Gas Information Sheet 36

Carbon monoxide alarms for domestic use

Overview

This gas information sheet provides information about electrochemical sensor carbon monoxide (CO) alarms and how to use them. CO alarms can be a useful back-up precaution but should not be considered a substitute for the proper installation and regular maintenance of gas appliances, every two years.

What is CO?

CO is a poisonous, colourless and odourless gas that interferes with the blood's ability to carry oxygen. Under normal operating conditions, well maintained and correctly ventilated gas appliances produce minimal CO, but high CO levels can occur if one or more of the following conditions exist:

- An appliance is faulty or poorly maintained.
- A flue is partially or totally blocked.
- The appliance is not installed in an adequately ventilated area.

About electrochemical sensor CO alarms

Electrochemical sensor CO alarms, where a chemical reaction with CO gas creates an electrical current that sets off an alarm, are the most common type of CO alarm available. They are designed to trigger at certain CO concentrations and time periods. (Your CO alarm's instruction sheet should provide triggering times and CO concentrations, which will vary.) The proximity of the alarm in relation to a gas appliance will also influence when it triggers an alarm. This is partly due to the nature of CO gas, which is slightly lighter than air, allowing air currents to affect a room's CO concentration.

Electrochemical sensor CO alarms:

- have a limited life span of around 2 to 7 years, but their life expectancy and effectiveness will vary depending on their environment (and the relative heat, humidity, and dust), battery condition, and the level of exposure to CO
- sometimes provide a visual and audible warning when the electrochemical sensing cell has expired (which is the ideal type), while others may only provide a use-by date
- are pre-calibrated and do not require maintenance other than to clean the outside case occasionally and ensure the holes on the front of the unit are kept clear.

Performance of CO alarms

CO alarms only detect CO gas. They do not detect smoke, fire, or other types of gas.

Be aware that CO alarm performance can be affected by:

- excessive spillage or reverse flueing of gas appliances caused by:
  - wind, including high gusts of wind
  - heavy air in the flue (such as cold or humid air)
  - negative pressure differentials within a room, resulting from the use of exhaust fans
  - simultaneous operation of several gas appliances without also increasing the ventilation
  - extended operation of flueless gas appliances

- other equipment that produces CO, such as a car idling in a garage attached to the home.

Placement of CO alarms in homes

CO alarms only indicate the presence of CO gas at the sensor; the actual concentration of CO in the room may be different.

When selecting installation locations, make sure the alarm is audible from all sleeping areas.

CO alarm manufacturers suggest installing them in or near every room with a gas heating appliance. Alarms located in the same room as a gas heating appliance should be located as directed by the manufacturer's installation instructions. If there is a partition in a room, the unit should be located on the same side of the partition as the gas heating appliance. A CO alarm located too close to a gas appliance may set off nuisance alarms; too far away and it may be slow to react.

Alarms should also be installed in or near bedrooms or other rooms that are normally occupied and remote from gas heating appliances, and should be located relatively close to where the occupant breathes (for example, close to the bedhead).

Do **not** place CO alarms in the following areas:

- close to a gas cooking appliance, which may result in nuisance activation of the alarm
- where the air temperature is outside the range the alarm is designed for (as specified in the manufacturer's instructions)
- where dirt or dust could collect and block the sensor
- where it could be easily knocked, damaged, or where it could be inadvertently removed
- in a damp area or directly above a sink
- in or below a cupboard
- behind curtains or furniture
- in dead air spaces, such as the peaks of vaulted ceilings or gabled roofs
- next to a door or window or anywhere that would be affected by draughts
- in turbulent air from ceiling fans
- where the air flow is obstructed by curtains or furniture
- in areas of high or low humidity (where battery efficiency may be reduced).

Care of CO alarms

CO alarms are for indoor use only. Do not expose them to rain or moisture and do not knock or drop them. Opening or tampering with the alarm may cause it to malfunction. CO gas must be able to reach the sensor for the alarm to accurately detect it, so ensure the alarm's vents are unobstructed.

Always keep a CO alarm in good working order by:

- removing accumulated dust
- not cleaning it using cleaning agents, detergents or solvents
- not spraying aerosols nearby, which can affect the electrochemical sensor
- not painting it (which will seal the vent holes and interfere with the sensor's ability to detect CO gas)
- not allowing children to play with it.

Standards

There is no standard in Australia that covers the design, manufacture, installation or servicing of CO alarms for domestic premises. Energy Safe Australia suggests you choose a CO alarm certified to EN50291 (the European standard) or UL2034 (the US standard).

Purchasing CO alarms

Before buying a CO alarm, check that they have the following features:

- Visual indicators for:
  - the CO detection alarm
  - alarm fault
  - electrochemical sensor end-of-life alert
  - electrical power.
- Different audible signals for the:
  - CO detection alarm
  - electrochemical sensor end-of-life alert.
- Markings:
  - showing the manufacturer's name, the supplier's name, or a trademark
  - identifying the model number or name and the serial number or manufacturing date
  - listing the standard to which it is certified, for example EN50291 or UL2034
  - identifying the mounting position if a unit is intended to be mounted in a definite position
  - showing supply voltage, frequency, and power consumption or the type and size of batteries
  - indicating the recommended maximum lifetime.

CO alarm limitations

The use of CO alarms may be an attractive option to reduce the threat of CO poisoning in homes, but issues related to their effectiveness, useful life, the number required, and their positioning may reduce the desire to use them. Also, CO alarms for use in domestic premises are not linked into the appliance's gas supply for and cannot cut off the gas if a fault arises.

If you do install CO alarms, regularly check the batteries are charged and that the sensor has not exceeded the expiry date marked on the alarm.

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