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## **Standards and Codes:**

The Limited Life of Carbon Monoxide Detectors

*The life safety industry's newest and fastest growing segment is system-connected carbon monoxide (CO) detection. All system-connected CO detectors contain a limited-life gas sensor. Underwriters Laboratories (UL) requires the detector to supervise the gas sensor electrically so that when the sensor reaches its end-of-life (EOL), the detector will send a trouble signal to the control panel. Security dealers, installers, distributors, and authorities having jurisdiction (AHJs) in the life safety community are familiar with UL requirements for fire alarm devices, however, they may misunderstand or overlook CO requirements. As a result, many system-connected CO detectors being installed are not code compliant.*

*This document defines the limited-life gas sensor of system-connected CO detection devices, and outlines UL's requirements and the benefits of supervising the CO sensor.*

### **Industry Challenges**

UL requires manufacturers of system-connected CO detectors to use the same critical life-safety supervision concepts as smoke detection devices in order to prevent undetected device failures. Some industry professionals are confused because system connected CO detectors have different replacement criteria than system connected smoke detectors.

CO detectors must be replaced because the CO gas-sensing element of a detector is considered as a limited-life component by UL. Smoke detectors generally do not have limited-life components. All system-connected CO detectors on the market have a limited-life gas sensor. For that reason, it is imperative that the gas sensor be supervised in order to avoid an undetected inoperable detector, which is a fundamental function of all fire-alarm system devices and Central Station Service. UL requires every system-connected CO detector to provide a means to send the sensor's EOL signal to the control panel.

Although it is important to communicate UL's life-safety supervision requirements of CO sensors, it is difficult to reach every member of the widespread life safety community. As a result, many CO detection devices being installed are not code compliant.

## **UL Requirements for Supervising CO Sensors**

UL standards require that a system-connected CO detector sends a trouble signal to the control panel when its CO sensor has reached its EOL.

*UL Standard 2075, Standard for Gas and Vapor Detectors and Sensors*, states:

- Section 17.1.1 requires detectors to be electrically supervised so that any of the following conditions shall result in a trouble condition:
  - Removal or failure of sensor
  - When sensor has reached its end-of-life (EOL)
- UL 2075, section 3.16 requires the detector signal to be annunciated at the control panel:
  - Trouble signal is indicated at the control panel to which the detector is connected

## **Benefits of Supervised CO Sensors**

All system-connected CO detectors are connected to a control panel. Usually, they are monitored 24/7 by a central station, providing protection whether residents are sleeping, out of the house, alone, or already experiencing the effects of CO, including headaches, nausea, and dizziness.

Because carbon monoxide is odorless, colorless and tasteless, it cannot be detected without a CO detector. That is why the detector must remain operable at all times. Failure is not an option. The only way to assure a fully functional detector 24/7 is via the supervised sensor. If a problem arises with the sensor or it has reached its EOL, the homeowner will be notified by the detector, the control panel, and the central station to replace the detector.

## **Conclusion**

To be compliant with UL 2075, security alarm professionals should make sure their system-connected CO detectors incorporate an integral trouble relay that sends a trouble signal to the control panel when the CO sensor has reached its EOL.

For information regarding the System Sensor  
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