Australian Government
Department of the Environment and Energy

Synthetic Greenhouse Gases

What are 'synthetic greenhouse gases'?

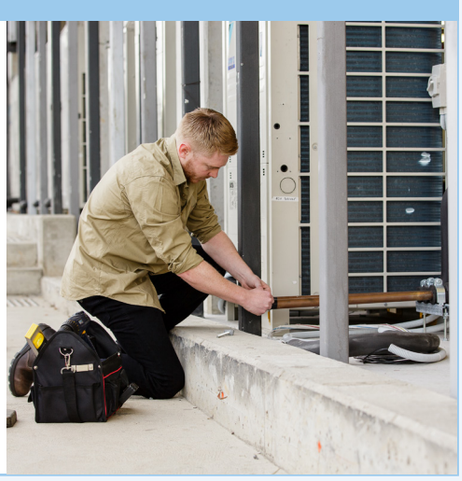
Synthetic greenhouse gases are man made chemicals. They are commonly used in refrigeration and air conditioning, fire extinguishing, foam production and in medical aerosols. When they are released, synthetic greenhouse gases trap heat in the atmosphere.

How are they different to 'greenhouse gases'?

Greenhouse gases are naturally occurring. They include carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Synthetic greenhouse gases are man made chemicals and generally have a much higher global warming potential than naturally occurring greenhouse gases.

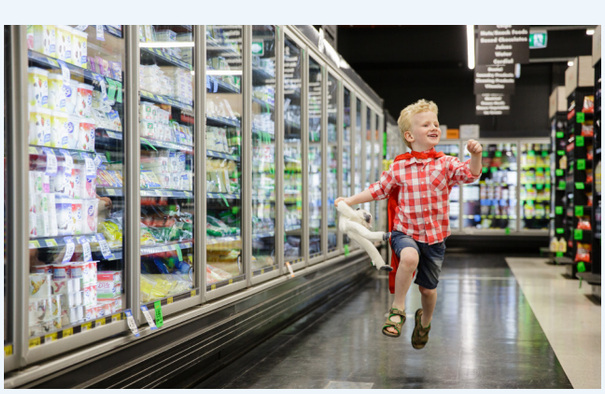
What is global warming potential?

Global warming potential (GWP) is a measure of how much heat a greenhouse gas traps in the atmosphere over a specific time compared to a similar mass of carbon dioxide (CO_2). CO_2, with a global warming potential of 1, is used as the base figure for measuring global warming potential. The higher the global warming potential number, the more heat a gas traps. The most common synthetic greenhouse gas in Australia is HFC-134a, which is mostly used in refrigerators and air conditioners. It has a global warming potential of 1430; this means the release of one tonne of HFC-134a is equivalent to releasing 1430 tonnes of CO_2 into the atmosphere.



22,800
the global warming potential of sulfur hexafluoride (SF_6)

Synthetic greenhouse gases
account for around 2% of all greenhouse gas emissions in Australia



Which synthetic greenhouse gases does Australia regulate?

- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF_6)
- nitrogen trifluoride (NF_3)

How do we use synthetic greenhouse gases?

They are man made chemicals with a wide variety of uses. They are commonly used as refrigerants in refrigerators and air conditioning, as fire extinguishing agents, propellants in aerosols, insulating gas in the electricity supply industry, foam blowing agents, solvents and in magnesium production. They are also a by-product in some chemical manufacturing and aluminium production.