MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

DISCUSSION DOCUMENT

Ensuring effective regulation of health and safety risks associated with toxic or flammable refrigerant gases

3 September – 14 December 2018

HOW TO HAVE YOUR SAY

Making a submission

The Ministry of Business, Innovation and Employment (MBIE) is seeking comments on this discussion paper by **5pm on Friday 14 December 2018**. We have included a consolidated set of questions at **Annex D** of this document to help you consider your response, but your general comments are also welcome.

When making a submission, please include your name, the name of your organisation, and your contact details.

Send your submission as a Microsoft Word document or PDF to HSWRegs@mbie.govt.nz

Alternatively you can post your submission to:

MBIE – Health and Safety Policy
PO Box 1473
Wellington 6140
New Zealand

Use of information

Your submission may be made public, or the content included in a summary or other report about this consultation process. By making a submission, we consider you have consented to this use, unless you clearly specify otherwise in your submission.

Release of information

Release of submissions is subject to the *Official Information Act 1982*. Please tell us as part of your submission if you have any objection to the release of any information in the submission, which parts you consider should be withheld, and include your reasons for withholding the information (for example, commercially sensitive material). We will consider any objections you note and consult with you when responding to requests under the *Official Information Act 1982*.

Please indicate on the front of your submission if it contains confidential information and mark the text accordingly. If you wish to make a submission which includes confidential information, please send us a separate version excluding the relevant information for publication on our website.

Private information

Any personal information you supply to us as part of your submission will only be used to help inform the development of policy advice in relation to this review. Please clearly indicate in your submission if you do not wish your name to be included in any summary of submissions that we may publish.

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EXECUTIVE SUMMARY

Ensuring only competent persons install, repair, and maintain systems that use toxic or flammable refrigerants

Hydrofluorocarbons (HFCs) are greenhouse gases with high global warming potential and are widely used in refrigeration and air conditioning systems.

A worldwide phase down on HFCs is being implemented from 2019 under the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer. The switch from HFCs to more environmentally acceptable alternatives will help combat climate change, but will also present increased risks to health and safety in some circumstances because of the higher toxicity or flammability of common alternatives.

The HFC phase down (and associated transition to flammable or toxic alternatives) is expected to increase the level of risk associated with work carried out by technicians in the heating, ventilation, air conditioning, and refrigeration (HVAC&R) industry. Because of the prevalence of systems using HFCs, many of these technicians lack the knowledge and experience to safely install, maintain, or repair systems that use refrigerants with toxic or flammable properties.

Consequently, in this changing and higher-risk operating environment it will be important to ensure that only competent persons install, repair, and maintain systems that use toxic or flammable refrigerants.

MBIE is seeking feedback on three alternative options that would ensure only competent persons install, repair, or maintain refrigeration, heat pump, or air conditioning systems that use toxic or flammable refrigerants:

- **option 1** would introduce an authorisation requirement for individual refrigeration service technicians and a requirement to establish and maintain a register of those individuals; or
- **option 2** would introduce an authorisation requirement for refrigeration service businesses and a requirement to establish and maintain a register of those businesses; or
- **option 3** would build on the current approach to industry self-regulation supported by WorkSafe effort to improve awareness, understanding, and compliance with current regulatory requirements.

Extending application of the joint Australian/New Zealand Standard for commercial refrigeration systems to include systems that use anhydrous ammonia

MBIE is also assessing a proposal that would require owners/operators of commercial or industrial refrigeration systems that use anhydrous ammonia to comply with the joint Australian/New Zealand Standard for commercial refrigeration systems. This would require a change to the Hazardous Substances Regulations.

This requirement was originally put in place to manage the risks associated with flammable hydrocarbon refrigerants following the 2008 Tamahere Cool Store Fire, which killed one and seriously injured seven firefighters.

Anhydrous ammonia is an acutely toxic substance but it is also flammable when mixed with air. The change that we are proposing would ensure consistent application of the Standard to all types of flammable refrigerants.

We welcome your feedback

MBIE welcomes your feedback on these proposals. To help you consider your response, a consolidated set of the consultation questions are provided in **Annex D**. Please submit your feedback by **5 pm on Friday 14 December 2018**.

SITUATION

Importance of refrigeration to the New Zealand economy

Refrigeration has provided New Zealand the opportunity to develop an extensive export economy, which has made possible a high standard of living for the population. Refrigeration is vital for reducing post-harvest and post-slaughtering losses and in the preservation of food products.

New Zealand has one of the largest refrigerated storage volumes per capita of any country and a significant percentage of our export earnings are from refrigerated food products.

HFCs are widely used in refrigeration and air conditioning systems

HFCs are widely used in refrigeration and air conditioning systems in New Zealand and other countries because of their favourable thermodynamic properties and low toxicity, reactivity, and flammability.

However, HFCs are contributing to climate change worldwide, and without action to curb their use will become a significant influencer on climate. As nations are moving to undertake ambitious efforts to combat climate change, the world is moving away from substances that have a high global warming potential, including HFCs. As a small, trade-dependent country, New Zealand will inevitably be influenced by these international changes.

A global phase down on HFCs will soon commence

In October 2016, New Zealand was among the 197 Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer that adopted an amendment in Kigali, Rwanda to phase down HFCs worldwide. The Kigali Amendment puts in place a worldwide phase down of the production and consumption of HFCs.

The global phase down on HFCs will accelerate the use of alternative refrigerants, which are less harmful to the environment but present increased risks to health and safety because of their hazardous properties (higher toxicity, higher flammability, or higher operating pressure).

The Kigali Amendment will enter into force on 1 January 2019 (for those countries that have ratified it) and involves regular phase down steps until 2036. This will result in significant reductions in the global supply of HFCs which will have a significant impact on the costs of HFCs and will incentivise many commercial and industrial refrigeration system owners in New Zealand to either retrofit or replace their refrigeration systems to use alternative refrigerants. The Government plans for New Zealand to ratify in late 2019, which would mean the Kigali Amendment enters into force for New Zealand from 1 January 2020.[1]

[1] If you have any queries related to the Kigali Amendment and the global phase-down on HFCs, then please email the Ministry for the Environment on montreal@mfe.govt.nz

Changes to regulations under the HSW Act may be needed to support a safe transition away from HFCs

Incompetent installation, repair, or maintenance of systems that use toxic or flammable refrigerants — particularly commercial systems (e.g. walk-in chillers) and industrial plant (e.g. meat processing plants) — can result in significant irreversible harm to persons and property. The costs associated with such an incident can be significant in terms of costs associated with: fatalities and serious injuries; damage to the refrigeration system and associated building; damage to products under refrigeration; attendances by emergency services; investigation and legal costs; lost production while system not operating; repair or re-build of damaged system and associated building. For example, the 2008 Tamahere Cool Store Fire killed one and seriously injured seven firefighters, destroyed $25 million worth of stored products, and $2.2 million worth of fire service equipment.

