Plumbers,
Gasfitters and
Drainlayers Board

Level 8, 70 The Terrace
P O Box 10655, Wellington 6140
Tel 0800 743 262, 04 494 2970
www.pgdb.co.nz

Gas information sheet No. 3

What is negative pressure?

This fact sheet helps to explain what negative pressure is, and the potential it has for drawing carbon monoxide into a home under certain conditions.

Understanding negative pressure



Negative pressure can occur when there isn't enough ventilation in the home and an extraction fan is operating.

This includes fans such as a rangehood or extractor fan above a stove and controlled ventilation systems such as HRV or DVS or heat transfer units installed in rooms using solid fuel fires.

Essentially, the extraction fan can draw air from any external opening in a house like windows and doors but this can also include gas appliance flues and chimneys. This creates a problem with the operation of an open flued gas appliance, and particularly a faulty one - because dangerous gasses, such as carbon monoxide, can be drawn into living spaces from the gas appliance flue or chimney.

Carbon monoxide (CO) can be hard to detect as it is a tasteless, odourless and colourless gas. CO can be particularly harmful if inhaled as it can cause fatal poisoning.

Gasfitters are required to check on new gas installations, that a negative pressure environment is not created when extraction fans are in use. They should check this with all the extraction fans going at the same time. If a negative pressure is found to be the case the gasfitter must take steps to fix the ventilation requirements or not connect the gas appliance(s) until the matter is resolved.

Simple steps you can take to resolve negative pressure

If you have open-flued gas appliances, space heater(s) or a hot water heater there are some simple steps you can take that will keep you and those in your home safe:

- Get your gas appliance serviced once every two years, or annually if the appliance is used a lot. Having gas appliances serviced helps to ensure your they run safely and efficiently. While the gasfitter is on site ask them to also check for negative pressure.
- Don't operate exhaust fans at the same time as a gas heater. A rangehood or bathroom fan can create a negative pressure, drawing carbon monoxide into living areas if the gas appliance is being used at the same time.

- Ensure there adequate ventilation. While it's not necessary to have windows and doors wide open on a freezing cold day, ventilation is important to ensure carbon monoxide isn't drawn into a living space. Correct ventilation also ensures the gas appliance will operate correctly and efficiently too.
- Don't leave gas heaters on all night or leave the heater on for extended periods when it’s not needed.
- Consider installing a carbon monoxide alarm as a back-up measure. Carbon monoxide alarms can be a useful back-up precaution, but should not be considered a substitute for the proper installation and maintenance of gas heating appliances.
- Don’t use gas hobs or stove as a gas heater. These gas appliances are not designed as space heaters and the burner’s performance can be affected by spills and items sitting in or over the flames.
- Never use outdoor heating appliances indoors. Outdoor heaters, such as patio heaters, barbecues, coal heaters and fire pits release carbon monoxide into the surrounding atmosphere. Carbon monoxide is lighter than air and can disperse more readily outdoors, but can be fatal if used indoors.

Carbon monoxide alarms

When purchasing carbon monoxide alarms we recommended you choose an alarm that meets US or EU carbon monoxide standards. The alarm will indicate compliance with one of the following standards:

- UL2034 (US)
- EN50291 (EU)

Choose a model that provides visual and audible alarms indicating when the electrochemical sensor or battery has expired. While these alarms may provide some indication of the presence of carbon monoxide, their operation is dependent upon the location where the alarms are placed, as levels elsewhere in the room may vary. Don't install them near cooking appliances, as this may result in nuisance alarms.

When purchasing a hard-wired alarm, it should only be installed by a licenced electrician.