



Departmental response to the recommendations of the *Baseline Analysis of Work Health and Safety Data and Information for the Use of Synthetic Greenhouse Gases and Substitutes in the Australian Gas Industry Sector* (David Caple and Associates Pty. Ltd) - July 2013

The Department of Sustainability, Environment, Water, Population and Communities (the department) engaged David Caple and Associates Pty. Ltd. to provide an independent baseline analysis of work health and safety data and information for synthetic greenhouse gases (SGGs) and their substitutes (including hydrocarbons, ammonia and carbon dioxide), and equipment containing these gases within Australia from 2007-2011. No previous national study has been conducted and information on the matter is useful for industry and regulators.

Commonwealth, state and territory work health and safety regulators participated in this analysis and were asked to provide information and data on incidents, injuries, investigations and prosecutions involving the use of SGGs or substitute gases, as well as risks arising from the use of substitute gases. A variety of industry organisations (representing employer groups and trade unions), as well as retailers of synthetic greenhouse gases and substitute gases and a sample of tradespeople from various industry sectors including refrigeration and air conditioning, aerosol, foam manufacturing, fire suppressant and electrical also participated.

The report provides a national overview of the work health and safety issues in the Australian SGG industry and provides an opportunity for industry and regulators to be well informed about safety issues in the industry. The report found that:

- synthetic greenhouse gases and natural gases have been used extensively and safely in Australia for many years
- against a long history of extensive use the report found little formal data, with only three identifiable major incidents (two in New Zealand and one in Australia) in the last five years, directly relating workplace injuries, incidents or compensation claims to the use of synthetic greenhouse gases or substitute gases
- state and territory work health and safety legislation place obligations on importers, designers, manufacturers, suppliers, installers and others to ensure that workplace health and safety risks are eliminated or adequately controlled
- the probability of future work health and safety incidents is most likely in the refrigeration and air conditioning industry, particularly small to medium sized workplaces such as automotive servicing, where the potential to replace SGGs with alternative gases in equipment not specifically designed for their use is greatest and it may be more difficult to access appropriately trained tradespersons competent in handling those substitute gases.

The report notes that there are a number of factors influencing a greater diversity in gases being used in workplaces. The Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995, global supply and demand and the equivalent carbon price are just some of the drivers that will affect the price of SGGs and encourage companies to consider alternative gases. Companies in Australia and overseas are increasingly adopting a

'green' corporate profile and are interested in ways to reduce their carbon footprint, including using low global warming potential refrigerants which offer energy efficiencies and environmental benefits.

Ten recommendations were made in the report with a focus on raising awareness of potential safety issues when using substitute gases, improving training, education and communication of appropriate workplace procedures and regulatory obligations to manage work health and safety risks, and increasing control and training for the use of substitute gases. Most of the recommendations focus on activities that fall outside the department's responsibilities limiting its ability to fully address them. Implementing these recommendations will require consideration by industry, work health and safety departments and other relevant government departments. Since receiving the report the department has liaised with stakeholders to raise awareness and progress the report's recommendations. More detail on these activities is set out below.

Report recommendations and actions to date

Recommendation 1

Develop a communication plan in consultation with WHS regulators to inform the community and particularly workplaces, which:

- a. highlights the potential WHS risks of using substitute gases in equipment that was designed for SGGs*
- b. targets the sectors that may be least aware of their legal obligations, including by using the supply chain*
- c. outlines the legal requirements with respect to risk assessments and correct labelling, storage and handling of gases that are used in workplaces.*

The department regularly undertakes a range of communication activities to raise awareness of safety issues with technicians, consumers, and industry through meetings, seminars, conferences and workshops. Most recently this has included liaison with over 40 industry associations from the refrigeration and air conditioning, fire protection, emergency services, automotive, electrical, aerosols, medical, and foams industries since 2012.

Articles have been published in Cool Change, an Australian Refrigeration Council newsletter distributed to approximately 70 000 professionals in the refrigeration/air conditioning and automotive industry, and other industry publications including HVAC&R Nation, Equilibrium, Gas Bag, Fire Australia Magazine, Australasian Fire and Emergency Service Authorities Council News and the Automotive Engineer Journal. Fact sheets have been published on the department's website (www.environment.gov.au) covering safety considerations when using flammable refrigerants and specific industry factsheets for the fire and refrigeration and air conditioning industries

In 2012, the department also provided funding to the Fire Protection Association Australia to conduct five national seminars on the equivalent carbon price from 25 July to 10 August 2012 and the Australian Institute of Refrigeration, Air conditioning and Heating for the development, distribution and publication of five fact sheets specifically targeted at the refrigeration and air conditioning industry.

