

Application for a Modified Reassessment
under section 63A of the
Hazardous Substances and New Organisms Act 1996

Name of Substances: LPG
Propane
Butane

Applicant: Chief Executive of ERMA New Zealand

Signed: _____

Date: _____

Application Checklist	Tick or n/a
Mandatory sections filled out:	
All Attachments enclosed:	
Application signed and dated:	

Office use only	
Date received:	___/___/___
Application Code:	
ERMA NZ Contact:	
Application Version No:	v1.1

EXECUTIVE SUMMARY

This application for the modified reassessment of specific aspects of the approvals for LPG, Propane and Butane has been prepared by the staff of ERMA New Zealand (“the Agency”) on behalf of the Chief Executive of the Environmental Risk Management Authority (“the Authority”) under section 63A of the Hazardous Substances and New Organisms Act 1996 (“the Act”).

We propose the following amendments to the approvals for LPG, propane and butane:

- a) the addition of a requirement that the substances contain an odorant;
- b) the addition of a requirement that the substances when used in refrigeration systems shall comply with certain clauses in:
 - (i) AS/NZS 1677 Refrigeration Systems; or
 - (ii) a code of practice approved by the Authority under section 79 of the Act that specifies requirements equivalent to the requirements specified in (i);
- c) a lowering of the threshold limits for signage requirements where the substances are stored indoors or in a machinery room where the substances are present in a refrigeration system;
- d) the inclusion of a provision, within the requirements of test certificates for hazardous substance locations where the substances are charged into cylinders, to confirm that the persons charging the cylinders are approved fillers and that they hold a current test certificate to this effect; and
- e) the addition of a requirement that LPG cylinders used in domestic properties should follow the recommendations set out in AS/NZS 1596.

Based on its risk assessment, we consider that the safety benefits of the proposed amendments will outweigh any increase in costs. Many of the suggested proposals are in line with international best practice.

We have also identified an issue regarding leakages of the substances caused by the use of POL connectors with QCC valves in cylinders and as a solution will consider proposing the use of valves which meet the CGA 793 specification, once valves manufactured to that specification become available.

This application is being publicly notified for submissions at the same time as an application for a modified reassessment of the same approvals (for LPG, Propane and Butane) received from the Liquefied Petroleum Gas Association of NZ Inc (LPGA) and it is intended that both applications will be considered by the Authority at the same time.

SECTION ONE – APPLICANT DETAILS

1.1 Name and postal address in New Zealand of the organisation making the application

Name: R Forlong
Address: ERMA New Zealand
PO Box 131
Wellington
Phone: 04 916 2426
Fax: 04 914 0433

1.2 The applicant's location address in New Zealand (if different from above)

Address: Level 1, BP House
20 Customhouse Quay
Wellington

1.3 Name of the contact person for the application

Name: Haydn Murdoch
Position: Advisor, Hazardous Substances
Phone: 04 918 8441
Fax: 04 914 0433
Email: haydn.murdoch@ermanz.govt.nz

SECTION TWO – APPLICATION TYPE

2.1 Purpose of the application

To amend the approvals for LPG, propane and butane through a modified reassessment under section 63A of the Act.

2.2 The approvals being reassessed

Liquefied petroleum gas (LPG)	Approval No: HSR001009
Propane	Approval No: HSR001010
Butane	Approval No: HSR000989

2.3 Specific aspects of the approvals being reassessed

We propose the following amendments to the approvals for LPG, propane and butane:

- a) the addition of a requirement that the substances contain an odorant;
- b) the addition of a requirement that the substances when used in refrigeration systems shall comply with certain clauses in:
 - (i) AS/NZS 1677 Refrigeration Systems; or
 - (ii) a code of practice approved by the Authority under section 79 of the Act that specifies requirements equivalent to the requirements specified in (i);
- c) a lowering of the threshold limits for signage requirements where the substances are stored indoors or in a machinery room where the substances are present in a refrigeration system;
- d) the inclusion of a provision, within the requirements of test certificates for hazardous substance locations where the substances are charged into cylinders, to confirm that the persons charging the cylinders are approved fillers and that they hold a current test certificate to this effect; and
- e) the addition of a requirement that LPG cylinders used in domestic properties should follow the recommendations set out in AS/NZS 1596.

In addition, if the Authority decides to approve the amendments to the approvals, we propose that they will come into effect on a date which is six (6) months after the date of the Authority's final decision on this application.

We have also identified an issue regarding leakages of the substances caused by the use of POL connectors with QCC valves in cylinders and as a solution will consider proposing the use of valves which meet the CGA 793 specification, once valves manufactured to that specification become available.

2.4 Grounds for the reassessment

In its decision dated 5 December 2008, the Authority determined that there was significant new information to indicate that there were grounds, under section 62(2) (a), for the modified reassessment of the approvals for LPG, propane and butane.

