ Historically, ionization smoke alarms ~~or~~ and smoke detectors ~~that use ionization smoke detection~~ have been ~~shown to be~~ more susceptible to ~~cooking~~ nuisance alarms than ~~those that use~~ photoelectric smoke ~~detection~~ alarms and smoke detectors when the alarms or detectors are installed within 10 ft (3.0 m) along a horizontal smoke travel path from a cooking appliance. ~~Smoke~~ Photoelectric smoke alarms ~~or~~ and smoke detectors ~~that use photoelectric smoke detection~~ also produce nuisance alarms when installed ~~less than 10 ft (3.0 m) from~~ near a cooking appliance, though to a lesser degree.

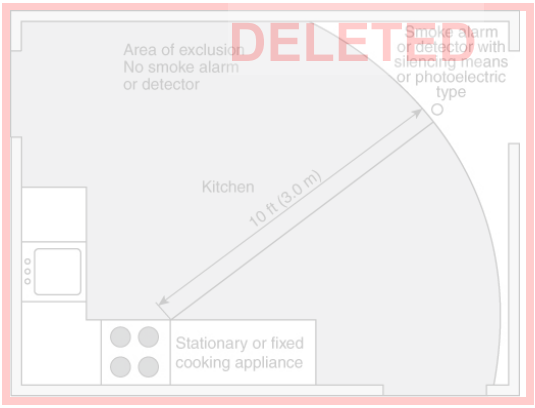
The ~~occurrence of the~~ higher frequency of nuisance alarms observed in ionization smoke alarms ~~or~~ and smoke detectors ~~that use ionization detection have~~ has been documented in ~~the~~ fire research data. Due to the differences in technology between ionization detection and photoelectric detection, the sensitivity typically used for ionization detection is much higher than that used for photoelectric detection. This sensitivity difference is a result of each type of the detection being required to satisfy UL 217 performance tests. Removing detection technology from consideration, the frequency of nuisance alarms is solely due to the sensitivity of the detection method used. Thus, both ionization and photoelectric detector technologies will produce nuisance alarms due to cooking, but ~~currently available~~ ionization smoke alarms and smoke detectors ~~that use ionization detection~~ typically produce more cooking-related nuisance alarms.

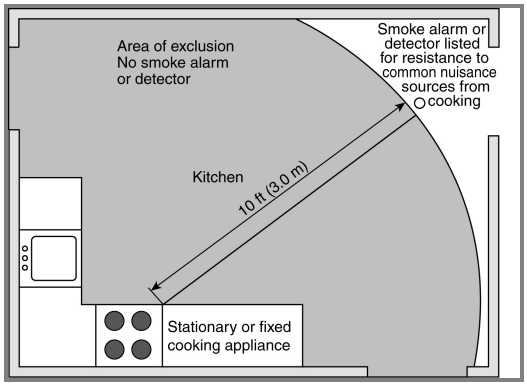
The higher sensitivities of currently available ionization smoke alarms and smoke detectors ~~that use ionization detection~~ do provide a benefit at the expense of a potentially higher rate of cooking-related nuisance alarms. Research has demonstrated that ionization detection will typically respond faster than photoelectric detection to flaming fires, providing earlier warning to occupants that might allow for quicker intervention or faster egress. In general, the installation of ionization smoke alarms ~~or~~ and smoke detectors ~~that use ionization detection~~ will result in increased fire safety at the risk of a higher frequency of nuisance alarms. The installation of photoelectric smoke alarms ~~or~~ and smoke detectors ~~that use photoelectric detection~~ will result in reduced fire safety for flaming fires and a reduced risk of nuisance alarms. ~~Based on~~

~~the trade-off between faster response to fires and the frequency of nuisance alarms, detectors that utilize both technologies (i.e., ionization, photoelectric, and a combination) are allowed to be installed between 10 ft (3.0 m) and 20 ft (6.1 m) along a horizontal flow path from a standard or fixed cooking appliance if the specific detector is equipped with an alarm silencing means or is of the photoelectric-type.~~

Nuisance alarm studies provide data on cooking nuisances that emanate from both fixed cooking appliances and stationary cooking appliances (e.g., stove, oven) as well as portable cooking appliances (e.g., toaster). Based on these studies, which demonstrate the potential of all cooking appliances to generate nuisance sources, a zone of exclusion has been specified surrounding each stationary or fixed cooking appliance. The purpose of this zone is to limit the installation of smoke alarms and smoke detectors in areas where stationary, fixed, or portable cooking appliances will be located within the residential kitchen space such that potential nuisance alarms are minimized. The size of the zone of exclusion ~~is specified to attempt~~ attempts to ~~take into account~~ consider the unknown and transitory locations of portable cooking appliances. This zone of exclusion is determined by measuring a 10 ft (3.0 m) radial distance from the closest edge of a stationary or fixed cooking appliance. The zone of exclusion is not intended to pass through walls or doorways. Figure A.29.11.3.4(4)(a) provides an example of the zone of exclusion in a generalized residential kitchen.

