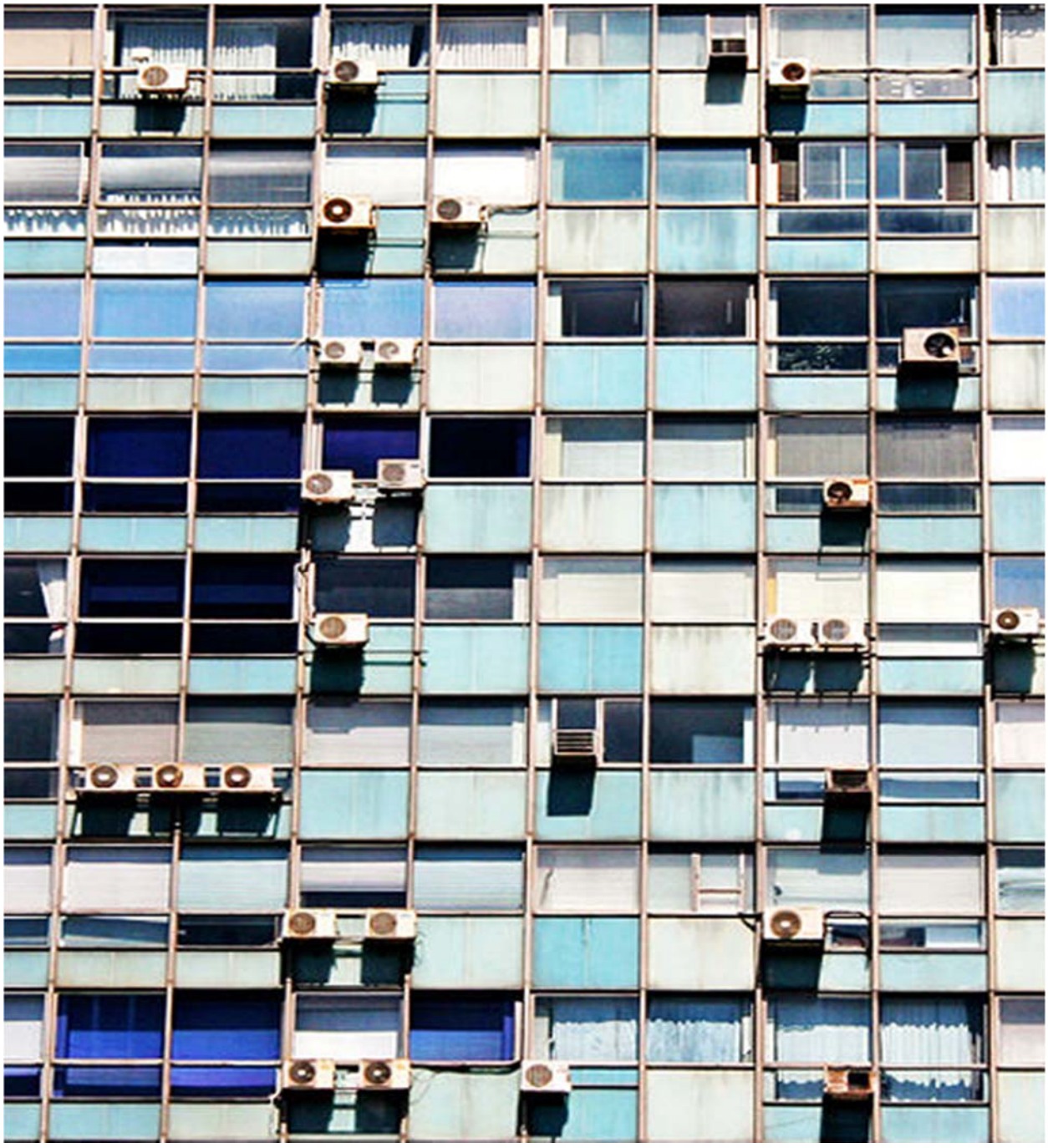
Guideline

Ozone Depleting Substances



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Background

The ozone layer prevents most harmful forms of ultraviolet light (UV light) from passing through the Earth's atmosphere. It is suspected that a variety of consequences such as increases in sunburn, skin cancer, cataracts, and damage to plants, may result from the increased UV exposure due to ozone depletion.

The Montreal Protocol on Substances that Deplete the Ozone Layer was ratified by the United Nations as the mechanism for setting legally-binding obligations to phase out the production and consumption of ozone-depleting substances (ODS). Australia continues to be a leader in the phase out of these substances, through implementation of the *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989*.

The Protocol sets out a mandatory timetable for the phase out of ODS including almost all imports to Australia of hydrochlorofluorocarbons (HCFC) – such as HCFC-22 or R22 – by 2020. Australia are ahead of schedule and have met or exceeded all of its phase out obligations under the Montreal Protocol.

Refrigerant – R22

R22 has been commonly used in air conditioning and refrigeration systems since the 1990s.

In accordance with Australian regulations, companies are allowed to retain R22 systems that are in good working order and continue to maintain them regularly to minimise leakage. Transitioning to alternative refrigerants and systems is encouraged as buildings are upgraded or replaced.

At Adelaide Airport, there is ~4 tonnes of refrigerant used within air conditioning and refrigeration units under the ownership and maintenance of Adelaide Airport Ltd (AAL). Over 98% of that refrigerant – including that used in the Terminal 1 main chiller plant and cold store refrigeration unit – has zero ozone depleting potential. The remaining 2% of smaller and generally older, commercial air conditioning units still contain R22.

Alternatives to R22

There are a range of possibilities when considering changing from R22 to an alternative refrigerant with zero ozone depleting potential.

It is important to consider the products that have a reduced global warming potential (ie. contribute less greenhouse gas emissions). Examples include ammonia, carbon dioxide, and hydrocarbons – in addition to current synthetic replacements such as R134a, R407a and R410a.

These and other alternatives should be assessed when retrofitting or constructing new facilities.

Inventory

A refrigerant inventory is a requirement for any building owner. Maintaining a register of refrigeration plant provides the basis for an inventory of refrigerant types, quantities and losses that may occur, as well as tracking preventative and other maintenance activities. This register can then provide a foundation for regular calculation and monitoring of:

- Greenhouse gas emissions from refrigerant losses; and
- Quantity of refrigerant with ozone depleting potential

AAL captures refrigerant losses and recharge quantities as they occur throughout the year and then consolidates the register on an annual basis to include in greenhouse gas accounts and to confirm remaining quantities of R22.

Licensing

Under legislation, any electrician or contractor who handles a fluorocarbon refrigerant (e.g. R22), or works on refrigeration and air-conditioning equipment that contains a fluorocarbon refrigerant, must hold a refrigerant handling licence. Similarly, any business that acquires, stores or disposes of a fluorocarbon refrigerant must hold a current Refrigerant Trading Authorisation.

All licensing is processed by the Australian Refrigeration Council.

Resources

Australian Refrigeration Council Ltd.
www.arctick.org

Electrical Regulatory Authorities Council
www.erac.gov.au

Montreal Protocol / Australian Legislation
www.environment.gov.au/atmosphere/ozone/legislation/montp.html

Safe Work Australia
www.safeworkaustralia.gov.au

Adelaide Airport Limited
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