This information included the Fire Service Report into the fire at the Icepack Coolstore, Tamahere and the Report of Inquiry into the Use of LPG Cylinders Indoors.

2.5 Public notification

- 2.5.1 This application will be publicly notified for submissions by notice on ERMA New Zealand's website and notice in the four main daily newspapers.
- 2.5.2 Copies of the application will also be provided directly to groups expected to have an interest in the application, including the LPG Association, test certifiers, training organisations and government agencies (including Department of Labour, the Energy Safety Service of the Ministry of Economic Development and Ministry for the Environment).
- 2.5.3 Submissions on this application must be made by 5 pm, **Monday 23 November 2009**, and sent by mail, fax or email to:
- Samantha Smith
ERMA New Zealand
PO Box 131
Wellington
Fax: 04 914 0433
E-mail: submissions@ermanz.govt.nz
- 2.5.4 Submissions must state the reasons for making the submission and whether the submitter wishes to be heard at a public hearing. The submission may also state any decision sought.
- 2.5.5 Submitters should attach the Submission Cover Sheet (provided in the **Appendix** to this application) to their submission.
- 2.5.6 The submissions received will be summarised and presented to the Authority in a Summary of Submissions document, together with any recommendations which the Agency considers appropriate.
- 2.5.7 The application, together with the Summary of Submissions and any further information or recommendations will be used by the Authority in considering the application. If required by any submitter, the Authority will hold a public hearing and then consider the application in accordance with the Act.

SECTION THREE – INFORMATION ON THE SUBSTANCES

3.1 The unequivocal identification of the substances

The three substances which are the subject of this reassessment are identified as set out below.

a. LPG

Chemical Name	Liquefied Petroleum Gas
CAS Number	68476-85-7
Molecular Formula	-
Synonyms	LPG L.P.G. Fuels, liquefied petroleum gas Liquid petroleum gas Petroleum gas liquefied Petroleum Gases, liquefied

b. Propane

Chemical Name	Propane
CAS Number	74-98-6
Molecular Formula	C ₃ H ₈
Synonyms	Propyl hydride Propyldihydride Dimethyl methane n-Propane

c. Butane

Chemical Name	Butane
CAS Number	106-97-8
Molecular Formula	C ₄ H ₁₀
Synonyms	n-Butane Butyl hydride Diethyl Methylethylmethane

3.2 The current HSNO controls on the substances

The full set of current HSNO controls can be seen at the following locations:

- LPG:
<http://www.ermanz.govt.nz/appfiles/OrgCtrl/pdf/HSR001009Con.pdf>
- Propane:
<http://www.ermanz.govt.nz/appfiles/OrgCtrl/pdf/HSR001010Con.pdf>
- Butane:
<http://www.ermanz.govt.nz/appfiles/OrgCtrl/pdf/HSR000989Con.pdf>

3.3 The proposal to modify the approvals of the substances

This reassessment proposes a number of modifications to the existing approvals for the substances. Modifications (a), (b) and (c) are proposed in response to the Fire Service Report into the fire at the Icepack Coolstore, Tamahere. Modification (d) is proposed in response to a recent audit of LPG cylinder filling. Modification (e) and proposal (f) are proposed in response to the Report of Inquiry into the Use of LPG Cylinders Indoors.

(a) Use of an odorant

We propose that:

- the substances be odorised in the manner set out in NZS 5263:2003 (Gas detection and odorization) so that any escape of gas into the atmosphere is readily detectable ; or**
- a means of detection other than odorization may be used provided that it complies with an approval granted by the Authority or a code of practice approved by the Authority under section 79 of the Act that specifies requirements that provide the same level of protection as the requirements specified in (i); and**
- odorization is not required in equipment that is an integral part of a refrigeration system when the quantity of the substance in the system is less than 1.5 kg.**

We propose that a control be added to the substances requiring that an odorant be added to the substance in all circumstances of use¹. The control is necessary to protect people from harm should there be a leak

¹ Note: Regulation 57 of the Hazardous Substances (Classes 1 to 5 Controls) Regulations 2004 covers the use of the substances when used as a fuel. The controls imposed on any fuel gas supplied or used in a distribution system, gas installation, or gas appliance subject to the Gas Act 1992 are the controls imposed under regulations made under that Act...Regulations 5 and 30 of the Gas Regulations 1993 deal with odorization and any applications for an exemption under that Act.

or unintended discharge of the substance that would have the potential to cause a fire or explosion.

The New Zealand Standard NZS 5263:2003 (Gas detection and odorization) provides performance standards that are a means of compliance where legislation requires a gas to be detectable. The standard provides a means of ensuring that persons are warned of the presence of escaping gas well before gas concentrations in the atmosphere reach levels capable of causing a hazard.