Figure A.29.11.3.4(4)(a) Example of Zone of Exclusion (~~gray area~~ Gray Area) Within Typical Residential Kitchen.





If other areas of this ~~code~~ Code require that ~~a~~ smoke ~~alarm or~~ alarms and smoke detectors be placed within a horizontal flow path distance between 10 ft (3.0 m) and 20 ft (6.1 m) from a stationary or fixed cooking appliance, the following ~~method should be used to determine the distance, and only photoelectric detection or smoke alarms/detectors with alarm silencing means can be installed in this area.~~ applies:

(1) The following ~~method~~ process should be used to determine the distance:

(a) The installer ~~must first~~ should determine the 10 ft (3.0 m) area of exclusion.

(b) The installer ~~must then~~ should determine the horizontal flow distance~~. This~~ , which is the horizontal distance along the ceiling from the closest edge of the cooking appliance to the smoke alarm or detector~~. The horizontal distance~~ and can consist of line segments due to impediments, such as interior partitions.

(c) Once an impediment is met, the measurement of the distance ~~will then~~ should continue along the new horizontal path segment until the distance requirement is met or another impediment is encountered.

(2) In these areas, only ~~photoelectric detection or~~ the following types of smoke alarms~~/~~ and detectors ~~with alarm silencing means~~ can be installed ~~in this area~~ :

(a) Equipment with photoelectric detection

(b) Equipment with silencing means

(c) Equipment listed for resistance to common nuisance sources from cooking

~~To install a smoke alarm or detector between 10 ft (3.0 m) and 20 ft (6.1 m) from the cooking appliance, an installer must first determine the 10 ft (3.0 m) area of exclusion. Once the area of exclusion is determined, an installer must then determine the horizontal flow distance. This is the horizontal distance along the ceiling from the closest edge of the cooking appliance to the smoke alarm or detector. The horizontal distance can consist of line segments due to impediments, such as interior partitions. Once an impediment is met, the measurement of the distance will then continue along the new horizontal path segment until the distance requirement is met or another impediment is encountered.~~ Figure A.29.11.3.4(4)(b) provides an example for placement outside a kitchen in a nearby hallway. Figure A.29.11.3.4(4)(c) provides another example of appropriate placement outside of a kitchen in an adjacent room.

Figure A.29.11.3.4(4)(b) Example of Smoke Alarm or Smoke Detector Placement Between 10 ft (3.0 m) and 20 ft (6.1 m) Away in Hallway from Center of Stationary or Fixed Cooking Appliance.

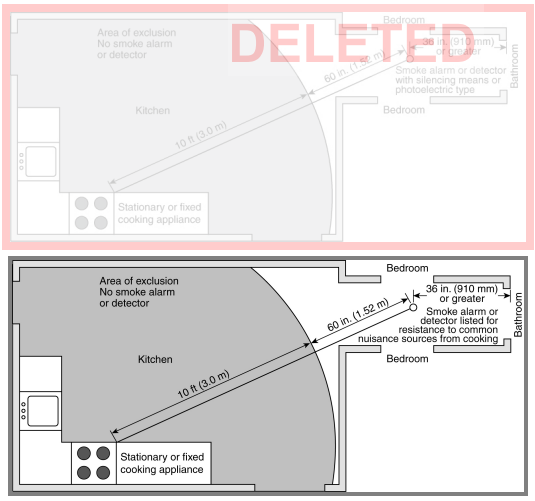
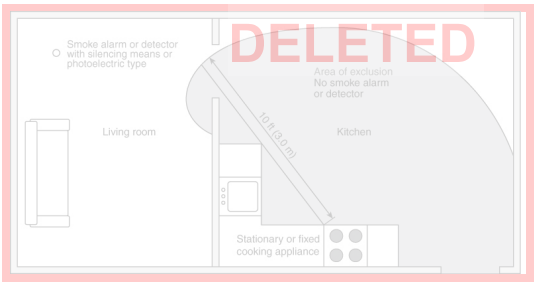
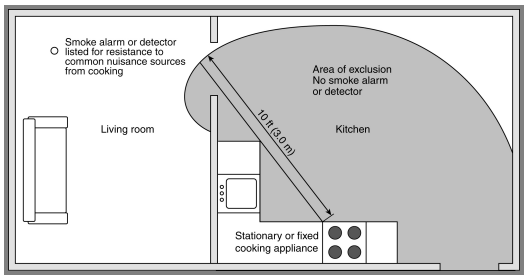