The risks associated with hazardous refrigerants, and associated plant and equipment that use those refrigerants, are largely managed by regulatory requirements made under the HSW Act, the Electricity Act, and the Building Act.

Go to **Annex A** of this document for more detail on the **current regulatory requirements**.

Our analysis has identified the following gaps in the current regulatory requirements made under the HSW Act:

- technicians are not required to demonstrate their competency to install, repair, and maintain refrigeration, heat pump, or air conditioning systems that use flammable or toxic refrigerant gases; and
- compliance with the joint Australian/New Zealand Standard for commercial refrigeration systems (AS/NZS 5149:2016) is not mandatory for systems using (flammable) anhydrous ammonia when all other flammable refrigerants are subject to this requirement.

ISSUE 1: TECHNICIANS ARE NOT REQUIRED TO DEMONSTRATE THEIR COMPETENCY TO INSTALL, REPAIR, AND MAINTAIN SYSTEMS THAT USE FLAMMABLE OR TOXIC REFRIGERANT GASES

Problem Definition

Risks associated with work involving refrigerants are likely to increase as HFCs are replaced with hazardous alternatives

Currently the majority of commercial refrigeration systems (e.g. walk-in chillers) and a smaller number of industrial plants (e.g. meat processing plants) use HFCs. HFCs are also widely used in domestic and light commercial appliances (e.g. retail food and beverage display cabinets) and in automotive air conditioning systems. HFCs have low toxicity, reactivity, and flammability. From 2019 onwards, these HFC-based refrigeration systems will increasingly be retrofitted or replaced with systems that use flammable, toxic, or high pressure alternative refrigerants.

Incompetent conversion of existing systems to use alternative refrigerants; incompetent design and installation of new systems to use alternative refrigerants; and incompetent repair and maintenance of these systems increases the risk of an incident that causes irreversible significant harm to consumers or third-parties.

The consequences of an incident involving a larger commercial system or industrial plant that uses a refrigerant with hazardous properties could be significant, despite the probability of an incident being low. For example, the 2008 Tamahere Cool Store Fire killed one and seriously injured seven firefighters, destroyed $25 million worth of stored products, and $2.2 million worth of fire service equipment.

By comparison the consequences of an incident involving a domestic or light commercial appliance that uses a refrigerant with hazardous properties is likely to be on a far smaller scale – despite being potentially significant for the persons directly affected by the incident. The probability of an incident occurring would also be expected to be low on the basis that those appliances are charged with relatively small quantities of refrigerants and must be manufactured to applicable safety standards cited in the *Electricity (Safety) Regulations 2010* (the ESR Regulations) before they can be sold on the New Zealand market. However, the probability of an incident occurring increases where incompetent repair or servicing of these appliances is carried out.

Reliance on the training system alone is unlikely to provide adequate assurance that risks are effectively managed

The HVAC&R industry is underpinned by a well-established apprenticeship system. It usually takes apprentices four years to complete their National Certificate.

The National Certificate includes training modules on refrigerants with hazardous properties, electrical wiring risks, and the installation, repair, and maintenance of commercial or industrial systems that use those types of refrigerants. However, while many refrigeration technicians have completed the National Certificate it is not a compulsory requirement for working on

refrigeration plant. Many people working in the industry have been trained overseas or have moved into refrigeration work from other trades such as electricians and fabricators.

Due to the widespread use of HFC refrigerants currently, there are relatively few refrigeration technicians with sufficient practical experience and theoretical knowledge about:

- the safe handling of toxic or flammable alternative refrigerants;
- the electrical wiring risks associated with the installation and maintenance of refrigeration plant and equipment containing flammable refrigerants; and
- the installation, repair, and maintenance of refrigeration, heat pump, or air conditioning systems that use those toxic or flammable alternative refrigerants.

The exception to this is the relatively small number of technicians that work on industrial scale refrigeration plant that typically uses ammonia.

Despite courses being offered by training providers to address these gaps, there are limited levers to compel HVAC&R business to invest in such training. Approximately 80 per cent of HVAC&R businesses employ less than three people and have limited resources to invest in training.

Investment in training is also limited by the fact that refrigeration technicians are not required to demonstrate — through a licensing regime or similar — that they are competent to install, repair, and maintain systems that use alternative refrigerants.

Continued reliance on the training system alone is unlikely to provide adequate assurance that risks associated with the increased use of refrigerants with hazardous properties will be adequately managed.

The HVAC&R industry is unable to regulate itself effectively on a voluntary basis

Previous attempts by the HVAC&R industry to regulate itself, following the 2008 Tamahere Cool Store Fire, have not had sufficient uptake across the industry to be as effective as they could have been because of their voluntary nature.

The proxy occupational licensing regime that was put in place by the Institute of Refrigeration Heating & Air Conditioning Engineers (IRHACE), the Climate Control Companies Association New Zealand (CCCANZ), and the Refrigerant License Trust Board (RLTB) relied on the approved filler certification requirements under the Hazardous Substances Regulations in combination with a voluntary agreement amongst key refrigerant wholesalers to restrict sales to refrigeration technicians who have evidence of competence to safely handle refrigerant (i.e. approved filler certification).

There are a number of weaknesses with this proxy regime, including:

- approved filler training and certification, which is a one day theory course, was never designed to provide comprehensive trade training for technicians that work with flammable, toxic, or high pressure refrigerants;
- approved filler training is not required to cover the transfer of refrigerant from a cylinder to a refrigeration system;

- approved filler training is not required to convey information on electrical risks, which are an important part of flammable refrigeration system design and installation;
- only half of the 7,000 refrigeration technicians working in the industry have completed approved filler training; and
- a number of suppliers, have not adopted the voluntary sales restriction agreement and sell refrigerants without restriction to persons with limited training or competency to safely handle those hazardous substances.

Approach taken to regulation of refrigeration technicians in Australia

Australia has built a comprehensive occupational licensing regime for refrigeration technicians working with fluorinated refrigerant gases (including HFCs) to support their environmental policy objectives. However, the risks to persons and property from alternative refrigerants are largely managed by general duties for the use, storage, and handling of hazardous substances prescribed in State work health and safety regulations. Improvements in competency to safely work with flammable, toxic, or high pressure refrigerants and associated systems has been achieved as a by-product of this occupational licensing regime.

Queensland is the only Australian State that has put specific occupational regulation in place under the *Petroleum and Gas (Production and Safety) Act 2004* to licence persons who work on refrigeration systems that use flammable hydrocarbon refrigerants.

The approach taken by Australian States and Territories, Queensland in particular, suggests there may be a good case for occupational regulation of refrigeration technicians in an environment where HFCs are being phased out and increasingly being replaced with flammable, toxic, and high pressure alternatives.

Approach taken to the occupational regulation of other occupations in the building sector or other occupations performing high-risk work

Occupational regulation, in the form of licensing, is used across the wider building industry to ensure that the individuals who are responsible for the completion of work are competent and accountable. Builders, electrical workers, plumbers, gasfitters, drain layers, architects, and engineers are all subject to occupational licensing regimes.