However, there are uses of the substances where the addition of an odorant has a disadvantage or is unacceptable. The standard deals with excluding the odorant in section 2.6 “Exemption from the requirement to odorize”, that requires an application for an exemption. It is proposed that any application for an exemption will follow the criteria in section 2.6 of the standard and an application be made to the Authority or an exemption may be allowed if specified in a Code of Practice approved by the Authority in accordance with section 78 of the Act.

In some cases the odorant can be used up (odorant fade) or masked (odorant masking). Sections 2.4.7 and 2.4.8 of the standard set out the criteria to deal with odour fade and odour masking respectively and by adopting the standard, the criteria set out in these sections will be incorporated into the controls.

It is also recognised that certain of the processes in the refrigeration cycle will strip out the common odorising agents and make them ineffective. This is a consideration in AS/NZS 1677:1998 Refrigerating Systems Part 1 and Part 2 which makes provision for alternative safety provisions to be approved. We propose that where alternative provisions are to be used in a refrigeration system, this will be treated as an exemption. Either an application must be made to the Authority for the exemption or it may be allowed by following a Code of Practice approved by the Authority in accordance with section 78 of the Act.

Odorization may not be practical where the substances are used in small quantities in, for example, domestic refrigerators. Consequently, the control for odorization of refrigeration systems should be subject to a threshold quantity (or minimum charge) below which odorising is not required. We propose that when the substance is contained in a refrigeration system a threshold quantity be set at 1.5 kg below which an odorant need not be added to the substance. This quantity aligns with the quantity of flammable refrigerants permitted in public areas of buildings as specified in AS/NZS 1677.2:1998 section 2.6.2.

(b) Proposal to provide additional controls where the substance is used in refrigeration systems contained in a building

We propose that, where the substance is contained in equipment that is an integral part of a refrigeration system, the quantity of refrigerant allowed and the means of containment:

- (i) shall be that set out in Section 2.6 of AS/NZS 1677.2; or**
- (ii) comply with a code of practice approved by the Authority under section 79 of the Act that specifies requirements that provide the same level of protection as the requirements specified in (i).**

The quantity of the substance that may be held in a building is set out in the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004, Schedule 10. Sections 7 and 20 of this document address the separation of cylinders containing substances with a 2.1.1A classification from high and low intensity land use and the boundary of the controlled zone respectively. Sections 8 and 21 deal with the situation where the substance is contained in an above ground stationary tank.

One or more cylinders that contain a class 2.1.1A substance and where the aggregate quantity is less than 100 kg may be stored adjacent to an area of high or low intensity land use or the boundary of the controlled zone. Stationary tanks containing a 2.1.1A substance are not allowed inside a building.

Refrigeration systems using flammable gases may be inside a building, the quantity may exceed 100 kg and the substance may be held in a stationary tank. This quantity of the substance stored in a refrigeration room can be in excess to that allowed by the hazardous substances legislation.

To correct the storage irregularity the, we propose adopting the criteria for the maximum charge of a flammable refrigerant set out in Section 2.6 of AS/NZS 1677.2:1998. Section 2.6 of the standard states:

CATEGORIES OF OCCUPANCY

Categories	General characteristics	Examples
I	Rooms, parts of buildings or buildings where— <ul style="list-style-type: none"> • people sleep; • people are restricted in their movement; • an uncontrolled number of people are present or to which any person has access without being personally acquainted with the necessary safety precautions. 	Public areas of buildings, hospitals, courts or prisons, theatres, supermarkets, schools, lecture halls, public transport terminals, hotels, dwellings, restaurants.

II	Rooms, parts of buildings or buildings where only a limited number of people may be assembled, some being necessarily acquainted with the general safety precautions of the establishment.	Business or professional offices, small shops, small restaurants, laboratories, places for general manufacturing and where people work.
III	Rooms, parts of buildings or buildings where only authorized persons have access, who are acquainted with general and special safety precautions of the establishment and where manufacturing, processing, or storage of material or products take place.	Manufacturing and processing facilities, including those for chemicals, food, beverages and drink, ice, milk products and ice cream, dairies, abattoirs and meat products, cool rooms, non-public areas in shopping centres and facilities, and other such typical places where access is restricted to only authorized persons.

NOTE: The examples given in this Table are not intended to be exhaustive and the general characteristics should be considered for any particular occupancy not listed.

2.6 MAXIMUM CHARGE OF REFRIGERANT OF GROUP A3 (Flammable Refrigerants)

2.6.1 General

Group A3 (Flammable) refrigerants are highly flammable and potentially explosive. Direct expansion systems using A3 refrigerants shall be permitted only in systems with restricted charge or in occupancy categories where only competent staff are present. The refrigerant charge in systems situated below ground level shall be restricted to 1.0 kg. Where the refrigerant charge exceeds 2.5 kg and the area is classified as hazardous in accordance with AS 2430.1 or NZS 6101.1, as applicable, the electrical equipment within the space shall be in accordance with AS 2381.1.

