

▶ *Hanover Risk Solutions*

Habitational Life Safety Systems— Frequently Asked Questions

Below you will find the answers to some questions that are frequently asked of Hanover Risk Solutions Consultants about life safety systems for habitational buildings such as apartments, condominiums and hotels. For further assistance with questions about protecting building occupants during fires and other emergencies, please contact your local Hanover Risk Solutions Consultant.

What type of smoke alarms should be installed?

Smoke alarms are classified by: 1) how they are powered, 2) how they detect fires, and 3) how they notify building occupants.

Smoke alarms can be powered by the building's electrical system, by batteries, or by both. For maximum reliability, Hanover recommends **electrically powered smoke alarms with battery backup**. A backup battery might be located in a central alarm panel, or individual backup batteries might be located in each smoke alarm.

There are two basic smoke alarm technologies for detecting fires—ionization and photoelectric. Ionization alarms are generally more responsive to flaming fires, such as a pan of cooking oil bursting into flames. Photoelectric alarms are generally more responsive to smoldering fires, such as a lighted cigarette dropped onto a sofa. Combination alarms use both technologies in one device. For the quickest response to both types of fires, Hanover recommends **combination ionization/photoelectric alarms**, or separate ionization and photoelectric alarms located next to each other.

Smoke alarms can be arranged to notify all building occupants when any alarm is activated (referred to as "interconnected" or "multiple-station" alarms), or arranged to notify only occupants in the vicinity of the alarm that was activated (called "single-station" alarms). Most commonly, smoke alarms located within an individual living unit are single-station, or they might be interconnected only with other smoke alarms within the living unit. Smoke alarms in common areas of the building, such as hallways and laundry rooms, are generally interconnected. Alarms can be interconnected by wires, or using wireless technology.

To ensure that your smoke alarms are the appropriate type and installed correctly, all work should be performed by a qualified fire alarm contractor in accordance with National Fire Protection Association (NFPA) Codes 101 and 72, your local building code and the manufacturer's specifications. All equipment should be listed by a nationally recognized testing laboratory such as Underwriters Laboratories (UL).

Where should smoke alarms be located?

The National Fire Protection Association recommends that smoke alarms within individual living units be located **inside** each bedroom, **outside** each sleeping area in the immediate vicinity of the bedrooms, and on **each floor level** of the living unit, including basements. Smoke alarms should also be located in common areas as required by NFPA Codes 101 and 72, your local building code and the manufacturer's specifications; for instance, in hallways, lobbies, stairwells, elevator shafts, equipment rooms, laundry rooms and storage areas.

What can be done to reduce nuisance fire alarms from cooking or showering?

Smoke from cooking and steam from showers and bathtubs, can cause inadvertent (nuisance) activation of smoke alarms. Frequent nuisance alarms can result in building occupants disabling the smoke alarms in their living unit, endangering themselves and other tenants.

The National Fire Protection Association recommends not installing smoke alarms near kitchen areas. If alarms must be installed between 10 and 20 feet horizontally of cooking appliances to meet code requirements for alarm placement, the alarms should have a silencing feature or be of the photoelectric type. If alarms must be installed between 6 and 10 feet horizontally of cooking appliances, they should be of the photoelectric type. (Photoelectric smoke alarms are generally less sensitive to cooking fires.)

NFPA also recommends not installing smoke alarms within 3 feet horizontally of the door of a bathroom that contains a shower or bathtub. Installing the smoke alarm more than 10 feet horizontally from the door will provide maximum protection from nuisance alarms, if this is feasible while meeting code requirements for alarm placement.

If smoke alarms that previously did not cause nuisance alarms begin causing problems, it may be that they are contaminated with dust or are past their recommended life span. Follow the manufacturer's recommendations for removing dust and other foreign material. Also follow the manufacturer's recommendations for alarm replacement—the maximum life span of most smoke alarms is 10 years.

In what situations should carbon monoxide alarms be installed?

Carbon monoxide (CO) alarms are intended to notify building occupants of dangerous levels of carbon monoxide released from combustion processes. They serve a different function than smoke alarms, which are intended to notify occupants of unintended fires.

CO alarms are recommended in all habitational buildings that use fuel-burning heating, cooking or other appliances; contain fuel-burning fireplaces; have vehicle garages with potential air pathways to living spaces; and wherever else required by NFPA Codes 101 and 720, your local building code and the manufacturer's specifications. CO alarms will give early warning of malfunctioning ventilation of appliances, closed flue dampers in fireplaces, and infiltration of exhaust from parking garages. Carbon monoxide is colorless and odorless, and can kill building occupants while they sleep.

Where should carbon monoxide alarms be installed?

The National Fire Protection Association recommends that carbon monoxide (CO) alarms within individual living units be located outside each sleeping area in the immediate vicinity of the bedrooms, and on each occupiable floor level of the living unit, including basements. CO alarms should also be located in common areas as required by NFPA Codes 101 and 720, your local building code and the manufacturer's specifications; for instance in central heating equipment rooms and in areas downstream of burners; in rooms containing other fuel-burning appliances or fireplaces; and in areas with potential air pathways to vehicle garages.

It is recommended that CO alarms be electrically powered with battery backup. CO alarms should be single-station or multiple-station (interconnected) as described above for smoke alarms. To ensure CO alarms are installed correctly and where required, all work should be performed by a qualified fire alarm contractor in accordance with NFPA Codes 101 and 720, your local building code and the manufacturer's specifications. All equipment should be listed by a nationally recognized testing laboratory such as Underwriters Laboratories (UL).

What can be done to reduce tampering with manual fire alarm pull stations?

Tampering with manual fire alarm pull stations can become an issue, especially with transient populations such as in hotels and dormitories. Clear plastic protective covers with tamper alarms can be installed over pull stations to help prevent this. As soon as the cover is lifted, the tamper alarm is activated. The sound of the tamper alarm will deter most people from pulling the fire alarm unless it is a true emergency situation. Installation of double-action pull stations will cause a further, slight delay that can increase the chance of catching the person if they do pull the fire alarm. Double-action pull stations require two actions, such as lifting or pushing one handle and then pulling another handle.

All fire alarm pull stations, and all protective covers for pull stations, should be listed by a nationally recognized testing laboratory such as Underwriters Laboratories (UL). All equipment should be installed by a qualified fire alarm contractor in accordance with NFPA Codes 101 and 72, your local building code and the manufacturer's specifications.

Does the LED light on an emergency lighting unit indicate that it is in operational condition?

Unless you have a newer emergency lighting unit with a self-testing/self-diagnostic feature, the LED light is probably only indicating that the AC power is on and the battery is charging. The LED is **not** indicating that the battery has enough power to provide the required 90 minutes of emergency light. The only ways to test this type of emergency light are to press the “test” button, or to de-energize the AC circuit that the light is connected to.

When you are replacing or installing new emergency lights, consider lights with a self-testing/self-diagnostic feature. Battery-powered emergency lights need to be tested every 30 days for at least 30 seconds, and every year for at least 90 minutes. Self-testing/self-diagnostic lights can save considerable time and expense versus performing these tests manually.

How should life safety systems be maintained?

Please refer to Hanover’s document on [Inspection, Testing and Maintenance of Life Safety Systems](#).

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