Under work health and safety legislation, the authorisation regime is used to ensure that certain high-risk work activities can only be carried out by a suitably qualified and/or experienced individual who holds an authorisation issued by WorkSafe, or a suitable organisation under delegation from WorkSafe. Alternatively, the requirement to hold an authorisation can be placed on a person conducting a business or undertaking (PCBU), rather than an individual worker, where it is more appropriate to do so.

Currently, an authorisation requirement — in the form of a certificate of competence for individual workers — applies to commercial divers, scaffolders working above 5 metres, and powder actuated tool operators. An authorisation requirement — in the form of a licence for PCBUs — applies to asbestos removal businesses.

Question: Have we accurately identified the issues associated with the competence of refrigeration technicians to install, repair, and maintain systems that use flammable or toxic refrigerants? Are there any other issues associated with this matter?

Objectives

We consider that any options to ensure only competent persons install, repair, or maintain refrigeration, heat pump, or air conditioning systems that use toxic or flammable refrigerants should:

- reduce the likelihood of harm to persons and property from the increased use of alternative flammable or toxic refrigerant gases, and the systems that use those refrigerants, with a view to supporting a safe transition away from HFCs (**effectiveness**);
- ensure that the duties and rights of employers and workers are clearly set out and complied with, and the responsibilities and accountabilities of regulatory agencies are clear and understood by both agencies and duty holders (**transparency and certainty**);
- ensure that compliance, transitional, and administrative costs are minimised (**cost effectiveness**); and
- ensure that the degree of regulation is commensurate with risk (**proportionality**).

Question: Do you agree with these objectives? Would you suggest any others?

Options

This section outlines three options to ensure only competent persons install, repair, or maintain refrigeration, heat pump, or air conditioning systems that use toxic or flammable refrigerants. These options are:

- **option 1** – introduce an authorisation requirement for individual refrigeration service technicians and a requirement to establish and maintain a register of those individuals;
- **option 2** – introduce an authorisation requirement for refrigeration service businesses and a requirement to establish and maintain a register of those businesses; and
- **option 3** – build on the current approach to industry self-regulation supported by WorkSafe effort to improve awareness, understanding, and compliance with current regulatory requirements.

The options proposed are mutually exclusive.

Option 1: introduce an authorisation requirement for individual refrigeration service technicians in regulations under the HSW Act

Option 1 proposes an authorisation requirement for individual service technicians given the higher-risk nature of the work as HFCs are phased out. It would also introduce a requirement to establish and maintain a register of individuals that have been issued an authorisation.

This would require individual technicians to obtain an authorisation from WorkSafe — or a suitable organisation under delegation from WorkSafe — before being permitted to work on systems that use flammable or acutely toxic refrigerants. Such authorisations currently apply to commercial divers, powder-actuated tool operators, and scaffolders that work above five metres.

Under this option a duty would also be placed on the service business (the employer) to ensure, so far as is reasonably practicable, that every refrigeration technician (the employee) who works on refrigeration, heat pump, or air conditioning appliances or systems that use flammable or acutely toxic refrigerants should be the holder of a current authorisation.

Different categories of authorisation are proposed to ensure that technicians do not work on systems outside of their competence. For example, a full authorisation would permit the holder to work on any size system in the refrigeration and air conditioning industry while a restricted authorisation would restrict the holder to working on domestic refrigeration or air conditioning appliances and/or light commercial stand-alone appliances.

It is proposed that the authorisation requirement would not apply to technicians working on automotive air conditioning systems or systems using non-toxic or non-flammable refrigerants.

The advantages of this option are that it:

- would be more likely than non-regulatory approaches to effectively reduce the likelihood of significant harm to persons and property from the incompetent installation, repair, or maintenance of systems using refrigerants with flammable or toxic properties;
- would leverage existing authorisation infrastructure and resources within WorkSafe to develop and implement an efficient authorisation regime;
- would impose less compliance costs than an authorisation requirement on refrigeration engineering businesses; and
- would be more likely than an authorisation requirement for businesses to be commensurate with the risks associated with work on refrigeration, heat pump, or air conditioning systems that use flammable or acutely toxic refrigerants.

The disadvantage of this option is that it would impose increased compliance costs on individual refrigeration technicians or their employers.

Question: Do you support the introduction of an authorisation requirement for individual refrigeration technicians in regulations under the HSW Act? If no why?

Question: What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)

Go to **Annex B** of this document for more detail on this option and the more detailed questions relating to the design of this option.

Option 2: introduce an authorisation requirement for refrigeration service businesses in regulations under the HSW Act

Option 2 proposes an authorisation requirement for refrigeration service businesses given the higher-risk nature of the work as HFCs are phased out. It would also introduce a requirement to establish and maintain a register of businesses that have been issued an authorisation. Such authorisations currently apply to asbestos removal businesses under the *Health and Safety at Work (Asbestos) Regulations 2016*.

This option would require refrigeration service businesses to obtain an authorisation from WorkSafe — or a suitable organisation under delegation from WorkSafe — before being permitted to carry out, direct, or allow a worker to carry out work on a refrigeration, heat pump, or air conditioning system that uses flammable or acutely toxic refrigerants. It is also proposed that an authorisation holder would be required to ensure that only competent individuals carry out work under the authorisation.

Different categories of authorisation are proposed to ensure that service businesses do not work on systems beyond the competence of their workers. The proposed categories under this option are consistent with those for Option 1.

The proposed exclusions under this option are consistent with those for Option 1.

The advantages of this option are that it:

- would be more likely than non-regulatory approaches to effectively reduce the likelihood of significant harm to persons and property from the incompetent installation, repair, or maintenance of systems using refrigerants with flammable or toxic properties;
- would enable WorkSafe to more effectively encourage voluntary compliance, or undertake enforcement action, through placing accountability for non-compliance on a person conducting a business or undertaking rather than an individual worker; and
- would leverage existing authorisation infrastructure and resources within WorkSafe to develop and implement an efficient authorisation regime.

The disadvantages of this option are that it:

- would impose greater compliance costs than an authorisation requirement on individual refrigeration technicians (for example, application fees for a PCBU authorisation are likely to be in the order of $500[2] while application fees for an

[2] Approximate based on licence application fees for asbestos removal licences.

individual authorisation are currently in the order of $90[3] but would likely be in the order of $250 under new regulations); and

- could be disproportionate to the level of risks associated with work on refrigeration, heat pump, or air conditioning systems that use flammable or acutely toxic refrigerants.

Question: Do you support the introduction of an authorisation requirement for refrigeration service businesses in regulations under the HSW Act? If no why?

Question: What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)

Go to **Annex C** of this document for more detail on this option and the more detailed questions relating to the design of this option.