2.6.2 Category I occupancies

Group A3 refrigerants shall be permitted only in systems with a refrigerant charge of up to 1.5 kg for each individual system, provided sudden loss of refrigerant could not raise the concentration of the refrigerant to or above the practical limit in an occupied space and provided there are no sources of ignition, e.g. unsealed electrical contacts associated with the refrigerating system or located in an area where the refrigerant could gather in the event of a leak.

Very small sealed systems with refrigerant charge of 0.25 kg or less may be sited in any location or category of occupancy provided there are no sources of ignition, e.g. unsealed electrical contacts associated with the refrigerating system or located in an area where the refrigerant could gather in the event of a leak.

In addition, indirect closed, indirect vented closed and double indirect refrigerating systems may be used but shall meet either of the following requirements:

(a) The refrigerant charge shall not exceed 5.0 kg in a special machinery room (see Clause 4.7.4).

(b) The primary refrigerating system shall be in the open air (see Clause 2.6.4(a) (i)).

2.6.3 Category II occupancies

Group A3 refrigerants shall be permitted, as for Category I occupancy, with the maximum charge restricted to 2.5 kg for refrigerating systems installed in an occupied space.

In addition, indirect closed, indirect vented closed and double indirect cooling systems may be used but shall meet either of the following requirements:

(a) The refrigerant charge shall not exceed 10 kg in a special machinery room (see Clause 4.7.4).

(b) The primary refrigerating system shall be in the open air (see Clause 2.6.4(a) (i)).

2.6.4 Category III occupancies

Group A3 refrigerants shall be permitted as for Category II occupancies.

In addition, any type of system may be used but shall meet the following requirements:

(a) For systems located in an occupied space which is not a special machinery room (see Clause 4.7.4), the following requirements shall be met:

(i) The refrigerant charge shall not exceed 10 kg.

(ii) The system shall be at ground level or above.

(b) For refrigerating systems with the high pressure side (except air-cooled condensers) located in a special machinery room (see Clause 4.7.4), or in the open air, the following requirements shall be met:

(i) The refrigerant charge shall not exceed 25 kg.

(ii) The system shall be at ground level or above.

(c) For refrigerating systems with all refrigerant-containing parts located in a special machinery room (see Clause 4.7.4) or in the open air, the following requirements shall be met:

(i) There shall be no restriction of refrigerant charge, except as required by regulations, i.e. local planning and building regulations.

(ii) The system shall be at ground level or above.

Section 4.7.4 goes on to state:

4.7.4 Special machinery rooms

Where a machinery room with special requirements is specified, the machinery room shall comply with Clauses 4.7.1 to 4.7.3 and the following:

(a) Access ways to adjacent rooms, permanently occupied or for general use, shall only be by means of tight-fitting, self-closing doors of not less than 1 h fire-resistive construction in accordance with AS 1530.4.

TABLE 4.1 - MINIMUM AIR VENTILATION RATES AND OPENINGS

<i>Mass of refrigerant in system</i> Kg	<i>Mechanical ventilation rate: quantity of air</i> L/s	<i>Natural ventilation: open areas of windows and doors</i> m²
10	64	0.45
25	120	0.7
50	190	1.0
100	300	1.4
150	390	1.7
250	550	2.2
300	623	2.4
400	756	2.8
500	875	3.2
700	1 095	3.7
900	1 290	4.2
1 000	1 390	4.4
2 000	2 210	6.25
4 000	3 500	8.85
6 000	4 580	10.85
8 000	5 560	12.5
10 000	6 440	14.0

NOTE: The values for this table were derived from the following equations:

Mechanical ventilation rate (qv) = 13.9 m₃

Natural ventilation opening area (A) = 0.14 m₂

where m = mass of the refrigerant charge in the largest system, any part of which system is located in the machinery room, in kilograms.

(b) Rooms adjacent to machinery rooms to which access might be needed during an emergency in the machinery room shall be provided with a separate means of access from a safe area in addition to access from the machinery room.

- (c) Walls, floors and ceilings where they are common to adjacent rooms shall be tightly sealed.*
- (d) All piping and ducting through walls, ceilings and floors shall be tightly sealed to the walls, ceilings or floors through which they pass.*
- (e) Exterior openings shall not be under emergency exits and staircases.*
- (f) At least one emergency exit shall be provided which opens directly to the outside or through a vestibule type exit equipped with a self-closing tight-fitting door.*
- (g) A remote switch for isolating all electrical equipment not protected for use in flammable atmospheres and for stopping machinery shall be provided outside and near the machinery room door.*
- (h) Independent mechanical ventilation equipment shall be installed with independent emergency control located outside and near the machinery room door.*
- (i) There shall be no naked flame producing equipment permanently installed and operated in the room.*

NOTE: For Groups A2, B2, and A3 refrigerant systems some explosion relief should be provided where reasonably practical if it is possible for the concentration to reach the lower explosive limit.

