

Title	Interpret and test for gases in an underground extraction sitecoal mine		
Level	4	Credits	15

Purpose	People credited with this unit standard are able to: evaluate gas testing requirements; demonstrate the methods and equipment used for measuring and interpreting gases and mixtures of gases, and describe the potential harm to personnel and the environment in an underground extraction site coal mine; evaluate and describe methods of dispersing gas in an underground extraction site coal mine; and demonstrate knowledge of evacuation and notification procedures in the case of a gas incident, in an underground extraction site coal mine.
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Classification	Extractive Industries > Underground Extraction
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Available grade	Achieved
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Entry information	
Critical health and safety pPrerequisites	Unit 7146, <i>Demonstrate basic knowledge and ability required to work in an underground operation</i> , or demonstrate equivalent knowledge and skills.

Guidance Information
Explanatory notes

- Performance of the outcomes of this unit standard must comply with the following:
Health and Safety at Work Act 2015 (HSW);
Health and Safety at Work (General Risk and Workplace Management) Regulations 2016;
Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016;
Health and Safety at Work (Worker Engagement, Participation, and Representation) Regulations 2016;
approved codes of practice issued pursuant to the HSW Act.
~~Health and Safety in Employment Act 1992 (HSE);~~
~~Health and Safety in Employment Regulations 1995;~~
~~Health and Safety in Employment (Mining Operations and Quarrying Operations) Regulations 2013;~~
~~approved codes of practice issued pursuant to the HSE Act.~~

- 2 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.
- 3 Joint assessment must be conducted in the assessment of this unit standard because of the high degree of risk.

To conduct a joint assessment, two assessors, or one assessor and one technical verifier, must have witnessed the learner undertaking the tasks required in the unit standard and have come to the same conclusion in regards to the learner being competent or not yet competent. At least one assessor or verifier must hold the unit standard they are assessing on their NZQA Record of Learning.

- 4 Due to the high degree of risk associated with this unit standard, the assessment process must include a learner interview with one or both assessors.

5 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.

Industry best practice may be documented in management plans, control plans, company procedures, managers' rules, occupational health and safety policy, industry guidelines, codes of practice, manufacturers' instructions, and safe working and/or job procedures (or equivalent).

- 6 This unit standard is intended for, but is not limited to, workplace assessment.

7 All evidence for assessment against this unit standard must be in accordance with industry best practice and company procedures.

Outcomes and ~~performance criteria~~evidence requirements

Outcome 1

Evaluate gas testing requirements in an underground ~~extraction site~~coal mine.

Performance criteria

~~Evidence requirements~~

- 1.1 Company procedures for testing and the timing of gas testing are evaluated to ensure they meet statutory requirements and industry best practice.
- 1.2 Methods for notification of underground personnel are described when carrying out gas testing in accordance with regulatory requirements ~~and industry best practice~~.
- 1.3 Required documentation is completed ~~in accordance with industry best practice~~.

Outcome 2

Demonstrate the methods and equipment used for measuring and interpreting gases and mixtures of gases, and describe the potential harm to personnel and the environment in an underground ~~extraction-site~~coal mine.

Range includes but is not limited to – carbon monoxide, carbon dioxide, methane, hydrogen, oxygen, nitrogen, sulphur dioxide, hydrogen sulphide, damp, oxides of nitrogen, higher hydrocarbons.

Performance criteria

~~Evidence requirements~~

2.1 Critical physical and chemical factors in gases are identified and interpreted in terms of health and safety underground.

Range may include but is not limited to – name, chemical symbol, flammable limits, relative density, occurrence in mines, physical properties, physiological effects, legal limits, gases and mixes of gases.

~~2.2 Results of gas measurements are interpreted in terms of potential hazards that may have consequences for mine site and personnel.~~

~~Range includes but is not limited to – spontaneous combustion, Coward's Triangle, Boyle's law, Charles's law, atmospheric pressure, toxic gases, exposure limits.~~

2.32 Methods for examining for gases or mixes of gases and related hazards in an underground ~~site~~coal mine are described.

2.43 Use of gas monitoring instruments and systems is demonstrated or described in accordance with manufacturer's specifications ~~and company procedures~~.

Range may include but is not limited to – hand-held gas detector, chemical, electronic, remote monitoring.

~~2.4 Results of gas measurements are interpreted in terms of potential hazards that may have consequences for mine site and personnel.~~

~~Range includes but is not limited to – spontaneous combustion, Coward's Triangle, Boyle's law, Charles's law, atmospheric pressure, exposure limits, oxygen depleted atmosphere.~~

2.5 ~~Documentation of tests~~Tests and results ~~is in accordance with industry best practice and company procedures~~are documented.

Outcome 3

Evaluate and describe methods of dispersing gas in an underground ~~extraction-site~~coal mine.

Performance criteria
Evidence requirements

- 3.1 Methods for gas detection, identification, and estimation of volume and concentration are described and evaluated ~~in accordance with industry best practice and company procedures.~~
- 3.2 Methods for safely dispersing the gas detected are described and evaluated ~~in accordance with industry best practice and company procedures.~~
- 3.3 ~~Documentation of tests~~ Tests and results ~~is in accordance with industry best practice and company procedures~~ are documented.

Outcome 4

Demonstrate knowledge of evacuation and notification procedures in the case of a gas incident in an underground ~~extraction site~~ coal mine.

Performance criteria
Evidence requirements

- 4.1 Procedures in event of evacuation as a consequence of a gas test results incident are described ~~in accordance with industry best practice and company procedures.~~
- 4.2 Location of signalling devices, gas monitoring and detection instrumentation, and alarms systems is demonstrated ~~in accordance with industry best practice and company procedures.~~
- 4.3 Methods of alarm activation are described ~~in accordance with industry best practice and company procedures.~~
- 4.4 Method of alerting personnel to initial response procedures is described in accordance with ~~industry best practice,~~ trigger action response plans (TARPs), ~~and company procedures.~~

Replacement information	This unit standard replaced unit standard 12632.
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Planned review date	31 December 2019 <u>2022</u>
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 November 2005	31 December 2017
Rollover and Revision	2	16 July 2010	31 December 2017
Review	3	18 June 2015	N/A 31 December 2019
<u>Review</u>	<u>4</u>		<u>N/A</u>

Consent and Moderation Requirements (CMR) reference	0114
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

~~Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.~~

~~Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.~~

~~Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.~~

~~Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.~~

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.~~

~~Please contact the NZ Motor Industry Training Organisation (Incorporated) (MITO) info@mito.org.nz if you wish to suggest changes to the content of this unit standard.~~