Option 3: build on the current approach to industry self-regulation supported by WorkSafe effort to improve awareness, understanding, and compliance with current regulatory requirements

Option 3 proposes to build on the current approach by the HVAC&R industry to regulate itself supported by WorkSafe efforts to improve awareness, understanding, and compliance with current regulatory requirements.

The current approach taken by the HVAC&R industry relies on the approved filler certification requirements under the Hazardous Substances Regulations in combination with a voluntary agreement amongst key refrigerant wholesalers to restrict sales to refrigeration technicians who can provide evidence of their competence to safely handle refrigerant (i.e. approved filler certification).

There are a number of weaknesses with the current approach to self-regulation that would need to be addressed by this option, including developing a more comprehensive and tailored approved filler training course for HVAC&R technicians. The revised course would need to cover important topics addressing risks and techniques that are not currently part of the mandatory course content.

Industry self-regulation would also be supported by the current work being undertaken by WorkSafe to improve plant owner and service technician/business awareness and understanding of, and compliance with, current legal obligations that apply to the safe handling of toxic or flammable refrigerants and the design, installation, repair, and maintenance of commercial and industrial refrigeration systems.

The advantages of this option are that it:

- would not impose any compliance costs on individual refrigeration technicians or refrigeration engineering businesses; and

[3] Approximate based on current application fees for current certificates of competence. It should be noted that these fees are grossly under costed and were last updated in 2003.

- would provide the HVAC&R with an opportunity to revise and relaunch an industry self-regulation approach in order to avoid government regulation.

The disadvantages of this option are that it:

- would still suffer from some of the same weaknesses it does now due to the arrangements being voluntary in nature, for example, the lower than expected take-up of the voluntary sales restriction agreement has meant that refrigerants continue to be sold to persons with limited training or competency to safely handle those hazardous substances; and
- would be less likely than regulatory approaches to effectively reduce the likelihood of significant harm to persons and property from the incompetent installation, repair, or maintenance of systems using refrigerants with flammable or toxic properties.

Question: Do you support building on the current approach to industry self-regulation supported by WorkSafe improving awareness, understanding, and compliance with current regulatory requirements? If no, why?

Question: What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)

ISSUE 2: COMPLIANCE WITH THE JOINT AUSTRALIAN/NEW ZEALAND STANDARD FOR COMMERCIAL REFRIGERATION SYSTEMS IS NOT MANDATORY FOR SYSTEMS USING ANHYDROUS AMMONIA

Problem Definition

Anhydrous ammonia is a refrigerant with toxic and flammable properties

Anhydrous ammonia is commonly used as a refrigerant in large industrial refrigeration systems. We estimate there to be some 200 commercial and industrial refrigeration systems across New Zealand that currently use anhydrous ammonia. A further 20 – 40 systems, which currently use HFCs, could be retrofitted to use ammonia in the future as the supply of HFCs is phased down.

Anhydrous ammonia is acutely toxic and is flammable when mixed with air.

Unprotected exposure to ammonia at a high enough concentration can be fatal. Lower-level exposures can cause temporary blindness and eye damage, as well as irritation to the skin, mouth, throat, lungs, and mucous membranes.

An ammonia leak can also contaminate the food items that the refrigeration system was designed to protect.

Ammonia has a strong and unpleasant smell at low concentrations. The strong smell however can also provide an advantage over other refrigerants in that it can enable small leakages in a refrigeration system to be discovered quickly and corrected.

Ammonia is liquefied under pressure. Because of this pressure, it will rapidly release into the air. Typically, the ammonia will rise, however in the presence of moisture (such as high relative humidity), the liquefied anhydrous ammonia gas forms vapours that are heavier than air. These vapours may spread along the ground or into low-lying areas with poor airflow where people may become exposed.

Mixtures of ammonia and air are flammable under certain circumstances. While an ammonia deflagration does not have the destructive power of hydrocarbons, it is capable of causing burns and minor structural damage. In order to ignite ammonia the minimum energy needed is considerably higher than other flammable substances.

In other jurisdictions, explosions have been attributed to releases of ammonia contaminated with lubricating oil.

The majority of industrial accidents involving ammonia in refrigeration systems affect those close to the point of the leak, such as production workers on a refrigerated process or refrigeration technicians servicing the ammonia system.

Incidents involving anhydrous ammonia

Between 1996 and 2016, 403 workplace incidents involving anhydrous ammonia were recorded. Of those incidents, eight involved serious injury to workers that required hospital admission or medical treatment.

In terms of more recent incidents, in 2017 a total of 17 workplace incidents involving anhydrous ammonia were recorded. So far in 2018 we've had 11 incidents, one of which left three people needing hospital treatment after being exposed to the toxic gas and required the plant to be evacuated.

It should be noted that these are recorded incident and injury rates but that actual rates are likely to be higher.

Under the Hazardous Substances Regulations, all commercial refrigeration systems using flammable refrigerants — except anhydrous ammonia — must comply with the joint Australian/New Zealand Standard

In accordance with regulation 10.10 in Part 10 of the Hazardous Substances Regulations, a business with management or control of a refrigeration system that uses a flammable refrigerant must ensure that the system complies with joint Australian/New Zealand Standard for commercial refrigeration systems (AS/NZS 5149:2016).

AS/NZS 5149:2016 specifies requirements for the design, construction, and installation of refrigerating systems including heat pumps. It also specifies requirements for testing, commissioning, marking, and documentation. It applies to new refrigerating systems, extensions or modifications of existing systems, and for used systems, being transferred to and operated on another site.

This requirement was originally put in place through the reassessment of the HSNO approval for LPG, butane, propane, and isobutane, in order to manage the risks associated with flammable hydrocarbon refrigerants following the 2008 Tamahere Cool Store Fire. Anhydrous ammonia, which is acutely toxic but also flammable when mixed with air, was outside the scope of that reassessment process.

Regulation 10.2 provides that Part 10 of the regulations does not apply to anhydrous ammonia contained in plant as a refrigerant, despite ammonia having flammable properties. The exemption of anhydrous ammonia from parts of the Hazardous Substances Regulations is a historical carry over from the former Dangerous Goods legislation, which acknowledged that the risks associated with ammonia refrigeration systems were at that time managed under the (now repealed) Factories and Commercial Premises legislation.

An Approved Code of Practice under the PECPR Regulations recommends all commercial refrigeration systems — including anhydrous ammonia systems — comply with the joint Australian/New Zealand Standard … but it is not legally binding

The Approved Code of Practice for Pressure Equipment (Excluding Boilers) was issued in 2001 as a practical guide to support duty holders comply with their obligations under the *Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeway) Regulations 1999* (the PECPR Regulations). The Approved Code of Practice (ACoP) requires designers of commercial and industrial refrigeration systems to ensure that all equipment, or any alteration

to equipment, is designed in accordance with (now superseded) joint Australian/New Zealand Standard for commercial refrigeration systems AS/NZS 1677:1998. This ACoP applies to refrigeration systems regardless of the type of refrigerant that is used.