4.7.5 Protection against explosion

Machinery rooms for systems using Groups A2, A3 or B2 refrigerants shall be designed to prevent the ignition of an explosive refrigerant/air mixture.

NOTE: Guidance on the selection of electrical apparatus is given in Appendix D.

To provide additional flexibility an alternative approach that provides a similar level of security may be adopted. If so, this may be provided for in a code of practice approved by the Authority.

(c) Requirement for signage

We propose that:

- (i) when the substances are held inside a building, the threshold above which signage is required be 50 kgs;**
- (ii) when the substance is held in equipment that is an integral part of a refrigeration system and the refrigeration system is contained in a machinery room as defined in section 1.4.34 of AS/NZS 1677.2, the threshold quantity above which signage required is “any quantity”.**

We propose to vary the controls for signage by setting a lower threshold limit when the substances are stored inside a building or in a refrigeration machinery room.

Where the substances are present inside a building or in a refrigeration machinery room any potential hazard presented by the substance is not immediately obvious. This could present a risk to people entering the building.

To reduce the risk signage has to be prominently displayed as required by the Hazardous Substances (Identification) Regulations and the Hazardous Substances (Emergency Management) Regulations.

The threshold at which signage is required for a 2.1.1A substance is 250 kg. We consider this quantity to be too high to provide an adequate level of warning when the substances are held inside a building or contained in equipment that is an integral part of a refrigeration system and in a machinery room.

(d) Approved filler requirements

We propose that for these substances, the following additional control be added:

- (i) where regulation 59 of the Hazardous Substances (Compressed Gases) Regulations requires an approved filler to charge a compressed gas container, the test certifier is to confirm that the person in charge has demonstrated that an approved filler charges the compressed gas container and that the approved filler holds a current test certificate.**

We propose that an additional control be included in regulation 81 of the Hazardous Substances (Classes 1 to 5 Controls) Regulations. The control will apply at a location where the substances are to be charged into a compressed gas container and regulation 60 of the Hazardous Substances (Compressed Gases) Regulations requires that the person who fills the container to be an approved filler.

At present there are no checks at locations to confirm that an approved filler holding the necessary test certificate is filling the containers. The test certifier does confirm that an approved handler is available and it is logical to make the same check of the approved filler and a recent audit of LPG cylinder filling recommended this course of action.

To provide assurance that the site is compliant it is proposed that the test certifier should confirm that the person in charge is able to demonstrate that an approved filler is filling the container and that person holds a valid test certificate.

(e) **Limitation on quantities used or stored indoors**

We propose to adopt the same criteria as AS/NZS 1596:2008 Sections 2 and 4.4.4 to cover the use and storage of LPG cylinders indoors. This would mean:

- **domestic dwellings – the maximum quantity both in use and not connected would be 20kg with a maximum cylinder size of 15kg.**
- **factories, warehouses and exhibition centres – a maximum cylinder size of 45kg with either:**
 - **for floor area greater than 200m² – a maximum of 250kg of LPG per 200 m² of floor area, with each group separated by 15m; or**
 - **for floor area up to 200 m² – a maximum of 45kg per 50 m² with a total allowable of 180kg.**

We propose that this control should be added to the substances to limit the quantities of the substances for indoor use and indoor storage. This outcome would be achieved by the adoption of the relevant sections of AS/NZS 1596 *The storage and use of LP Gas*. AS/NZS 1596:2008 Sections 2 and 4.4.4 cover the use and storage of LPG cylinders indoors².

(f) **Proposal to use CGA 793 valves**

We propose to consider adopting the CGA 793 valve outlet connection for cylinder sizes of 18 kg and less subject to:

- **suppliers being able to source these valves; and**
- **the application of the cylinder not requiring a gas flow rate greater than that deliverable by the CGA793 connection.**

The Report of the Inquiry into the Use of LPG Cylinders Indoor Situations identified that historically there have been issues relating to the use of POL connectors with QCC valves in cylinders. Leakages have occurred which have resulted in incidents of harm. A new valve specification has been identified which eliminates these issues.

We propose that the valves meeting this specification should be used when the substances are contained in cylinders. The valve specification proposed is CGA 793.

Valves produced to this specification utilise the same external thread (ACME) that couples with the currently used QCC connector (type CGA 791) but do not have an internal thread, thereby preventing the use of a POL connector.

We note that valves to this specification are not currently being manufactured and therefore any adoption of the specification will be dependent on the availability of the valves.