Recommendation 2

Promote the development of education programs for engineers with universities and vocational education and training (VET) providers on the safe design, installation, operation, maintenance and decommissioning of plant and equipment using substitute gases. While there are competent engineers already designing large systems based on hydrocarbon use, they are mainly located in the large cities and there are not many available in regional and rural Australia.

The Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE) has a number of relevant initiatives and programs aimed at increasing the skills of Australia's workforce. The Australian Government Skills Connect program is designed to link employers and industries to workforce development programs, initiatives and service delivery networks under a single identifiable banner. It draws together DIICCSRTE programs that offer co-contributions to businesses for developing their employees, through training, up-skilling and re-skilling. Programs include: the National Workforce Development Fund which provides \$765m over six years from 2011-12 to industry to support training and workforce development in areas of current and future skills need, language; literacy and numeracy training; Investing in Experience (Skills Recognition & Training) for mature age workers; and mentoring of Australian Apprenticeships. Further information can be found at www.innovation.gov.au.

In September 2011, DIICCSRTE provided funding to industry skills council, E-Oz Energy Skills Australia for the Development of Natural Refrigerants Training Resources to Up-Skill Existing Refrigeration and Air Conditioning Workers Project. E-Oz developed national competency standard units for safely handling natural refrigerants during the installation, commissioning, service and repair of stationary refrigeration and air conditioning systems. Three units were developed for ammonia and carbon dioxide and two for hydrocarbons. These units are available now at registered training organisations (RTOs) across the country with more RTOs offering them over the next two years. More information is available at www.e-oz.com.au.

The project also involved a Train-the-Trainer program to provide training to 42 teachers from RTOs across Australia in at least two of the three natural refrigerants during 2012.

Recommendations 3 and 4

Broaden the existing Commonwealth, state and territory governments' approach to the licensing of technicians who are working on plants or equipment that contains gases, or expand on the proposed National Occupational Licensing System, to include the safe use of refrigerants including substitute gases.

Retain a focus on licensing to cover not just the use of the gas but a broader licence to cover the proposed category of plant or equipment where the gas will be used. For example, the licence could be for tradespeople to work on large coolrooms, fixed installations such as supermarkets, plug-and-operate installations such as refrigerators or split-system air conditioners, or mobile plants such as cars.

The *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989* (the Act) regulates the manufacture, import and export of all ozone depleting substances and SGGs

and the Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995 (the Regulations) create a national system to control the end uses of these gases. The Act and Regulations do not regulate the use of natural refrigerants as these gases are not covered by the *Vienna Convention for the Protection of the Ozone Layer*, the *Montreal Protocol on Substances that Deplete the Ozone Layer* or the *UN Framework Convention on Climate Change*.

The Council of Australian Governments agreed in 2009 to the National Occupational Licensing Authority (NOLA) establishing a National Occupational Licensing System for specific occupations across Australia. This work system aims to remove overlapping and inconsistent regulation between states and territories for the licensing of a number of occupations including refrigeration and air conditioning occupations. Natural refrigerants are being considered as part of this work.

A consultation regulation impact statement on reforming occupational licensing for refrigeration and air conditioning occupations was released for public comment and closed on 5 October 2012. The department made a submission to the regulation impact statement on 6 November 2012 supporting the inclusion of natural refrigerants in any national refrigeration and air conditioning licensing system, including setting mandatory competency requirements, and coverage of the automotive sector. The consultation regulation impact statement can be found on the NOLA website www.nola.gov.au.

Recommendation 5

Ensure that all Australian WHS regulators adopt the Code of Practice developed for ammonia. They should also adopt the codes under development on the safe handling and use of carbon dioxide and hydrocarbons as refrigeration gases used in plant and equipment, through the Safe Work Australia process. This will enable their inspectors to enforce the legal responsibilities under the relevant WHS Act in their state or territory.

The Commonwealth, states and territories are responsible for making and enforcing work health and safety laws in their jurisdiction, including adopting codes of practice. The 2008 Intergovernmental Agreement for Regulatory and Operational Reform in Occupational Health and Safety seeks to harmonise WHS laws by adopting a model WHS Act supported by model Regulations and model codes of practice and is complemented by a nationally consistent approach to compliance and enforcement policy. In accordance with the Intergovernmental Agreement, Safe Work Australia develops model codes of practice as part of the package of harmonised WHS laws (see www.safeworkaustralia.gov.au).

Regulatory bodies, fire services, end users, suppliers, design engineers and contractors are working together to develop an industry code of practice for the Safe Application of Flammable Refrigerants (including hydrocarbons). The department provided \$43 500 to the Australian Institute of Refrigeration, Air conditioning and Heating to expedite the development of this code, which will provide practical guidance on how to manage health and safety risks when handling equipment containing flammable refrigerants. When the code is finalised, it will be available to industry and end users and submitted to Safe Work Australia for consideration as a model code of practice.

