

Submission to the Victorian Government's Discussion Paper: Options for addressing risks from open flued gas space heaters in Victoria.

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Submission in response to the Victorian Government's Discussion Paper: options for addressing risks from open flued gas space heaters in Victoria.

<https://enqage.vic.gov.au/open-flued-gas-space-heaters-discussion-paper>

Doctors for the Environment Australia (DEA) is an independent, self-funded, non-Government organisation of medical doctors in all Australian States and Territories. Our members work across all specialties in community, hospital and private practices. We work to prevent and address the diseases - local, national and global - caused by damage to our natural environment. We are a public health voice in the sphere of environmental health with a primary focus on the health harms from pollution and climate change.

Summary

Gas is often regarded as a 'clean' fuel, but air pollutants released from the combustion of methane indoors can cause or exacerbate illness involving the heart, lungs brain or nervous system. Open flued gas space heaters (OFGSHs) can sometimes provide a direct pathway for these pollutants into a room. The tragic deaths of three Victorians from carbon monoxide (CO) poisoning has highlighted the most serious complication (Coronial Inquest 2018), but the health impacts of non-fatal indoor concentrations of CO and other pollutants are not so widely known.

While the risks of indoor gas use can be reduced, they cannot be removed. Education for consumers about knowing how to operate gas appliances does not necessarily change behaviour. (1,2) Risk reduction is also dependent on compliance with the regulatory environment, making tenants and those in low-income households especially vulnerable. Lastly, and importantly for modern or renovated homes, adequate ventilation is difficult to achieve in well-sealed and energy efficient buildings.

DEA recommends a phase out of OFGSHs, which includes a ban on all new installations (Option 3). Like-for-like replacement of old heaters does not address the hazards of OFGSHs. If immediate replacement of current heaters is not made compulsory, safety checks should be arranged, coupled with education and advice on potential hazards. DEA supports the installation of CO alarms while transitioning away from gas heaters.

Consideration should be given to the eventual withdrawal of domestic indoor gas use.

DEA recommendations:

1. A ban on all installations of OFGSHs, either new or replacement units.
2. Increased public education about the risks of OFGSHs, including the importance of regular servicing and adequate ventilation whenever gas appliances are used as well as the potential risks that come with well-sealed homes.
3. Compulsory and regular inspection, testing and certification of all existing OFGSHs.
4. The provisions of incentives for households to transition away from the use of OFGSHs, with support especially targeting low-income households and landlords.
5. The use of appropriate CO alarms, which DEA supports as a stopgap measure until Victoria has transitioned away from OFGSHs.
6. The eventual phase out of indoor gas use.

Discussion

Carbon monoxide

CO poisoning is the most serious complication of the use of gas appliances.

CO is a tasteless, colourless, odourless gas. Once inhaled, CO passes from the lungs to the bloodstream where it replaces oxygen on haemoglobin molecules within the red blood cells. As exposure continues, the haemoglobin is unable to carry enough oxygen to meet the body's needs. Individual cells then die, including cells in the brain and heart. Permanent brain and nerve damage can occur even at levels too low to be detectable by CO alarms. (3,4) Death can occur within minutes of very high-level exposure.

Exposure to low levels of CO can cause flu-like symptoms of headache, fatigue, feeling unwell, nausea, sleep disturbances, and impaired memory and concentration. Higher levels of exposure can cause non-specific symptoms such as shortness of breath, headaches, dizziness, nausea, weakness and confusion. (3,4,5)

Chronic low-level exposure to CO may never be suspected by sufferers or their healthcare providers due to the non-specificity of their symptoms. Consequently, there is a risk of those affected returning to potentially fatal environments. (4) Confirmation of poisoning is difficult even if suspected, as CO levels reduce rapidly once the person is removed from

the source. (3) Fatalities are likely to be underestimated. For example, CO poisoning may not be suspected in elderly people with other medical conditions who are assumed to have died of natural causes. Non-fatal CO poisoning data is not routinely collected, especially if those affected are only seen in general practice.