The guidance in the ACoP is not legally binding in the same way as the requirements prescribed in the PECPR Regulations. However, the ACoP can be used in legal proceedings as evidence of whether or not a duty or obligation under the PECPR regulations has been complied with. It is our understanding that some insurers may require compliance with the ACoP in addition to the PECPR Regulations.

It is possible that a number of existing ammonia refrigeration systems do not comply with the requirements of the joint Australian/New Zealand Standard for commercial refrigeration systems, given the voluntary nature of this requirement currently.

Question: Have we accurately identified the gaps in the current regulatory requirements for ammonia refrigeration systems? Are there any other issues associated with this matter?

Proposal

We consider there is a case for requiring operators of ammonia systems to comply with the joint Australian/New Zealand Standard for commercial refrigeration systems.

Question: Do you agree that there is a case for requiring operators of ammonia systems to comply with the joint Australian/New Zealand Standard for commercial refrigeration systems? If no why?

We propose amending regulation 10.10 of the Hazardous Substances Regulations to clarify that, despite the general exemption at regulation 10.2 (for anhydrous ammonia systems from Part 10), a business with management or control of a refrigeration system that uses any flammable refrigerant must ensure that the system complies with joint Australian/New Zealand Standard for commercial refrigeration systems (AS/NZS 5149:2016).

This change would ensure consistent application of AS/NZS 5149:2016 to all commercial refrigeration systems that use refrigerants with flammable properties – including anhydrous ammonia. It would also make mandatory the current approach set out in the Approved Code of Practice for Pressure Equipment (Excluding Boilers) 2001 under the PECPR Regulations.

Question: Do you agree with the proposed change to regulation 10.10 of the Hazardous Substances Regulations? If no why?

This proposal would require appropriate transitional arrangements for existing commercial refrigeration systems that were designed and installed before the commencement of AS/NZS 5149:2016 to exclude them from this proposed requirement but instead to require those systems to be maintained and repaired in accordance with the Standard to which those

systems were constructed and installed, or in accordance with generally accepted industry practice.

Question: Do you agree with the proposed transitional arrangements? If no why?

Question: What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)

ANNEX A: CURRENT REGULATORY REQUIREMENTS

Primary duty of care to maintain a work environment without health and safety risks

The primary duty of care at section 36 of the *Health and Safety at Work Act 2015* (the HSW Act) is a broad overarching duty which includes, but is not limited to, a person conducting a business or undertaking (PCBU) having effective practices in place for providing and maintaining a work environment that is without health and safety risks; and providing and maintaining safe plant (i.e. refrigeration, heat pump, air conditioning systems).

In addition to the primary duty of care, section 38 places a duty on a PCBU who manages or controls plant at a workplace to ensure, so far as is reasonably practicable, that the plant is without risks to the health and safety of any person.

There are also complementary duties on businesses responsible for the design, manufacture, construction, installation, importation, and supply of plant at workplaces.

Regulations managing the competence of persons who work with refrigerants and refrigeration systems

In accordance with regulation 9 of the *Health and Safety at Work (General Risk and Workplace Management) Regulations 2016* (the GRWM Regulations), a PCBU must ensure that every worker who carries out work of any kind, uses plant of any kind, or deals with a substance of any kind that is capable of causing a risk in a workplace, either has adequate knowledge and experience or is adequately supervised by a person who has that knowledge and experience. WorkSafe has issued guidance on its website to support PCBUs to meet this obligation.

This general requirement is further strengthened by the more specific obligations at regulations 4.5 and 4.6 of the *Health and Safety at Work (Hazardous Substances) Regulations 2017* (the Hazardous Substances Regulations), which apply to PCBUs handling hazardous substances.

These requirements would therefore apply to PCBUs that employ or engage technicians who work with hazardous refrigerant gases or plant that contains those substances.

Regulations managing hazards associated with the toxic or flammable properties of refrigerant used in commercial or industrial refrigeration systems

Regulation 1.13 of the Hazardous Substances Regulations clarifies that these regulations do not apply to domestic refrigerators, domestic heat pumps, or room air conditioners. This regulation also clarifies that these regulations (other than regulations 2.5 and 2.6) do not apply to a commercial or industrial refrigeration system to which regulation 10.10 applies.

Regulations 2.5 and 2.6 provide that where hydrocarbon or other flammable gas refrigerants are used in a refrigeration system, signage must be displayed that displays the correct hazard pictogram and hazard statement for the substance. This requirement is essential for the safety of technicians who work on refrigeration plant and emergency service workers when responding to an incident. This regulation does not apply to anhydrous ammonia being used as a refrigerant.

Regulation 10.10 provides that a PCBU with management or control of a commercial or industrial refrigeration system that uses flammable refrigerants (such as hydrocarbons or hydrofluoroolefins) must ensure that the system complies with joint Australian/New Zealand Standard for commercial refrigeration systems (AS/NZS 5149:2016). This regulation applies to all refrigerants with flammable properties excluding anhydrous ammonia.

AS/NZS 5149:2016 specifies requirements for the design, construction, and installation of refrigerating systems including heat pumps. It also specifies requirements for testing, commissioning, marking, and documentation. It applies to new refrigerating systems, extensions or modifications of existing systems, and for used systems, being transferred to and operated on another site.

Regulations 15.64 to 15.65 provide that a PCBU must ensure that no person at the workplace charges a gas container (i.e. recovering refrigerant from a refrigeration system into a cylinder) unless: the person is an approved filler for the type of gas being used; or the person is undertaking training to become an approved filler and is supervised at all times by a person who holds an approved filler certificate for the type of gas being used. Regulation 15.66 prescribes the criteria that must be satisfied before an individual can be issued with an approved filler certificate.

Regulations managing hazards associated with pressure equipment for commercial or industrial refrigeration systems

The *Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeway) Regulations 1999* (the PECPR Regulations) apply to pressure equipment that contain gases at pressures exceeding 50 kPa. This includes commercial or industrial refrigeration systems (excluding vehicle mounted systems) regardless of the type of refrigerant that is used.

Under the PECPR Regulations, New Zealand based designers of pressure equipment are required to ensure that equipment has been design verified by an independent design verifier, New Zealand based manufacturers of pressure equipment are required to ensure that equipment has been inspected by an independent equipment inspector during fabrication, and the supplier must ensure that the equipment has been installed in accordance with the regulations. Where the pressure equipment has been designed and manufactured overseas, then the New Zealand based supplier is responsible for ensuring that design verification and inspection during fabrication is carried out.

Under the PECPR Regulations, the owner of the pressure equipment (the “controller”) is required to ensure that the pressure equipment is not operated unless, so far as reasonably practicable, it has a current certificate of inspection. The controller is also required to ensure that the pressure equipment is safe, operated safely within its design limits, and maintained in a safe condition.

