

Title	Demonstrate knowledge of gas, and the hazards and safety controls for working with live gas		
Level	3	Credits	6

Purpose	People credited with this unit standard are able to: describe the origins, types and sources of gas in the New Zealand gas industry; describe the basic composition, characteristic properties and hazards of gases in New Zealand; identify the three elements of the fire triangle; and describe the hazards, controls and actions to be taken when working with live gas.
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Classification	Gas Industry > Gas Network Operations
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Available grade	Achieved
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Guidance Information

- 1 This unit standard is intended for, but is not limited to, workplace assessment. The range statements relate to enterprise specific equipment, procedures, and processes.
- 2 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable manufacturer's specifications, company procedures and legislative requirements. This includes the knowledge and use of suitable tools and equipment.
- 3 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the current version of:
 - Health and Safety at Work Act 2015;
 - Health and Safety in Employment (Pipelines) Regulations 1999;
 - Gas Act 1992;
 - Gas (Safety and Measurement) Regulations 2010;
 - Resource Management Act 1991;
 - Hazardous Substances and New Organisms Act 1996;
 - AS/NZS 60079.10.1:2009 *Explosive atmospheres - Classification of areas - Explosive gas atmospheres*;
 - AS/NZS 4645.1:2018 *Gas distribution networks – Network management*;
 - AS 2885.3-2012 *Pipelines – Gas and liquid petroleum Operation and maintenance*;
 - NZS 5442:2008 *Specification for reticulated natural gas*;
 - NZS 5435:1996 *Specification for liquid petroleum gas (LPG)*;
 - and any subsequent amendments and replacements.
- 4 References
 - Australian standards (AS) may be found at www.standards.org.au;
 - Australian/New Zealand standards (AS/NZS) may be found at

www.standards.govt.nz;

New Zealand standards (NZS) may be found at www.standards.govt.nz.

- 5 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.
- 6 **Definitions**
Company procedures mean the documented methods for performing work activities, and include health and safety, operational, environmental, and quality management requirements. They may refer to legislation, regulations, guidelines, standard operating procedures, manuals, codes of practice, or policy statements.
Live gas operations refer to work where gas may be present in, or may be released into, the atmosphere or where air may enter a network containing gas.
PPE refers to personal protective equipment.

Outcomes and performance criteria

Outcome 1

Describe the origin, types and sources of gas in the New Zealand gas industry.

Performance criteria

- 1.1 The origins and types of gas in New Zealand are described in relation to gas networks.
- Range natural gas, LPG;
may include –butane, propane, tempered LPG, biogas, hydrogen gas.
- 1.2 The sources of gas used in New Zealand are described in relation to gas networks.
- Range gas fields, LPG bulk storage tank;
may include – biogas, manufactured gas.

Outcome 2

Describe the basic composition, characteristic properties and hazards of gases in New Zealand.

Performance criteria

- 2.1 The basic composition of gases in New Zealand is described in relation to gas networks.
- Range natural gas, LPG, biogas.

- 2.2 Gas characteristic properties are described according to industry usage.
- Range specific gravity, ignition temperature, calorific value, odourless, colourless, non-toxic, explosive limits.
- 2.3 Potential hazards arising from the characteristic properties of gas are described.
- Range lack of visibility, flammability, asphyxiation, specific gravity, odourless.

Outcome 3

Identify the three elements of the fire triangle.

Performance criteria

- 3.1 The three basic components that must be present for a fire or explosion to occur are identified.
- 3.2 Potential sources of ignition of reticulated gas are identified.

Outcome 4

Describe the hazards, controls and actions to be taken when working with live gas.

Performance criteria

- 4.1 Controls to eliminate sources of ignition are described.
- Range sources of ignition may include – tools, stray electric currents, naked flames and smoking, electrical equipment, static electricity, vehicles, machinery, non-intrinsically safe equipment (such as cell phones).
- 4.2 Potential hazards of carrying out a live gas operation, and their appropriate controls described.
- Range hazards – uncontrolled gas release, explosive atmosphere, pneumatic energy, confined space; evidence of three hazards is required.
controls may include – authorised personnel, equipment, PPE, protection of public, gas detection, atmospheric testing, exclusion zone, safety observer, safe access and egress, operating procedure, ignition sources, venting; evidence of three different controls is required.
- 4.3 Actions to be taken in the event of a gas fire, explosion, and asphyxiation are described.
- Range personal safety, public safety, protection of property, notification, reporting.

Replacement information	This unit standard replaced unit standard 12442, unit standard 12524 and unit standard 17690.
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Planned review date	31 December 2024
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	17 August 2017	31 December 2021
Review	2	27 February 2020	N/A

Consent and Moderation Requirements (CMR) reference	0014
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.