

TIPS TO PREVENT CARBON MONOXIDE POISONING

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Odorless, colorless carbon monoxide (CO) is often described as the silent killer and is produced by more than just cars. More than 150 people die each year from CO coming from fuel-burning consumer products, according to the U.S. Consumer Product Safety Commission.*

Carbon monoxide is present in the exhaust gases from:

- Boilers
- Furnaces
- Hot water heaters
- Pool heaters
- Fireplaces that are fueled by gas, oil, wood or charcoal

Hotels face a significant responsibility to protect guests from poisoning. "According to National Institute of Health, between January 1st 2005 to December 31st 2018 905 guests were poisoned in 115 identified incidents including 22 fatalities. Children accounted for 16% of the number of incidents and 27% of the fatalities".**

Proper venting of exhaust gases is important to keep the gases from escaping into other areas inside the building, as the following example shows.

LESSONS LEARNED FROM A FATAL SITUATION

In 2014, a president of a hotel group was indicted for manslaughter for the deaths of hotel guests from carbon monoxide poisoning.

At first, it was believed that a couple who perished in a hotel room died from heart attacks. But when another incident occurred involving an 11-year-old child who died in that same room, and the mother sustained debilitating injuries, it was discovered that carbon monoxide was leaking into the room from a corroded exhaust pipe serving the hotel pool's natural gas heater.



In this situation, the swimming pool heater was improperly designed, installed, serviced and inspected. Furthermore, no safety alert system was in place. Below are the specific problems that were identified that you may find helpful to know. The same exposure exists in buildings with boiler rooms, hot water heaters, fireplaces and buildings with enclosed garages.

- The pool heating exhaust pipe ran horizontally across the pool room.
- The hotel maintenance staff converted the heating unit from propane to natural gas. The employees were neither licensed nor certified to complete this type of work, and they did not secure the required permits to assure the project was completed to code.
- The exhaust pipe from the pool heater was severely corroded and had numerous holes.
- No carbon monoxide detector was in the pool heater room or in the guest rooms.

BEST PRACTICES FOR ON-SITE ASSESSMENT

Having the following procedures in place to inspect gas-producing equipment and to respond to leaks and poisoning can help you reduce liability and save lives:

1. Validate that all heating, hot water and fireplace systems are installed and vented to code.
2. Have the units inspected and serviced annually by a licensed service person. Include testing for exhaust gas leaks.

3. Inspect the venting systems monthly for deficiencies such as corrosion, blockage, restriction and leakage. Other visual clues that can indicate a problem:
 - Gas flames that are pale yellow or wavy
 - Excessively dirty, clogged or missing furnace air filters
 - Gas appliance valves that are missing or not properly installed
 - Soot near burners or appliance venting
 - Venting not approved by the appliance manufacturer or not venting to the proper place outdoors
 - Evidence of discoloration at the appliance burner, burner access door, or vent area
 - Gas appliances that are missing a fire door or apron
4. Document all service and ongoing maintenance.
5. Establish procedures for immediately investigating for carbon monoxide leaks or poisoning when guests, employees or residents complain of dizziness, headaches, nausea or other flu-like symptoms which are alleviated when they go outside for fresh air. Call the utility company and/or other experts for testing and evaluation and have the area shut down and secured.

CO ALARM SYSTEMS



Many states require installation of CO detectors in new hotel structures, and some require them in existing hotels. States have additional requirements for CO detectors in residential buildings.

A CO alarm can be a stand-alone unit which is tested to Underwriters Laboratory (UL) Standard 2034 and has its own built-in power supply and audible device. These units are typically installed in a residential occupancy. A CO detector can also be part of a system that is tested to UL Standard 2075 and is designed to be used with a fire alarm system and receives its power from the fire alarm panel.

Provide two independent and reliable power sources for all devices.

CO alarm and trouble signals should have a distinctively different sound than for smoke and heat detection.

Section 908.7 of the 2018 IFC and ICC requires CO detection to be installed in "newly" constructed Group-R and Group-I occupancies if the building contains a fuel burning appliance or an attached garage.

If sleeping or dwelling units do not contain a fuel-burning appliance or have an attached garage, but are located in a building with a fuel-burning appliance or an attached garage, CO detection is not required if:

- The unit is located more than one story above or below any story that contains a fuel-burning appliance or an attached garage.
- The unit is not connected by duct work or ventilation shafts to an attached garage or any room containing a fuel-burning appliance.
- The building is provided with a common-area CO alarm system.

* United States Consumer Product Safety Commission, Carbon Monoxide Information Center

**National Institute of Health, Carbon Monoxide poisoning in hotels and motels - "the problem silently continues", August 16, 2019.

ADDITIONAL RESOURCES

For further assistance in preventing this type of loss, you can refer to the following online resources:

- NFPA 54 – National Fuel Gas Code – 2018 Edition
- NFPA 72 2019 Edition
- Natural Gas Installation Handbook

Design: [Graphic Design Centre](#)

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