

REFRIGERANT GASES IN NEW ZEALAND

By VASA NZ director Catherine Tocker

Some recent developments are set to impact the automotive air-conditioning industry in NZ.

Some Outcomes of the Review of Synthetic Greenhouse Gases in the Emissions Trading Scheme and upcoming Regulatory Review

The government's recent review of synthetic greenhouse gases (SGG) in the Emissions Trading Scheme (ETS) has come up with changes that will affect the automotive air-conditioning sector.

The Ministry for the Environment is now seeking submissions on some of the proposed SGG regulatory requirements coming out of the review.

A link to more information and the consultation document for submissions is available at <http://www.climatechange.govt.nz/consultation/sgg/index.html>

Submissions close Friday 12 October 2012 at 5.00pm.

SGG Levy on vehicle imports

A new levy will be imposed at point of first registration on imported vehicles (in lieu of carbon units). This levy was hoped, by submitters, to be made available to fund strategies to improve handling of refrigerants for improved environmental outcomes. The SGG in the ETS review and the regulatory review is silent on how the levy, to be collected by New Zealand Transport Agency, will be spent. Until law changes are finalised all qualifying importers must participate under the existing scheme.

Price increases expected for R134a

Bulk importers of refrigerant gas can elect to participate in the ETS as previously required under the law, where the government has extended the 2 for 1 surrender option, or a fixed price/per kg of CO₂, currently capped at \$25/kg from 1 July 2013. Until law changes are finalised all qualifying importers must participate under the existing scheme.

For R134a, with a GWP of 1300 imports of R134a will cost up to an additional \$32.50/kg at point of import, the costs of which will flow on through wholesalers, to repairers and then on to the consumer. In Australia at present there is a furore as the impacts of their carbon tax on the end-user are being thrashed out.

There is also some stockpiling of R134a (pre-carbon tax or equivalent) happening around the world and the production of R134a is being scaled down as agreed internationally. These factors, along with increased demand in developing countries, are also affecting availability and hence the price.

However, it does appear that some 'bulk pre-purchase' deals are available with favourable pricing for summer 2012-13.

Venting SGG will be banned

At present, very few automotive repairers have the relevant Approved-Filler certification; for compressed gases under the Compressed Gases Regulations of the Hazardous Substances and New Organisms Act 1996; (HSNO) required when recovering a compressed gas such as R134a into a cylinder, and most do not recover refrigerant as a matter of course.

At present, the wriggle-room around compliance (if the regulations are considered at all) is that with refrigerants such as R134a there is no legal requirement to recover the refrigerant, no policing and no real financial benefit to recover.

However, the Code of Conduct for VASA members and also the Motor Trade Association Environmental Standards require members take all practicable steps to protect the environment. This should be extending to member workshops recovering SGG refrigerants as a matter of course as it reflects best practice.

And now, most significantly, an outcome of the SGG in the ETS review is that the venting of SGG refrigerants **will** be outlawed. In future, all SGG refrigerants like R134a must to be recovered - for engine or air-conditioning repairs or service and from end-of-life vehicles. This does not included uncontrollable 'natural loses' from functioning systems,

How this will be accomplished has not been elaborated on. In Australia SGG are included in the ozone-protection legislation where venting is an offence.

The significance of mandatory recovery of SGG is two-fold. At last, something concrete is being done which will actually have an impact on lowering the global warming impact of the refrigerant, and there will be a mandate for all refrigerant removal from a system to be carried out by an Approved-Filler.

Workshops should be looking into getting compliant with these requirements if not already, even if it means sub-contracting.

Refrigerant Transport, Approved-Fillers and Handlers Requirements and documents that may be of interest:

Suitably qualified people can get a Refrigerant Licence which encompasses Approved-fillers certification and approved-handlers (for triggering amounts of flammable refrigerants, if applicable) from The Refrigerant Licencing Trust Board at www.rlnz.org.nz

Alternatively, test certifiers can be found through www.epa.govt.nz

The certification process is designed to ensure the person meets the skills, qualification and legislative requirements under the HSNO.

Any approved handler or filler must ensure the the chemical they are working with has been approved for use in NZ. It must have an approval number from the EPA and a Material Safety Data Sheet that complies with NZ requirements must be available.

Hazardous Substances and New Organisms Act 1996
Hazardous Substances (Compressed Gases) Regulations 2004
Hazardous Substances (Personnel Qualifications) Regulations 2001
(there are other applicable regulations too, re storage, handling and labelling).

Can be found at: www.legislation.govt.nz

While there may not be policing of Approved-Fillers, Refrigerant Licencing NZ (RLNZ) will promote their Refrigerant Licence and they will look to promote those in the industry with the relevant certification as industry-leaders, using best practice and increase public awareness of the requirement to have relevant qualifications to do this function.

Approved Fillers

Hazardous Substances (Compressed Gases) Regulation 2004 requires any person transferring refrigerant into a compressed gas cylinder for recycling, re-use or destruction to hold an **approved-fillers** certificate.

This does not include transferring refrigerant from a cylinder into a 'system' such as a motorcar AC system!

