



Safety in Emergency Situations

Safety considerations when flammable refrigerants may be present in an emergency situation.

The application of an equivalent carbon price on synthetic greenhouse gases is expected to increase the use of refrigerants that have a lower global warming potential. Many of these alternative refrigerants are more flammable and if they are not handled correctly, may raise new safety hazards for the emergency services sector.

Under the Government's Clean Energy Future Plan introduced on 1 July 2012, an equivalent carbon price now applies to a range of synthetic greenhouse gases (SGGs), including hydrofluorocarbons (HFCs) commonly used in refrigeration, air conditioning and fire protection equipment.

Synthetic greenhouse gases are listed under the Kyoto Protocol, and most have global warming potential (GWP) many times that of carbon dioxide. Applying an equivalent carbon price on synthetic greenhouse gases creates a financial incentive to reduce emissions by increasing costs on their use.

The equivalent carbon price on synthetic greenhouse gases, including HFCs, will encourage:

- Increased recycling
- Improved servicing of equipment to reduce leakage of refrigerant gases
- A switch to purpose-designed equipment using lower GWP refrigerants, where relevant safety standards and legislative requirements are met
- Development of safe, low GWP refrigerants and suitably designed equipment.

Alternative refrigerants

Several lower GWP refrigerants, including ammonia, carbon dioxide and hydrocarbons, are already available in Australia. Each of these natural alternatives to HFCs have hazard characteristics that differ from the commonly used SGG refrigerants. Ammonia has high toxicity and medium flammability; carbon dioxide operates at a higher pressure than fluorocarbons when used as a refrigerant; and hydrocarbons are highly flammable.

Safety concerns arise where equipment containing gases that are flammable, toxic or under high pressure are not labelled appropriately.

Overseas and Australian experience demonstrates that each of these alternative refrigerants can be used safely and effectively when manufacturer instructions and relevant health and safety standards are correctly followed.

Safety in emergency situations involving flammable refrigerants

Strict standards and procedures must be followed when using flammable refrigerants, including hydrocarbons. These vary between states and territories and the relevant authorities should always be consulted to ensure the legal requirements that apply to the use of hydrocarbons for refrigeration and air conditioning purposes are followed.



Safety requirements under state and territory regulations

Work, health and safety legislation places obligations on importers, designers, manufacturers, suppliers, installers, and others to ensure that the work health and safety risks are assessed and eliminated or mitigated.

However, there is the possibility that inappropriately or incorrectly installed or maintained equipment containing HFC alternatives may be present. This needs to be considered when responding to an emergency.

For example, there have been a small number of major incidents where hydrocarbons have been used in place of HFCs which have resulted in fire and explosion. One significant incident was the 2008 Tamahere cool store explosion in New Zealand where leakage of a hydrocarbon refrigerant gas resulted in a fatal explosion.

Emergency service personnel should be mindful that there may be instances where refrigeration systems or gas cylinders, particularly those containing hydrocarbons, do not have appropriate labelling indicating that a flammable refrigerant has been used.

Emergency services personnel are urged to exercise caution when approaching a situation where refrigerants may be present and consider these hazards in any risk assessment undertaken before entering a site.



More information

For more information about the Australian Government's administration of synthetic greenhouse gases, please visit www.environment.gov.au/equivalentcarbonprice, email ozone@environment.gov.au or phone the department on 1800 803 772.

For more information about requirements in each state and territory, visit Safe Work Australia at www.safeworkaustralia.gov.au to find the relevant work health and safety authority. For information about Australian Standards, visit Standards Australia at www.standards.org.au

