Gas Information Sheet 44

Carbon Monoxide safe working level

Introduction

To assist gasfitters in carrying out carbon monoxide (CO) spillage testing this information sheet will:

- provide background information for CO exposure
- make sure gasfitters are safe from undue CO exposure
- explain the need to keep exposure to CO under check
- help determine CO exposure after a spillage test, and accumulated exposure over an 8 hour day.

Understanding exposure levels

According to Safe Work Australia the maximum recommended exposure to carbon monoxide (CO) gas measured over an 8-hour period is 30 ppm (parts per million) based upon a Workplace Exposure Standard.

Safe Work Australia explains an eight-hour time-weighted average (TWA) exposure standard is the average airborne concentration of a particular substance permitted over an 8-hour working day and a 5-day working week.

At times gasfitters may be subjected to higher concentrations of CO gas for short durations, for example at appliance flues or at draught diverters. To guard against prolonged exposure to high concentrations of CO the following table, from Safe Work Australia, provides guidelines for the control of short-term excursions above the 8-hour TWA exposure standard.

Guidelines for the control of short-term excursions for carbon monoxide

Concentration (a) (ppm)	Total exposure (b) (min.)
200	15
100	30
60	60

1. Short-term excursions should never exceed 400 ppm.

2. This duration represents the sum of exposures at this level over an 8-hour workday, and assumes no other exposure to carbon monoxide.

For further information on workplace exposure standards for airborne contaminants (for example, carbon monoxide), go to the following links:

https://www.safeworkaustralia.gov.au/doc/workplace-exposure-standards-airborne-contaminants-2024

https://www.safeworkaustralia.gov.au/doc/guidance-interpretation-workplace-exposure-standards-airborne-contaminants

Energy Safe Victoria acknowledges the information provided by Safe Work Australia.

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Measuring your exposure

It is unlikely gasfitters will be exposed to CO on every job they attend, however where CO is encountered exposure levels will most likely be low as the CO concentration in the room will be far less than the concentration at the appliance while the spillage test is underway.

Gasfitters should use a calibrated gas analyser or carbon monoxide detector (refer to Energy Safe Gas Information Sheet 37) to check ambient CO levels while conducting spillage tests.

To measure your exposure to CO gas over an eight hour period you need to measure the amount of CO where you are located, not the CO readings only at the appliance.

Begin your spillage testing:

1. Test for CO spillage as outlined in Gas Information Sheet 38 for:
    - open flued indoor gas appliances – fabricated flue
    - open flued indoor gas appliances – existing chimney
    - central heating units
    - room sealed space heaters.
2. While carrying out CO spillage testing (above) take readings of CO gas concentration in the room in which you are working and note the time of your exposure (i.e. the length of time of your spillage test).

You need this information to calculate your time weighted average CO exposure level for an eight hour period. This becomes very important when planning to carry out a number of spillage tests in one day so that you can anticipate when you are approaching the maximum allowable limit of 30 ppm of CO.

If you are exposed to higher CO concentrations near the appliance, while carrying out spillage testing, also include this exposure and duration of exposure in your time weighted average calculations.

Exposure over an 8-hour period can be calculated with the following formula.

TWA8 hour = [Exposure time (min) x CO (ppm)]/480

(8 hours is equivalent to 480 minutes).

Who we are

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We regulate the energy industry and sector to ensure generation, supply and usage uphold safety standards, and engage with the community to raise awareness of energy safety risks.

In everything we do, we strive to deliver on our purpose to keep Victoria energy safe. Always.

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