The regulation also stipulates if you keep more than 1500kg of a non-flammable compressed gas like R134a (hazard class 2.2 – non-flammable, non-poisonous) on site you need to have an emergency management plan and test that plan annually.

The regulation makes specifications about cylinders and fittings and their testing regime.

Approved Handlers and Other controls

A summary of the threshold quantities of hazardous substances that trigger key requirements from the regulations and transfer notices (from the old Dangerous Goods Act) is available at:

<http://www.epa.govt.nz/Publications/Threshold-Quantities.pdf>

Additional HSNO controls apply to flammable refrigerants, like propane. When certain thresholds are reached this triggers requirements for controls, or proof that those controls are in place.

For flammable refrigerants:

Hazard classification	Quantity beyond which controls apply
2.1.1A	100 kg (not permanent gases) 100 m ³ (permanent gases)
2.1.2A	3 000 L aggregate water capacity

Note: empty cylinders need to be counted as full when calculating whether a threshold has been reached.

The Hazardous Substances (Personnel Qualifications) Regulation 2001 requires any person, using for instance a 'flammable' refrigerant to hold an **approved-handlers** certificate, and possess relevant safety equipment where the quantity of flammable refrigerant exceeds the thresholds (ie 100kg of an impermanent gas) and proof that required controls are in place. There are controls on who can handle and be responsible for, and detailed storage requirements for the product, specified in various other HSNO regulations.

Additionally, if carrying more than 50kg of a flammable refrigerant in a vehicle, a fire extinguisher must be carried.

Implications in NZ of R1234yf as replacement for R134a under the HSNO

New refrigerants are being investigated by vehicle manufacturers and the leading chemical manufacturers like Du Pont to replace R134a in accordance with an international mandate that rules out continued use of R134a in new automotive models.

It is likely that the refrigerant R1234yf, will replace R134a in some (if not all) car air-conditioning models.

The Material Safety Data Sheet for R1234yf can be found below:

2,3,3,3 tetrafluoroprop-1-ene

<http://www51.honeywell.com/sm/genetron/common/documents/1234yf-MSDS.pdf>

The refrigerant is described as mildly flammable and at present in NZ this would fall into Hazard Class 2.1, flammable.

At present, recovery of this refrigerant is not deemed to be required. However, remember R134a was deemed environmentally inert when released and recovery was not prescribed as necessary when it was introduced!

If not recovering, you would not need Approved Fillers to handle this substance! However, other Approved handler controls will apply to **R1234yf**, if the thresholds are reached.

Daimler/Mercedes Benz recent announcement annexing the use of R1234yf in future platforms does not clear up the future of this refrigerant in makes and models likely to reach NZ-shores.

Using non-OEM approved Hydrocarbons

It may be tempting to look favourably at existing hydrocarbon refrigerants, like propane or LPG for use in existing R134a/R12 systems. Hychill Minus 30 is Hazard Class 2.1, a flammable compressed gas and additional controls are stipulated based on the above thresholds. The suppliers of these products give favourable reports of the performance of these refrigerants in automotive systems. The refrigerants are promoted as natural and green and are exempt from any carbon tax or equivalent.

Health and Safety considerations if considering retrofitting R12/R134a systems with a hydrocarbon:

NZ Health and Safety in Employment (HSAE) legislation **requires that all practicable steps are taken to avoid injury in the work place**. As there is no need for a flammable property to be included in an automotive AC system, it is possible to **ELIMINATE** the risk - which is the first tier required under the NZ HSAE law, by using non-flammable refrigerants.

It is my belief that the NZ HSAE laws are unambiguous – if you don't need to use a flammable refrigerant (which you don't), then you completely eliminate the risk by not using flammable refrigerants in systems not designated for it.

In the mean time, remember that the only OEM-approved refrigerant for use in motor vehicle R134a systems, or for retrofit of R12 systems - is R134a.

Levies on Refrigerant

At present, most refrigerant wholesalers are collecting one or two levies/kg of refrigerant sales.

1. \$1.51/kg – Refrigerant Destruction Levy - on sales of non-CFC refrigerants passed to Recovery NZ to facilitate the recovery and destruction of non-CFC refrigerants.
2. \$0.50 – Training Levy – on sales of all refrigerants by participating wholesalers – to partially fund the activities of the Refrigerant Licencing Trust Board and their licencing scheme detailed above.

Commerce Commission – Restrictive Trade Practices

The Refrigerant Licencing Trust Board and associates have made an application to the Commerce Commission which considered it would allow participating refrigerant wholesalers to prohibit sales of refrigerant to anyone

who did not hold the requisite certificates – fillers and/or handlers depending on the class and volume of refrigerant sought.

Land Transport Rule 2005

You should also familiarise yourself with your business' obligations under:

See 2011 Consolidated Land Transport Dangerous Goods Rule 2005 and amendments at:

http://nzta.thomsonreuters.co.nz/DLEG-NZL-LTSA-T.LTR-45001_1.pdf

What next:

If you don't have approved-fillers certification for yourself and your staff, you should rectify this situation to comply with the compressed gases regulations and ready yourself for mandatory recovery of SGG and perhaps participate in the submissions process for the synthetic greenhouse gases regulations review. Make sure your cylinders are legally able to be used in NZ and that they are 'in test'.