Carbon monoxide alarms

DEA supports appropriate CO alarms as a stopgap measure until Victoria has transitioned away from gas appliances (especially OFGS). CO alarms should be installed to US or European standards and should only be a back-up to proper use and maintenance of gas appliances. It should be noted that alarms will not detect chronic low-level exposure to CO and cannot be a substitute for elimination of the hazard of burning gas indoors.

Other combustion by-products

While CO is the focus of the Discussion Paper, the health impacts of the other complex by-products of gas combustion (mentioned on pages 6 and 8) are not so widely known. Harmful pollutants include:

- Nitrogen dioxide (NO₂) which has an irritant effect on the eye, nose, throat and lungs and can worsen asthma, especially in children. (6,7,8)
- Volatile organic compounds including formaldehyde (HCHO). When inhaled, HCHO can be irritating to the eyes, nose, throat and lungs. High levels of HCHO exposure over long periods has been classed as cancer-causing in humans. (9)
- Fine particulate matter (PM_{2.5}, along with ultrafine, even smaller particles) which can irritate the respiratory tract and lodge in the lungs leading to lung damage. These particles can also lead to inflammation which may cause heart problems. (10)
- Polycyclic aromatic hydrocarbons (PAHs) which are produced where there is insufficient oxygen and gas is incompletely burned. Poorly installed or faulty appliances can increase PAH production. With long term exposure, some PAHs can affect the eyes, kidneys and liver and may cause cancer. (11)

Young children are at particular risk from poor air quality because their bodies are still developing, and they are spending long periods of time at home. Other vulnerable groups are the elderly, smokers and those with pre-existing heart or lung conditions.

A range of illnesses and symptoms have been associated with indoor gas use:

- Increased hospitalisations for acute respiratory tract infections in young children living in homes with flued or unflued gas heaters. (12)
- Increased asthma in both adults and children living in homes with gas cooking appliances. (13) One Australian study estimates that 12% of childhood asthma can be attributed to the use of gas stoves for cooking. (14)
- Increased cough and wheeze in schoolchildren exposed to schoolroom OFGHs. (15) In another study, removal of OFGH from classrooms resulted in a reduction in asthma symptoms in schoolchildren and decreased school absences. (16)
- Chronic wheeze and reduced lung function in children living in homes with gas cooking appliances. (17)
- Allergic rhinitis. (18)

Discussion Paper Options

The adverse health effects of CO poisoning and its implication in subliminal toxicity mandate that OFGSHs should not be used in households and should be phased out as quickly as possible. Similarly, use in any populated indoor setting such as schools, aged-care and nursing facilities, should be phased-out.

Options 1 and 2 in the Discussion Paper would be inappropriate as the problem of toxic pollution would only be perpetuated.

Option 4, which would require federal approval, would be unlikely to address the issue adequately due to an anticipated lengthy delay in reaching state- and industry-wide consensus, and the uncertainty that improved standards would actually eliminate escape of toxic combustion products.

Option 3, the banning of all OFGSHs, is the logical option. To reduce the negative effects of such a ban, consideration should be given to the impacts on workers and service providers within the heating appliance manufacturing industry.

Because gas as an energy source has been part of the Australian domestic scene for generations, widespread public education and targeted information to gas users on the adverse health effects will be necessary to change public opinion on gas use. Current campaigns have concentrated on harmful effects of CO but have not broached the hazards of other pollutants. Those with respiratory illnesses, especially asthma, may be

unaware that gas appliances could worsen their symptoms. Now that electricity from clean and cheaper (renewable) sources is becoming increasingly available, it makes economic and health sense to seriously consider phasing out gas as a domestic fuel. Any process of replacement of existing OFGSHs or other gas appliances needs to consider the owner's financial status. Since older appliances are more likely to be used by those with less ability to pay, financial incentives and subsidies may be necessary initially, although there will be savings over the long-term.

Future implications

Withdrawal of OFGSHs from domestic use must be the first step in the acceptance that gas is unsuitable for domestic indoor use because of risks to human health and well-being. Issues of supply, cost and contributions to greenhouse gas emissions are also relevant to using gas as an energy source, especially when there are cheaper and safer electrical alternatives readily available.

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