Further duties are placed on the controller in relation to record and information keeping, accident notification, and investigation of potentially unsafe equipment.

An Approved Code of Practice (ACoP) has been made under the PECPR Regulations as a practical guide to support duty holders comply with their obligations. The ACoP requires designers of commercial and industrial refrigeration systems to ensure that all equipment, or any alteration to equipment, is designed in accordance with an appropriate Standard, one of

which is the (now superseded) joint Australian/New Zealand Standard for commercial refrigeration systems AS/NZS 1677:1998.

While the ACoP is not legally binding in the same way as the requirements prescribed in the PECPR Regulations it can be used in legal proceedings as evidence of whether or not a duty or obligation under the PECPR regulations has been complied with. Furthermore, it is our understanding that insurers will generally require compliance with the ACoP.

Regulations managing electrical hazards on or in the vicinity of a commercial or industrial refrigeration system

In accordance with regulation 15 of the *Electricity (Safety) Regulations 2010* (the ESR Regulations), a person who owns or operates an installation must not use the installation if the installation is electrically unsafe.

Regulations 20(2)(fa) and (fb) provide that an installation is deemed to be electrically unsafe when any commercial or industrial refrigeration system is charged with an alternative refrigerant that it was not designed to use, unless the system has subsequently been modified to operate safely with the alternative refrigerant. These requirements were built into the ESR Regulations in 2013, in response to the increasing number of incidents in New Zealand involving the use of flammable hydrocarbon refrigerants.

Regulation 60 of the ESR Regulations requires a commercial or industrial refrigeration system to comply with the (now superseded) joint Australian/New Zealand Standard for commercial refrigeration systems (AS/NZS 1677).

Regulations that ensure emergency response procedures and systems are in place and kept in good working order

In accordance with regulation 14 of the GRWM Regulations, a business must ensure that an emergency plan for the workplace is prepared, maintained, and tested on an ongoing basis.

Under the Building Act 2004, all buildings require a compliance schedule and annual building warrant of fitness if they contain any specified systems, including: fire suppression systems; emergency warning systems for fire or other dangers; and mechanical ventilation or air conditioning systems. The complete list of specified systems is listed at Schedule 1 of the Building (Specified Systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005.

An owner of a building for which a compliance schedule is required, must obtain the compliance schedule from the appropriate territorial authority. The compliance schedule must:

- state and describe each of the specified systems covered by the compliance schedule; and
- state the performance standards for the specified systems; and
- describe the inspection, maintenance, and reporting procedures to be followed by independently qualified persons in respect of the specified systems to ensure that those systems are performing to the performance standards.

An owner of a building for which a compliance schedule has been issued must supply to the appropriate territorial authority, on an annual basis, a building warrant of fitness. The purpose of a building warrant of fitness is to ensure that the specified systems stated in the compliance schedule are performing, and will continue to perform, to the performance standards for those systems.

ANNEX B: DETAILED INFORMATION AND QUESTIONS FOR OPTION 1

Proposal

Option 1 proposes an authorisation requirement for individual service technicians given the higher-risk nature of the work as HFCs are phased out. It would also introduce a requirement to establish and maintain a register of individuals that have been issued an authorisation.

This would require individual technicians to obtain an authorisation from WorkSafe — or a suitable organisation under delegation from WorkSafe — before being permitted to work on systems that use flammable or acutely toxic refrigerants. Such authorisations currently apply to commercial divers, powder-actuated tool operators, and scaffolders that work above five metres.

Under this option a duty would also be placed on the service business (the employer) to ensure, so far as is reasonably practicable, that every refrigeration technician (the employee) who works on refrigeration, heat pump, or air conditioning appliances or systems that use flammable or acutely toxic refrigerants should be the holder of a current authorisation.

Different categories of authorisation are proposed to ensure that technicians do not work on systems outside of their competence. For example, a full authorisation would permit the holder to work on any size system in the refrigeration and air conditioning industry while a restricted authorisation would restrict the holder to working on domestic refrigeration or air conditioning appliances and/or light commercial stand-alone appliances.

It is proposed that the authorisation requirement would not apply to technicians working on automotive air conditioning systems or systems using non-toxic or non-flammable refrigerants.

The advantages of this option are that it:

- would be more likely than non-regulatory approaches to effectively reduce the likelihood of significant harm to persons and property from the incompetent installation, repair, or maintenance of systems using refrigerants with flammable or toxic properties;
- would leverage existing authorisation infrastructure and resources within WorkSafe to develop and implement an efficient authorisation regime;
- would impose less compliance costs than an authorisation requirement on refrigeration engineering businesses; and
- would be more likely than an authorisation requirement for businesses to be commensurate with the risks associated with work on refrigeration, heat pump, or air conditioning systems that use flammable or acutely toxic refrigerants.

The disadvantage of this option is that it would impose increased compliance costs on individual refrigeration technicians or their employers.

Question: Do you support the introduction of an authorisation requirement for

individual refrigeration technicians in regulations under the HSW Act? If no why?

Question: What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)

Out of scope

Our preliminary view is that this option should not apply to technicians that work on automotive air conditioning systems.

We are aware of a small number of incidents in Australia, where people have been injured as a result of component failure with vehicle air conditioning systems containing flammable refrigerants. We are not aware of any incidents in New Zealand where either technicians or members of the public have been harmed from vehicle air conditioning systems containing flammable refrigerants. Further our understanding is that the automotive industry is moving towards using next generation synthetic refrigerants with low flammability or non-flammable carbon dioxide, which is starting to be used and mandated in Europe.

For these reasons, and the fact that only very small quantities of refrigerant are used in automotive air conditioning systems, we consider that the risks facing automotive technicians are already managed adequately by current regulatory requirements under the HSW Act. Tailored guidance and industry training could be used to further support these technicians as alternative refrigerants to HFCs are increasingly used.

We are also proposing that technicians should not be required to hold an authorisation for any work on a refrigeration system, heat pump, or air conditioning system that uses non-toxic or non-flammable refrigerants.

At this time we have not determined whether the proposed authorisation requirement should apply (or not apply) to technicians who work on refrigeration or air conditioning systems in aircraft, vessels, transportable containers, and mobile (truck or van) refrigeration units — or whether current trade training for these technicians is sufficient.

Question: Do you agree that technicians who only work on automotive air conditioning systems should be excluded from the proposed requirement to hold an authorisation? If no why?

Question: Do you agree that technicians should not be required to hold an authorisation for any work on a refrigeration system, heat pump, or air conditioning system that uses non-toxic or non-flammable refrigerants? If no, why?

Question: Should the proposed authorisation requirement apply (or not apply) to technicians who work on refrigeration or air conditioning systems in aircraft, vessels, transportable containers, and mobile (truck or van) refrigeration units? Why?