² Refer Table 2.1 and Section 4.4.4 of AS/NZS 1596:2008

Additional consultation will be undertaken before a final decision on the adoption of the valve is made.

(g) Transitional period for implementation of new controls

It will not be practical for the proposed new controls to be introduced immediately. Hence we propose a transitional period not only to allow matters to be brought up to the required standard but also to avoid unnecessary compliance costs.

In the case of the refrigeration plant, a compliance plan approved by the Authority setting out the procedures and conditions to be followed will be appropriate to allow the plant to continue in operation.

We propose that:

- (i) a six month ‘transitional’ period should apply before the proposed control variations come into effect (this period commencing on the date of the Authority’s decision on any variations to the controls);**
- (ii) the person in charge of a refrigeration system that was in use or being constructed before the date that these variations are published may apply for approval of a Compliance Plan as an alternative to meeting the requirements of the variations.**

The application for the Compliance Plan must be provided within 12 months of the date these variations come into effect and will specify the steps that the person in charge must take to either:

- make whatever alterations to the system that are necessary to enable compliance with the compliance plans; and/or**
 - manage the risks of non-compliance.**
- (iii) The introduction of a new CGA 793 valve and connector system would only be introduced if and when the valve becomes commercially available.**

This valve specification was approved by the Compressed Gas Association in the US with the intention that the valve was used for cylinders in cabinet heaters. However, approval in the US to use cabinet heaters indoors was not granted and so the valve was never manufactured. The industry in the US are now hopeful that approval will be obtained in 2010 which would require production runs of the new valve.

Should this occur, the valve would then be available for the NZ market and its use could be introduced shortly after availability is confirmed.

SECTION FOUR: RISKS, COSTS AND BENEFITS

4.1 Introduction

The variations to the controls proposed in this reassessment have been initiated as a consequence of recommendations made in the following reports (links to the reports provided):

- Report of the Inquiry into the Explosion and Fire at Icepak Coolstores, Tamahere on 5 April 2008
http://www3.fire.org.nz/CMS_media/pdf/ca44cf33fe580cebba4ab6a7648e75c0.pdf
- Report of the Inquiry into the use of LPG Cylinders in Indoor Situations (INQ 03014) to ERMA New Zealand
<http://www.ermanz.govt.nz/resources/publications/pdfs/INQ03014.pdf>

Both of these investigations were initiated as a consequence of loss of life following incidents where LPG was being used. The recommendations made in these reports were the outcome of a detailed investigation and risk assessment.

The main benefit of this proposal is that the issues that have been identified as potential causes of the loss of life and the likelihood of a Tamahere-type incident occurring again will be reduced. In addition, the well being of workers, including emergency services and the public will be improved by minimising the likelihood of an incident by providing more definitive controls as well as making them more aware of the presence of LPG.

4.2 Assessment of the risks associated with the reassessment proposal

4.2.1 Proposal to odorise LPG used in refrigeration systems

It is a common practice to odorise these substances, particularly when they are used as fuels. A recommendation in the Report of the Inquiry into the Explosion and Fire at Icepak Coolstores, Tamahere, recommended that all large scale flammable gas installations should by law require inclusion of an odorising agent in the gas.

The report also noted odorising agents can dissipate during handling and use, and needed to be checked and refreshed if necessary. To cover this eventuality there is the provision for an approved code of practice that will allow other engineering solutions to be approved that will effectively deal with alternative protection systems should an odorant prove unsatisfactory.

The recently published IPENZ Coldstore Engineering Practice Notice 15 comments on the odouring requirements of AS/NZS 1677 and the fact that filters and dryers commonly used in the refrigeration industry will remove the ethyl mercaptan odourant commonly used for liquefied petroleum gas. The standard makes provision for “alternative safety provisions” and the approved code of practice option will cover this eventuality.

4.2.2 Proposal to provide additional controls where the substance is used in refrigeration systems contained in a building

The health and safety in employment legislation requires that equipment meets the requirements of the standards set in AS/NZS 1677. The proposal reinforces this requirement. We anticipate that the proposal will result in a reduction of risks, as the additional controls will result in safer use of the substances within refrigeration systems.

4.2.3 Proposal to lower the threshold limit for signage

We anticipate that there will be a reduction in risks as a result of the proposal to lower the threshold limits for signage for the substances.

4.2.4 Proposal to add a control to the location test certificate

The addition of a requirement, to the location test certificate, that the test certifier should confirm that the person in charge is able to demonstrate that an approved filler is filling the container and that person holds a valid test certificate, may reduce the risk of non compliance by providing a positive reinforcement of the need for an approved filler wherever cylinders are being charged with the substances.