Figure A.29.11.3.4(4)(c) Example of Smoke Alarm or Smoke Detector Placement Between 10 ft (3.0 m) and 20 ft (6.1 m) Away in Hallway from Center of Stationary or Fixed Cooking Appliance.

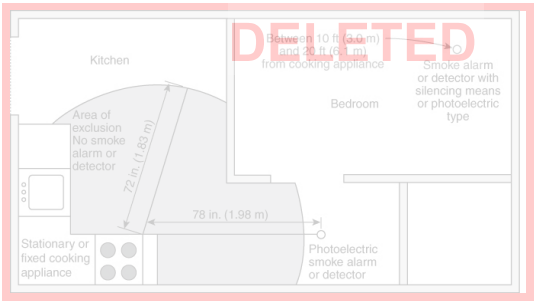




At a horizontal flow path distance ~~of~~ greater than 20 ft (6.1 m), any type of smoke alarm or smoke detector can be installed.

~~In rare cases, a residential dwelling can be of such size and configuration that an area of exclusion of 10 ft (3.0 m) from a stationary or fixed cooking appliance excludes the placement of a smoke alarm or smoke detector required by other areas of this Code. In these cases, a smoke alarm or smoke detector using photoelectric detection can be installed at least 72 in. (1.83 m) from the fixed or stationary cooking appliance. Figure A.29.11.3.4(4)(d) provides an example of this situation in practice where a smoke alarm or smoke detector is required outside of the sleeping area, but the space is in close proximity to the kitchen space.~~

~~**Figure A.29.11.3.4(4)(d) Example of Exception Placement of Photoelectric Smoke Alarm or Smoke Detector at 72 in. (1.83 m) from Stationary or Fixed Cooking Appliance.**~~



~~In response to the above noted nuisance alarm studies, the 8th edition of UL 217, *Smoke Alarms*, and the 7th edition of UL 268, *Smoke Detectors for Fire Alarm Systems* , have added a new performance test to help reduce nuisance alarms from normal cooking. This end-product performance and listing requirement aligns with 29.11.3.4 (6) of this Code. Smoke alarms complying with these UL standards will be listed "for resistance to common nuisance sources from cooking" and are suitable for installation at distances from cooking appliances outlined in this Code.~~

(5) Smoke alarms and smoke detectors shall not be installed within an area of exclusion determined by a 10 ft (3.0 m) radial distance along a horizontal flow path from a stationary or fixed cooking appliance except as permitted in 29.11.3.4(6) . ~~When the 10 ft (3.0 m) area of exclusion would prohibit the placement of a smoke alarm or smoke detector required by other sections of this Code, and when the kitchen or cooking area and adjacent spaces have no clear interior partitions or headers, smoke alarms or smoke detectors shall be permitted for installation at a radial distance between 6 ft (1.8 m) and 10 ft (3.0 m) from any stationary or fixed cooking appliance unless the devices are listed for resistance to common nuisance sources from cooking nuisance alarms in accordance with the 8th edition of UL 217, the 7th edition of UL 268, or subsequent editions.~~

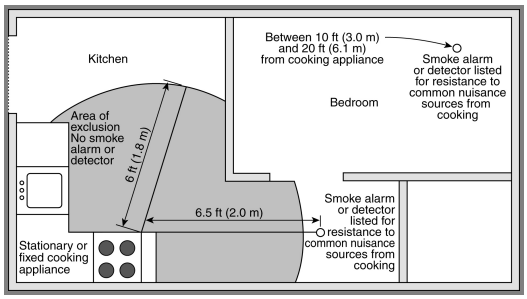
(6)* ~~When~~ Where the 10 ft (3.0 m) area of exclusion would prohibit the placement of a smoke alarm or smoke detector required by other sections of this Code, and ~~when~~ where the kitchen or cooking area and adjacent spaces have no clear interior partitions or headers, smoke alarms ~~or~~ and smoke detectors shall be permitted ~~for installation~~ to be installed at a radial distance between 6 ft (1.8 m) and 10 ft (3.0 m) from any stationary or fixed cooking appliance ~~provided~~ if the devices are listed for resistance to common nuisance sources from cooking in accordance with ~~the 8th edition of~~ UL 217, ~~the 7th edition of~~ or UL 268, ~~or~~

~~subsequent editions~~ .