Categories for the proposed refrigeration technician authorisation

The authorisation would authorise the individual holder to work on any category of refrigeration system — using flammable or toxic refrigerants — specified in the authorisation. Consistent with existing types of certificate of competence under the ESR Regulations, the different categories for the authorisation would not be set in regulation but rather would be set administratively by WorkSafe in consultation with the HVAC&R industry.

Our preliminary view is that the different categories for the authorisation should be as follows:

- Full refrigeration and air conditioning – this category would permit the holder to work on any size system in the refrigeration and air conditioning industry;
- Heat pump and split systems – this category would restrict the holder to working on heat pumps or split system air conditioners of less than 18kW; and
- Domestic refrigeration and air conditioning appliances– this category would restrict the holder to working on domestic refrigeration or air conditioning appliances and/or light commercial stand-alone refrigeration appliances.[4]

Question: Do you agree with the proposed categories for the proposed refrigeration technician authorisation? If no why?

Criteria for the proposed refrigeration technician authorisation

The criteria, which would need to be satisfied by an applicant before an authorisation is issued, should be sufficiently broad enough to allow for the different types of NZQA Level 4 qualifications that an applicant could hold, e.g. the National Certificate in Refrigeration and Air Conditioning, the National Certificate in Heating, Ventilating, and Air Conditioning (Mechanical Services) etc. The criteria should also be broad enough to allow for recognition of prior learning if the applicant has proof of industry experience but no qualification documentation, or overseas industry experience and/or qualifications.

It is proposed that an applicant for a refrigeration technician authorisation should meet the following high-level criteria:

- The applicant should have a thorough knowledge of the installation, repair, and maintenance techniques and procedures for the category of systems in respect of which the applicant seeks an authorisation.
- The applicant should have a thorough knowledge of the hazardous properties for the class of refrigerants (e.g. highly flammable, mildly flammable, acutely toxic etc.) in respect of which the applicant seeks an authorisation. (This could be demonstrated by holding a valid approved filler certificate for the class/classes of refrigerants that the individual will be working with).

[4] Domestic or light commercial refrigeration equipment means: equipment that is designed primarily for household or light commercial use; and is designed not to be permanently connected to the power supply of the premises where it is installed; and does not require the installation of pipework to enable the movement of refrigerant.

- The applicant should have had suitable training, including suitable recent experience, in the installation, repair, and maintenance for the category of systems in respect of which the applicant seeks an authorisation.

In addition to this proposed criteria, an applicant would also be required to meet the default criteria that currently apply to all applicants for a certificate of competence, regardless of type (commercial diving, scaffolding etc). For example, an applicant would be required to be physically and mentally able to perform any task that it is reasonable to expect the holder of such a certificate to perform; and be of good character and reputation.

Consistent with other types of certificate of competence, the detailed criteria would not be set in regulation but rather would be set administratively by WorkSafe in consultation with the HVAC&R industry.

Question: Do you agree with the proposed high level criteria to be met before a refrigeration technician authorisation will be issued? If no why?

Question: Is there any other high level criteria that should be met before a refrigeration technician authorisation will be issued?

Proposed fees

Fees for the issue, renewal, and replacement of certificates of competence are set out in Schedule 2 of the HSE Regulations. These are currently set at $90 (incl GST) for the issue of a certificate of competence and $56.25 (incl GST) for the renewal or replacement of a certificate. However, these fees are grossly under costed and were last updated in 2003.

Note that we intend to consult (at a later time) on an exposure draft of any proposed regulatory changes to test the detail of any fees for refrigeration technician authorisations before final policy decisions are made.

Transitional provisions

This option would require a suitable transitional period to allow for establishment of the proposed authorisation regime. Note that we intend to consult (at a later time) on an exposure draft of any proposed regulatory changes to test the detail of any transitional provisions before final policy decisions are made.

ANNEX C: DETAILED INFORMATION AND QUESTIONS FOR OPTION 2

Proposal

Option 2 proposes an authorisation requirement for refrigeration service businesses given the higher-risk nature of the work as HFCs are phased out. It would also introduce a requirement to establish and maintain a register of businesses that have been issued an authorisation. Such authorisations currently apply to asbestos removal businesses under the *Health and Safety at Work (Asbestos) Regulations 2016* (the Asbestos Regulations).

This option would require refrigeration service businesses to obtain an authorisation from WorkSafe — or a suitable organisation under delegation from WorkSafe — before being permitted to carry out, direct, or allow a worker to carry out work on a refrigeration, heat pump, or air conditioning system that uses flammable or acutely toxic refrigerants. It is also proposed that an authorisation holder would be required to ensure that only competent individuals carry out work under the authorisation.

Different categories of authorisation are proposed to ensure that service businesses do not work on systems beyond the competence of their workers. The proposed categories under this option are consistent with those for Option 1.

The proposed exclusions under this option are consistent with those for Option 1.

The advantages of this option are that it:

- would be more likely than non-regulatory approaches to effectively reduce the likelihood of significant harm to persons and property from the incompetent installation, repair, or maintenance of systems using refrigerants with flammable or toxic properties;
- would enable WorkSafe to more effectively encourage voluntary compliance, or undertake enforcement action, through placing accountability for non-compliance on a person conducting a business or undertaking rather than an individual worker; and
- would leverage existing authorisation infrastructure and resources within WorkSafe to develop and implement an efficient authorisation regime.

The disadvantages of this option are that it:

- would impose greater compliance costs than an authorisation requirement on individual refrigeration technicians (for example, application fees for a PCBU authorisation are likely to be in the order of $500[5] while application fees for an individual authorisation are currently in the order of $90[6] but would likely be in the order of $250 under new regulations); and

[5] Approximate based on licence application fees for asbestos removal licences.
[6] Approximate based on current application fees for current certificates of competence. It should be noted that these fees are grossly under costed and were last updated in 2003.

- could be disproportionate to the level of risks associated with work on refrigeration, heat pump, or air conditioning systems that use flammable or acutely toxic refrigerants.

Question: Do you support the introduction of an authorisation requirement for refrigeration service businesses in regulations under the HSW Act? If no why?

Question: What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)

Ensuring only competent persons carry out work under the PCBUs authorisation

To ensure that only competent persons carry out the work under a PCBUs authorisation, either:

- a duty would be placed on the authorised PCBU to ensure that any worker who carries out work on a refrigeration system, heat pump, or air conditioning system under the authorisation is competent to do so; or
- the authorised PCBU would be required to nominate a supervisor (or supervisors) on their authorisation to supervise persons undertaking the work on the refrigeration, heat pump, or air conditioning systems.

In either case the criteria that would need to be satisfied before a worker or supervisor is deemed to be "competent" would be set in regulation. The proposed criteria are consistent with those for Option 1. In addition, to be a nominated supervisor the person would need to have a suitable amount of relevant industry experience.

Where work is being carried out on a system covered by the authorisation, a nominated supervisor would be required to be in the vicinity and readily available to the worker/s.

Question: Which of the following alternatives do you think would be the most effective way to ensure that only competent persons carry out work under the PCBUs authorisation? Why?

