

# HOME GAS APPLIANCES AND YOUR HEALTH

## FACT SHEET



**Although natural gas is often seen as a ‘clean’ fuel, this is a myth. All gas-burning appliances produce pollutants.**

**These can reduce indoor air quality, especially if the appliance is faulty, poorly maintained, or there is inadequate ventilation.**

**They can also cause or exacerbate illnesses.**

### What pollutants will you be exposed to?

Gas appliances produce a complex range of pollutants, some of which are:

- carbon monoxide
- nitrogen dioxide (NO<sub>2</sub>)
- fine particles (PM<sub>2.5</sub>, along with ultrafine particles)
- volatile organic compounds, including formaldehyde
- polycyclic aromatic hydrocarbons.

### What are the health impacts of indoor gas use?

#### Carbon monoxide poisoning

This is the most serious complication of burning gas indoors.

Carbon monoxide is a tasteless, colourless and odourless gas. When inhaled, it replaces oxygen in the blood stream.

Exposure to **high levels** of carbon monoxide can cause fatigue, headaches, nausea,

confusion, shortness of breath and chest pain. Within minutes, it can lead to suffocation and death.<sup>1-3</sup>

Between 2011 and 2016, there were fifteen confirmed fatalities from carbon monoxide poisoning in Australia<sup>4</sup>; however, this is likely to be an underestimate of the actual number of deaths.<sup>1</sup> For instance, carbon monoxide poisoning may not be suspected in elderly people with other medical conditions who are assumed to have died of natural causes.

Longer term exposure to **lower levels** of carbon monoxide can cause

- flu-like symptoms, including headache, fatigue, feeling generally unwell, nausea and vomiting.
- sleep disturbances and impaired memory and concentration.
- permanent brain and nerve damage, even at levels too low to be detected by carbon monoxide alarms.<sup>1,2</sup>

Because of vague nature of these symptoms, it is difficult to know how often longer-term, lower-level exposure to carbon monoxide occurs. However, there is some evidence to suggest this may be relatively common and responsible for significant illness.

For example, in two studies that tested for carbon monoxide exposure in those presenting with headache to emergency departments, dangerous blood levels were found in 31 of 483 (6.4%)<sup>5</sup> and 7 of 37 (18.9%) people.<sup>6</sup>

In a different study, definite carbon monoxide poisoning was found in 3 of 29 individuals (10.3%) admitted to hospital with reduced consciousness but no indication of the cause.<sup>7</sup>

Importantly, because the symptoms of long-term, low level carbon monoxide exposure are poorly recognised, there is risk of those affected returning to potentially fatal environments.<sup>3</sup>



Healthy planet, healthy people

## Other health impacts

Studies have shown associations of indoor gas usage with:

- **increased asthma** in children living in homes with gas cooking appliances.<sup>13-15</sup> One estimate is that 12% of childhood asthma in Australia is due to the use of gas stoves for cooking.<sup>16</sup>
- **increased cough and wheeze** in children are exposed to open flued gas space heaters in classrooms.<sup>17</sup> Removal of such heaters from classrooms has been shown to reduce both children's asthma symptoms and school absences.<sup>18</sup>
- **reduced lung function** in children living in homes with gas cooking appliances.<sup>19</sup>
- increased hospitalisations for **acute respiratory tract infections** in young children living in homes with flued or unflued gas heaters.<sup>20</sup>
- **slower brain and behaviour development** in children living in homes with gas cooking appliances.<sup>21,22</sup>
- increased **allergic inflammation of the nose** in adults and children from homes with gas cooking appliances.<sup>23</sup>
- increased **asthma-like symptoms** and **reduced lung function** in women using mainly gas for cooking.<sup>12</sup>

**Explosions, fires and thermal burns** can result from gas leakage from faulty or improperly used appliances.

**Thermal burns from** contact with glass doors of gas fireplaces are also relatively common, particularly in children.<sup>8-11</sup>

## Young children most at risk

Young children are at particular risk because their bodies are still developing and they spend long periods of time at home. Other sensitive groups include the elderly, smokers and those with pre-existing heart or lung conditions.

## How to reduce the risks

Gas heating **should be serviced** and **carbon monoxide leakage tests** conducted at a minimum of two yearly by a licensed gas fitter.

**Carbon monoxide alarms** are recommended, although they should only be a back-up to proper use and maintenance of gas appliances.

**Exhaust ventilation** should always be used with gas appliances, especially with gas stoves.

## Associated issues

Of concern, those in **lower socioeconomic groups** are less likely to have enough income to ensure their gas appliances are serviced as recommended or to replace ageing and risky appliances.

**Renters** may be less likely to report problems to landlords because of fears of having their rent increased<sup>31</sup>. Renters are also less likely to know what type of gas heater is installed and whether it has recently been serviced.

**Rangehoods** are often noisy and are consequently not used as often as they should be. In a survey of 3200 people from Melbourne, 44% of those with range hoods reported not using them regularly.<sup>32</sup>

**Increasing the thermal efficiency of buildings** (such as through blocking drafts) can result in **inadequate entry of fresh air** for the safe operation of gas appliances.<sup>33</sup>

There is particular risk with use of unflued and open flued gas heaters as these require plenty of fresh air to operate reasonably safely. The Victorian State Government has described these heaters as being incompatible with modern, energy efficient houses.<sup>33-35</sup>

## The need for reform

Even with appropriate education of consumers, the risks associated with indoor gas use cannot be eliminated.

Gas is also now a costly energy source in Australia. Recent modelling suggests that for many Australian homes, it would be cheaper over 10 years to switch from gas to efficient electric appliances.<sup>43</sup>

The extraction and burning of gas also contribute to greenhouse gas emissions and therefore climate change

This is well recognised as a major threat to human health<sup>44</sup>.

For these reasons, Doctors for the Environment Australia supports the gradual phase-out of gas burning appliances in homes. Homeowners must be supported in the transition towards safer, non-polluting electrical alternatives.

## Doctors for the Environment Australia Recommendations

1. Increased public education about the risks of indoor gas appliances, including the importance of regular servicing and adequate ventilation.
2. Provision of incentives for households to transition away from the use of gas to energy efficient electrical appliances, with particular support offered to low-income households as well as landlords.
3. Reforms to building regulations to mandate installation of non-gas heating and cooking appliances in all new homes.
4. Reforms to building regulations and local planning rules to stop the automatic connection of all new suburbs and homes to gas.
5. Consideration of the eventual withdrawal of indoor gas usage altogether.

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