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## The detrimental effects on flued appliances when installing mechanical ventilation (exhaust fans)

### What is the hazard?

The installation or replacement of kitchen range hoods and bathroom exhaust fans can impact on the safe operation of open flued gas space heaters.

### How does this hazard occur?

Flued gas space heaters, like the majority of fuel burning appliances, rely on positive indoor air pressure for correct operation. The operation of extraction fans, along with inadequate ventilation, can cause negative pressure to develop within the home resulting in toxic gases from the operation of gas appliances not adequately venting to the outside.

### Background

Modern house construction and renovations continue to maintain a focus on building tightness. This is to maintain heating efficiency ratings and also prevent drafts. This minimises the natural ventilation capabilities of a building and subsequently lowers the ability to draw air from gaps, vents and adjacent rooms.

Air extraction systems are more powerful and efficient, quieter and often duplicated with extra bathrooms, kitchens, butler pantries and so on.

These factors increase the likelihood of flue spillage from flued appliances dramatically.

### Risk

House depressurisation occurs when household equipment, such as kitchen or bathroom fans, exhaust air from inside the house which in turn lowers the pressure. This depressurisation can hinder the natural draught from vented and flued appliances and lead to the back draft or “spillage” of combustion products into living space.

Extensive spillage can cause elevated indoor levels of combustion products such as carbon dioxide (CO<sub>2</sub>), water vapour as well as more dangerous contaminants such as carbon monoxide (CO) – or in other gas fuelled appliances, nitrogen dioxide (NO<sub>2</sub>).

Spillage of combustion products into a living space of a home can result in the death of the occupants

## Safety considerations

All trades need to take a proactive approach in observing the potential effects of mechanical/electrical ventilation systems where they may compromise and interfere with correct operation of fuel burning flued appliances.

## Advise the owner

Clause 4.1.5 of Australian Standard AS/NZS 3000: *Electrical installations* “Wiring Rules” recognises that air extraction systems may adversely affect the safe operation of combustion appliances, including those in other rooms, potentially resulting in carbon monoxide poisoning.

Due to this significant risk, the standard requires the provision of advice to the customer to have their flued combustion appliances tested by a competent person to ensure correct operation following the installation of a kitchen range hood or any other type of air extraction system.

## Document Development History

Version	Application Date	Sections amended
1.0	October 2020	Original release
2.0	September 2022	Format update, minor updates

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