There is a risk that the test certifier will engage with the person in charge to provide the approved filler test certificate which could pose a threat to the LPG delegation and training system. If the test certifier issues the certificate the result will be less effective as the certificate will be for five years, may be used at any facility and with no annual review of the approved filler’s performance.

4.2.5 Limitation on quantities for indoor use or storage

Placing limitations on the quantity of the substances allowed for indoor use or storage will lead to a reduction in risk. This reduction in risk is a benefit and is outlined in section 4.4.

4.2.6 Change to the valve specification

The LPG inquiry originally made this recommendation as there had been several deaths attributed to leakage of gas from cabinet heaters resulting from leaking valves. It was suspected that these leaks

could be attributed to problems with the QCC/POL interface. It is unclear whether this continues to be a cause of leaks, however the change to the new valve specification would reduce the risk of leakages occurring and hence the risk to injury of persons using LPG indoors.

4.3 Assessment of the costs associated with the reassessment proposal

4.3.1 Proposal to odorise the substances

LPG, propane and butane are routinely odorised particularly where used as a fuel, which is a requirement of the Gas Act. To odorise the gases is neither difficult nor costly. Ethyl mercaptan is already used extensively in the gas industry and is a readily available odorant. Ensuring that the gas remains odorised may involve some additional cost, but this is not considered to be significant.

4.3.2 Proposal to provide additional controls where the substances are used in refrigeration systems contained in a building

The proposals relating to refrigeration systems reflect the requirements that are contained in AS/NZS 1677. This is the only New Zealand Standard relating to refrigeration plant and is quoted in the Department of Labour Approved Code of Practice for Pressure Equipment (Excluding Boilers).

The standard is widely used and is also referred to in the recent published IPENZ Practice Note New Zealand Coldstore Engineering.

It is expected that refrigeration plant will generally conform to this standard, the variations to the controls simply reinforce the requirements and consequently should not impact adversely on costs.

It is noted that existing plants may in some instances not be totally compliant and consequently a transitional compliance period and compliance plan process is proposed.

4.3.3 Proposal to lower the threshold limit for signage

Additional costs will be generated as signage will be required at quantities lower than the present threshold limits.

4.3.4 Proposal to add a control to the location test certificate

The test certification requirement will only be required at hazardous substances locations that are already subject to test certification. The test certification will only be required when the current location test certificate is being renewed. There will be a small amount of additional work for the test certifier to complete but this should not be significant. The test certifier has only to check the existence and

currency of the approved fillers certification. They are not obligated to issue an approved filler test certificate.

As an alternative to the addition of the specified control, there could be an informal check conducted by the test certifier.

4.3.5 Limitation on quantities for indoor use and storage

This reassessment proposes to limit the quantity for indoor use and storage. Those organisations or residences that use or store LPG in greater quantities will be required to establish a permanently distributed system with the LPG cylinders located outdoors, or to use an alternative energy source. A permanently distributed system will result in an installation cost which will vary depending on the circumstances. An alternative energy source may cost more depending on the option chosen; any comparison would include both installation and running costs.

4.3.6 Specified valve connection

The CGA 793 valve connection is an alternative to connections currently fitted to the cylinders. As this valve is not currently manufactured the cost is unknown. However, as it is very similar to the current QCC valve it is not anticipated there will be significant additional cost.

Cabinet heaters imported to New Zealand would need to be fitted with a CGA 793 connector (on the regulator) which would connect to cylinders fitted with valves to CGA 793. We believe that older cabinet heaters with the current QCC connector would be able to connect to cylinders using the new valves. However, as there are no CGA 793 valves available we have not yet been able to confirm this in practice.

Nine kilogram cylinders imported for outdoors use would also be fitted with the CGA 793 valve as there is no way of differentiating between those destined for indoor and outdoor use. However, these would not be able to be connected to regulators using a POL fitting which are common on barbeques. This may require separate imports of cylinders with POL only valves, or may require valves to be changed in New Zealand. Additionally, it will reduce the interchangeability of cylinders between cabinet heaters and other uses.

4.4 Assessment of the benefits associated with the reassessment proposal

4.4.1 Odourising the substances

The requirement for odourising the substances is beneficial, as it will reduce the risk that a leak of the substances will go undetected and result in fire or explosion. In addition, the requirement endorses one of the recommendations made in the report of the Inquiry into the Explosion and Fire at Icepak Coolstores, Tamahere on 5 April 2008, that all large scale flammable gas installations should by law require inclusion of an odourising agent in the gas.

4.4.2 The use of a recognised refrigeration standards

IPENZ, in the recently published Coldstore Engineering in New Zealand Practice Note, recommends that almost all refrigeration systems, except low temperature cascade refrigeration systems, should comply with AS/NZS 1677. Compliance with this standard will minimise the likelihood of adverse incidents and hence reduce the potential for harm to people or the environment.