The Ammonia Refrigeration code of practice, released in 2011, was developed by a dedicated Ammonia Taskforce and has been adopted by Work Safe Victoria. This code covers safety requirements for design and modification; hazard identification; risk assessment and controls; emergency planning; maintenance; placarding (identification) signage; personal protective equipment; detection systems; training and auditing (see www.airah.org.au). The department has forwarded the WHS baseline analysis report to state and territory WHS authorities so they can consider this recommendation.

Recommendation 6

Consider the requirements for the use and handling of the substitute gas hydrofluoroolefin (HFO-1234yf) when it is registered for use in Australia. This will enable greater knowledge of the potential WHS risks by the users in workplaces.

Australia has established registration processes to consider the health and safety and environmental impacts of chemicals. For example, the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) assesses all chemicals new to Australia and assesses existing chemicals on a priority basis, in response to concerns about their safety on health and environmental grounds. This includes assessment of the safety data sheet and label. Commonwealth, state, territory and local government agencies are responsible for the implementation of NICNAS risk management recommendations (see www.nicnas.gov.au). Gases such as HFO 1234yf are assessed under the NICNAS regulatory framework.

It is the responsibility of importers and/or manufacturers introducing a new industrial chemical to Australia to apply for a certificate or permit for that chemical by submitting a notification to NICNAS. NICNAS then assess the chemical based on the information supplied and issues a certificate or permit with conditions to ensure safe use of that chemical.

Recommendation 7

Explore the potential to mandate the use of a left-hand thread on all gas containers that contain a flammable gas, to align the system with that used with industrial gases. This would assist as a secondary indicator of the flammable contents of the container if the labelling is not correct.

Standards Australia is the body recognised by the Australian Government as the Standards body in Australia. The standards it develops are internationally aligned. Standards Australia represents Australia on the International Organization for Standardization and the International Electrotechnical Commission (see www.standards.org.au).

The Australian Standard AS2473.2-2007 *Valves for compressed gas cylinders, Part 2: Outlet connections (threaded) and stem (inlet) threads*, requires that a left hand thread is used to denote flammable gases and a right hand thread to denote non-flammable gases for certain industrial gases and those used in certain cylinders, such as barbeque cylinders. Consideration by Standards Australia would be required to determine the feasibility of amending or extending this standard to include other gases. The department has forwarded the WHS baseline analysis report to Standards Australia to consider this recommendation.

Recommendation 8

Monitor the policies and regulations developed by the European Aerosol Association to ensure that the selection of propellants used in Australia and their labelling include the potential WHS risks relating to flammability as well as health impacts.

Under WHS legislation in Australia there are requirements for the classification of hazardous substances and dangerous goods, including labelling and safety data sheets. Australia is currently transitioning to the Globally Harmonized System of Classification and Labelling of Chemicals, which was developed by the UN and provides a single internationally agreed system of chemical classification and hazard communication through labelling and safety data sheets. This system came into effect in Australia on 1 January 2012. There is a five year transitional period for moving to the new system. After 1 January 2017 all chemicals supplied for use must comply with the new requirements. More information can be found on the Safe Work Australia website www.safeworkaustralia.gov.au.

Recommendation 9

Review the data relating to SGGs and substitute gases with the WHS regulators within the next 12 months to monitor incidents or injuries and outcomes of WHS Inspector visits to workplaces, to determine whether the WHS risk profile has changed.

The report noted that there was a lack of data relating to incidents, injuries and outcomes of WHS Inspector visits to workplaces available for this review. The department will work with WHS regulators and the Australian Competition and Consumer Commission who monitor and report on incidents involving SGGs and substitute gases. A future update of this study will assist in this respect.

Recommendation 10

Use international benchmarking of SGG policy and safe use of substitute gases to ensure that Australian workplaces maintain their current high standards of WHS performance.

Standards Australia has links with relevant international organisations. Safe Work Australia is a national policy body with primary responsibility for leading the development of policy to improve work health and safety and workers' compensation arrangements across Australia. Safe Work Australia participates in a range of international activities and works closely with international organisations on health and safety (see www.safeworkaustralia.gov.au).

The department maintains its awareness of issues in relation to SGGs and substitute gases through international organisations including United States Environmental Protection Agency, European Commission, Environment Canada, GIZ Proklima and the United Nations implementing agencies such as the United Nations Development Programme, the United Nations Environment Programme, the United Nations Industrial Development Organization, and the World Bank.