A.29.11.3.4(6)

In rare cases, a residential dwelling can be of such size and configuration that an area of exclusion of 10 ft (3.0 m) from a stationary or fixed cooking appliance excludes the placement of a smoke alarm or smoke detector required by other areas of this Code. In ~~these cases~~ such a case , a smoke alarm or smoke detector using photoelectric detection or listed for resistance to common nuisance sources from cooking can be installed at least ~~72 in. (1.83 m)~~ 6 ft (1.8 m) from the fixed or stationary cooking appliance. ~~Figure A.29.11.3.4(4)(d)~~ Figure A.29.11.3.4(6) provides an example ~~of this situation~~ in practice where a smoke alarm or smoke detector is required outside of the sleeping area, but the ~~space~~ sleeping area is in close proximity to the kitchen space.

Figure A.29.11.3.4(6) Example of Exception Placement of Photoelectric Smoke Alarm or Smoke Detector at 72 in. (1.83 m) from Stationary or Fixed Cooking Appliance.



(7)* Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from a door to a bathroom containing a shower or tub unless listed for installation in close proximity to such locations.

(8) Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from the supply registers of a forced air heating or cooling system ~~and shall be~~ or installed ~~outside of~~ within the direct airflow from ~~those~~ such registers.

(9)* Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from the tip of the blade of a ceiling-suspended (paddle) fan unless the room configuration restricts meeting this requirement.

(10) Where stairs lead to other occupiable levels, ~~a~~ smoke alarms ~~or~~ and smoke detectors shall be located so that smoke rising in the stairway cannot be prevented from reaching ~~the~~ smoke alarms ~~or~~ and smoke detectors by an intervening door or obstruction.

(11) For stairways leading up from a basement, smoke alarms ~~or~~ and smoke detectors shall be located on the basement ceiling near the entry to the stairs.

(12)* For tray-shaped ceilings (coffered ceilings), smoke alarms and smoke detectors shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 in. (300 mm) vertically down from the highest point.

(13) Smoke alarms and smoke detectors installed in rooms with joists or beams shall comply with ~~the requirements of~~ 17.7.4.2.4.

Supplemental Information

File Name	Description	Approved
SR_5146_29.11.3.4_4_5_A.29.11.3.4_4_5_.docx		

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Mon Jul 31 15:29:51 EDT 2023

Committee Statement

Committee Statement: The first change addresses a sentence that is not written correctly. As written, it is prohibiting the use of detection equipment listed for nuisance sources between 6 and 10 feet from a cooking appliance. The intent is to allow such devices. The second change addresses what appears to be a typo. Both of these issues are also present at least in the 2022 edition.

The annex material required significant revisions based on changes that have been made to the body in 29.11.3.4 which basically allows only detection equipment listed for nuisance resistance to cooking to be installed between 10 and 20 feet from a cooking appliance, with a small exception for these same types of nuisance-resistant detection equipment to be installed between 6 and 10 feet from a cooking appliance if 10 to 20 feet is not feasible. The rewrites change some of the figures, re-orders the section to provide a shorter introduction to the issue with nuisance alarms from legacy detection equipment followed by the discussion of nuisance-resistant equipment, and then discusses the areas of exclusion. The reference to 29.11.3.4(6) is removed. This section relates to bathrooms/showers. Annex material that is more applicable to (5) has been relocated from (4).

Response Message: SR-5146-NFPA 72-2023

Public Comment No. 6-NFPA 72-2023 [Section No. 29.11.3.4]

Public Comment No. 7-NFPA 72-2023 [Section No. A.29.11.3.4(4)]

Second Revision No. 5122-NFPA 72-2023 [Section No. 29.14.2]

29.14.2 Instructions.

29.14.2.1 ~~Carbon Monoxide Alarms and Carbon Monoxide~~ Alarms and Detectors.

The following information shall be included in the instructions provided with ~~carbon monoxide alarms and carbon monoxide~~ alarms and detectors:

(1) Installation instructions

(2) Operating instructions

(3) Testing instructions

(4) Maintenance instructions

(5) Replacement and service instructions

29.14.2.2 Carbon Monoxide Alarms and Carbon Monoxide Detectors.

In addition to 29.14.2.1, the following information shall be included in the instructions provided with carbon monoxide alarms and carbon monoxide detectors:

(1) Statement indicating that smoke might not be present during a carbon monoxide alarm condition

(2)* Information on the actions to be taken in case of an alarm

(3) Minimum and recommended distances from fuel-burning ~~appliances~~ equipment

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 16:45:40 EDT 2023

Committee Statement

Committee Statement: Section 29.14.2.1 applies to all detectors and alarms. The revision of the term "appliances" to "equipment" in 29.14.2.2 is to correlate with the new definition of "fuel burning equipment" in Chapter 3.