4.4.3 Proposal to lower the threshold limit for signage

The lowering of the threshold limit for signage for the substances will provide an increased level of awareness for people entering an area in which the substances are present, thereby reducing the likelihood that the actions of the people will contribute to adverse effects to human health or the environment.

4.4.4 Limitation on quantities for indoor use and storage

The LPG Inquiry report dated May 2004 made the following recommendation:

Recommendation 5

That AS/NZS 1596:2002 *The storage and handling of LP Gas* be reviewed and approved by ERMA New Zealand.

Since the enquiry was held, the AS/NZS standard has been revised and is now available as the 2008 edition. This standard is widely used as best practice in New Zealand. Sections 2 and 4.4.4 of this standard encompass the use and storage of LPG indoors.

Limiting the quantities of the substances allowed to be stored and used indoors will reduce the magnitude of any adverse effects should the substances ignite. Establishing these limits as part of the

approvals for the substances, will also eliminate existing uncertainties about the quantities allowed in indoor situations.

4.4.5 Specified valve connection

The LPG Inquiry report dated May 2004 made the following recommendation:

Recommendation 3

That a new QCC OPD valve, without the POL Screw, be approved for use in New Zealand. The specification for this valve to include the design features now considered acceptable for NZ use.

Since the enquiry was held, the Compressed Gas Association Inc has determined a new standard for valve connections, the CGA 793. This connection type meets the requirements of Recommendation 3 of the LPG Inquiry report and is an alternative to connections currently fitted to the cylinders.

Adoption of this valve specification would mean that all new cylinders imported to New Zealand (for indoors use) would be fitted with the CGA 793 valve.

The use of this connection is compatible with the QCC connection (CGA type 791) but prevents the use of a POL connector. This would remove the possibility of damage to and leakage from the back-check valve in the QCC valve, thereby reducing the risk to users. This reduction in risk is considered to be beneficial.

4.5 Assessment of any particular risks, costs and benefits which arise from the relationship of Māori and their culture and traditions with their taonga, or which are, for other reasons, of particular relevance to Māori

We do not believe there are any particular risks, costs or benefits arising from the modified reassessment in relation to Māori and their culture and traditions.

SECTION FIVE – INTERNATIONAL CONSIDERATIONS

5.1 The best international practices and standards for the safe management of the substance (section 63A(6)(b))

The proposed new controls on the substances are based on current Australian and New Zealand standards. Should other equivalent or better international standards become available, these may be presented for approval by the Authority in a code of practice.

It should be noted that the standard AS/NZS 1667 was last revised in 1998. This pre-dates the introduction of the hazardous substances legislation and consequently some of the references in this document are out of date and may cause confusion. It is recommended that Standards New Zealand, other government departments that reference this standard (such as the Department of Labour, Energy Safety) and the refrigeration industry seek a revision of the standard to ensure that it is brought into line with current practice.

5.2 International obligations and treaties

The Agency is not aware of any specific international obligations or treaties associated with these substances.

Appendix - Making Your Submission

1. Cover sheet for your submission. Please fill in your details.
2. Template for submission on application.

Submission on a notified application

To: ERMA New Zealand
PO Box 131
Wellington 6140
Email submissions@ermanız.govt.nz

Once your submission has been received the submission becomes a public document and may be made publicly available to anyone who requests it

Submission on application
number:

Name of submitter or
contact for joint submission:

Organisation name
(if on behalf of an organisation):

Postal address:

Telephone number:

Email:

I wish to keep my contact details confidential³

³ Keeping your contact details confidential means that your name will appear in our Evaluation and Review report as a submitter but your contact details will not be available to other submitters or the applicant. This means that you will not receive any additional information that is circulated by submitters and the applicant prior to the hearing. However, the additional information will be available for you to view on the day of the hearing. If your submission is requested by another party your contact details will not be displayed on the submission.

The reasons for making my submission are⁴:

- I support the application I oppose the application
- I neither support or oppose the application

- I wish to be heard in support of my submission**
(this means that you can speak at the hearing)
- I do not wish to be heard in support of my submission**
(this means that you cannot speak at the hearing)

I wish ERMA New Zealand to make the following decision:

⁴ Further information can be appended to your submission, if you are sending this submission electronically and attaching a file we accept the following formats – Microsoft Word, Text, PDF, ZIP, JPEG and JPG. The file must be not more than 8Mb.

Submission Proposals

	Proposal	<i>Please explain your views and, if possible give reasons or illustrate your comments with examples</i>
1	Proposal to odorise the substances	
2	Proposal to provide additional controls where the substances are used in refrigeration systems contained in a building	
3	Proposal to lower the threshold limit for signage	
4	Proposal to add a control to the location test certificate	
5	Proposal to limit quantities for indoor use and storage	
6	Proposal to adopt CGA 793 valves	