EITHER

a) Placing a duty on an authorised PCBU to ensure that any worker who carries out work on a system under the authorisation is competent to do so.

OR

b) Requiring an authorised PCBU to nominate a supervisor (or supervisors) on their authorisation to supervise persons undertaking the work on a system.

Question: Do you agree with the proposed criteria that would need to be satisfied before a worker or supervisor is deemed to be "competent"? If no why?

Question: What is the minimum amount of relevant industry experience that should be met before a person can be a nominated supervisor on a PCBUs authorisation?

Authorisation processes

It is proposed that the application, issue, renewal, suspension, cancellation, and review of decision processes for the refrigeration engineering businesses authorisation — and the requirement to establish and maintain a register of each PCBU that has been issued an authorisation — would be consistent with the provisions for the licensing of asbestos removalists under Parts 6 and 7 of the Asbestos Regulations.

Question: Do you agree with using the licensing processes in Parts 6 and 7 of the Asbestos Regulations as the basis for the processes for refrigeration engineering business authorisations? If no why? Are there any substantive changes you would make?

Out of scope

The proposed exclusions for this option would be consistent with those for Option 1.

Question: Do you agree that PCBUs who only work on automotive air conditioning systems should be excluded from the proposed requirement to hold an authorisation? If no why?

Question: Do you agree that PCBUs should not be required to hold an authorisation for any work on a refrigeration system, heat pump, or air conditioning system that uses non-toxic or non- flammable refrigerants? If no, why?

Categories for the proposed refrigeration engineering business authorisation

The proposed authorisation would authorise the PCBU holder to carry out, direct, or allow a worker to carry out work on any category of commercial or industrial refrigeration system specified in the authorisation. The different categories for the proposed authorisation would be set in regulation. The proposed categories for this option would be consistent with those for Option 1.

Question: Do you agree with the proposed categories for the proposed refrigeration engineering business authorisation? If no why?

Proposed fees

Fees for the issue, renewal, and replacement of authorisations are likely to be similar to the fees currently charged for the licensing regime (Class B) under the Asbestos Regulations. These are currently set at $490 (incl GST) for the issue or renewal of a licence; $80 (incl GST) for each

nominated supervisor in the licence issue or renewal; $170 to add a new supervisor to the licence; $220 to amend licence conditions; and $120 for a replacement licence.

Note that we intend to consult (at a later time) on an exposure draft of any proposed regulatory changes to test the detail of any fees before final policy decisions are made.

Transitional provisions

This option would require a suitable transitional period to allow for establishment of the proposed authorisation regime. Note that we intend to consult (at a later time) on an exposure draft of any proposed regulatory changes to test the detail of any transitional provisions before final policy decisions are made.

ANNEX D: CONSOLIDATED CONSULTATION QUESTIONS

Technicians are not required to demonstrate their competency to install, repair, and maintain systems that use flammable or toxic refrigerant gases

Problem Definition

1. Have we accurately identified the issues associated with the competence of refrigeration technicians to install, repair, and maintain systems that use flammable or toxic refrigerants? Are there any other issues associated with this matter?

Objectives

2. Do you agree with these objectives? Would you suggest any others?

Option 1: introduce an authorisation requirement for individual refrigeration service technicians in regulations under the HSW Act

3. Do you support the introduction of an authorisation requirement for individual refrigeration technicians in regulations under the HSW Act? If no why?

Note that if you don't support option 1, then you do not need to respond to questions 4 – 10 in your submission. Go to question 11.

4. What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)

5. Do you agree that technicians who only work on automotive air conditioning systems should be excluded from the proposed requirement to hold an authorisation? If no why?

6. Do you agree that technicians should not be required to hold an authorisation for any work on a refrigeration system, heat pump, or air conditioning system that uses non-toxic or non-flammable refrigerants? If no, why?

7. Should the proposed authorisation requirement apply (or not apply) to technicians who work on refrigeration or air conditioning systems in aircraft, vessels, transportable containers, and mobile (truck or van) refrigeration units? Why?

8. Do you agree with the proposed categories for the proposed refrigeration technician authorisation? If no why?

9. Do you agree with the proposed high level criteria to be met before a refrigeration technician authorisation will be issued? If no why?

10. Is there any other high level criteria that should be met before a refrigeration technician authorisation will be issued?

Option 2: introduce an authorisation requirement for refrigeration service businesses in regulations under the HSW Act

11. Do you support the introduction of an authorisation requirement for refrigeration service businesses in regulations under the HSW Act? If no why?

Note that if you don't support option 2, then you do not need to respond to questions 12 – 19 in your submission. Go to question 20.

12. What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)

13. Which of the following alternatives do you think would be the most effective way to ensure that only competent persons carry out work under the PCBUs authorisation? Why?

EITHER

a. Placing a duty on an authorised PCBU to ensure that any worker who carries out work on a system under the authorisation is competent to do so.

OR

b. Requiring an authorised PCBU to nominate a supervisor (or supervisors) on their authorisation to supervise persons undertaking the work on a system.

14. Do you agree with the proposed criteria that would need to be satisfied before a worker or supervisor is deemed to be "competent"? If no why?

15. What is the minimum amount of relevant industry experience that should be met before a person can be a nominated supervisor on a PCBUs authorisation?

16. Do you agree with using the licensing processes in Parts 6 and 7 of the Asbestos Regulations as the basis for the processes for refrigeration engineering business authorisations? If no why? Are there any substantive changes you would make?

17. Do you agree that PCBUs who only work on automotive air conditioning systems should be excluded from the proposed requirement to hold an authorisation? If no why?

18. Do you agree that PCBUs should not be required to hold an authorisation for any work on a refrigeration system, heat pump, or air conditioning system that uses non-toxic or non- flammable refrigerants? If no, why?

19. Do you agree with the proposed categories for the proposed refrigeration engineering business authorisation? If no why?

Option 3: build on the current approach to industry self-regulation supported by WorkSafe effort to improve awareness, understanding, and compliance with current regulatory requirements

20. Do you support building on the current approach to industry self-regulation supported by WorkSafe improving awareness, understanding, and compliance with current regulatory requirements? If no, why?

21. What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)

Compliance with the joint Australian/New Zealand Standard for commercial refrigeration systems is not mandatory for systems using anhydrous ammonia

Problem Definition

22. Have we accurately identified the gaps in the current regulatory requirements for ammonia refrigeration systems? Are there any other issues associated with this matter?

Proposal

23. Do you agree that there is a case for requiring operators of ammonia systems to comply with the joint Australian/New Zealand Standard for commercial refrigeration systems? If no why?

24. Do you agree with the proposed change to regulation 10.10 of the Hazardous Substances Regulations? If no why?

25. Do you agree with the proposed transitional arrangements? If no why?

26. What do you think are the main benefits and costs of this proposal? (Please quantify any impacts identified and express in dollar terms to the extent practical)