Response Message: SR-5122-NFPA 72-2023

Public Comment No. 13-NFPA 72-2023 [Section No. 29.14.2.2]

Second Revision No. 5145-NFPA 72-2023 [Section No. A.29.5.8]

A.29.5.8

~~Low frequency or tactile notification appliances such as bed shakers have been shown to be effective in waking those with normal hearing to profound hearing loss [CSE NIH report, 2005; Bruck and Thomas, 2009; Bruck, Thomas, and Ball, NFPA RF report, 2007]. Additionally, see~~ Visual notification appliances can awaken sleeping persons, provide verification that there is a fire alarm condition, and serve to alert persons when they are not in contact with a tactile appliance. See the ~~NFPA Fire Protection Research Foundation~~ FPRF report, *Review of Alarm Technologies for Deaf and Hard of Hearing Populations*, ~~August 2021,~~ for further details.

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Mon Jul 31 14:31:55 EDT 2023

Committee Statement

Committee Statement: The charging paragraph for this annex material does not reference low frequency or tactile notification appliances – rather it refers to visual notification appliances. Annex material formerly located in A.29.5.10.2 on visual notification appliances has been relocated to be associated with requirements for visual notification appliances in 29.5.8.

Response Message: SR-5145-NFPA 72-2023

Public Comment No. 35-NFPA 72-2023 [Section No. A.29.5.8]

Second Revision No. 5120-NFPA 72-2023 [Section No. A.29.7]

A.29.7

Hazardous concentrations of carbon monoxide can accumulate in a residence, generally from improperly operating ~~heating appliances~~ fuel-burning equipment , insufficient make-up air into the residence or space, or blocked chimneys or vents. However, there are many other potential sources of carbon monoxide within a home, including, but not limited to, the following:

(1) Malfunctioning fossil fuel–burning ~~appliances~~ equipment

(2) Wood stoves

(3) Fireplaces

(4) Idling automobiles in attached garages

(5) Portable equipment such as gasoline-powered lawn and garden equipment and electric power generators

(6) Barbecues

Carbon monoxide is odorless, tasteless, and colorless; therefore, its presence is undetectable by smell, taste, or sight. Carbon monoxide can be mixed and migrate throughout a residence through the HVAC system. Carbon monoxide alarms meeting the requirements of UL 2034, *Single and Multiple Station Carbon Monoxide Alarms*, and carbon monoxide detectors meeting the requirements of UL 2075, ~~*Safety*~~ *Gas and Vapor Detectors and Sensors*, ~~and~~ that are installed in accordance with this standard should provide a significant level of protection against fatal carbon monoxide exposure.

The installation of additional carbon monoxide alarms could result in a higher degree of protection. Adding alarms to rooms where fuel-burning ~~appliances are~~ equipment is located could provide earlier warning of carbon monoxide hazards caused by those sources. Additional alarms located in rooms normally closed off from the required alarms could increase the escape time, since the carbon monoxide concentration needed to force the carbon monoxide out of the closed rooms to the alarms would not be necessary. As a consequence, the installation of additional carbon monoxide alarms should be considered.

Carbon monoxide alarms or detectors are not substitutes for proper maintenance, inspection, and testing of fuel-burning equipment. Fuel-burning equipment ~~and appliances~~ should be used, maintained, tested, and inspected according to the manufacturers' instructions.

Carbon monoxide detectors/alarms are cross sensitive to hydrogen, an explosive gas that can be given off by recharging lead-acid batteries. Where households include recharging stations (e.g., for golf carts), the alarm should be located away from the recharging location.

Submitter Information Verification

Committee: SIG-HOU

Submittal Date: Wed Jul 26 16:26:37 EDT 2023

Committee Statement

Committee Statement: The term "fuel-burning appliances" is not defined. "Fuel-burning equipment" was defined under FR-5006 in Chapter 3 of the First Draft Report. This change revises the text to match the defined term and be consistent throughout this section.

Response SR-5120-NFPA 72-2023

Message:

Public Comment No. 14-NFPA 72-2023 [Section No. A.29.7]