

Title	Use and maintain the integrity of portable gas detection devices in hazardous areas		
Level	4	Credits	2

Purpose	<p>This unit standard covers the gas detection aspects of ensuring a workplace is safe from explosive and toxic gases and vapours. It requires the ability to use measuring instruments accurately, follow written instructions and to write instructions for others.</p> <p>This unit standard is intended for competent people who require entry to a designated hazardous area to undertake repair, maintenance, or construction work.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – prepare to use portable gas detection device; – establish safety of the area with regard to the presence of gases or vapours; – monitor gas detection devices for the presence of gases or vapours; and – follow procedures to maintain the integrity of gas detection devices.
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Classification	Explosive Atmospheres > Electrical Apparatus in Explosive Atmospheres - Operations
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Available grade	Achieved
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Entry information	
Critical health and safety prerequisites	Unit 26741, <i>Demonstrate underpinning knowledge of gas detection apparatus in explosive atmospheres</i> , or demonstrate equivalent knowledge and skills.

Explanatory notes

- 1 This unit standard has been designed for training and assessment on-job or off-job in a simulated environment which includes explosion-protected apparatus and wiring systems similar to those encountered in a real workplace.

- 2 This unit standard is directly equivalent to Unit 2.4 *Use and maintain the integrity of portable gas detection devices* in the Australian/New Zealand Standard AS/NZS 4761.1:2008 *Competencies for working with electrical equipment in hazardous areas (EEHA) Part 1: Competency standards* and includes essential skills and knowledge as specified in the relevant clauses. It aligns with Australian Competency Standard *UEENEEM076A* from UEE07 Electrotechnology Training Package Version 3.1 (copyright Australian National Training Information Service).
- 3 This unit standard is intended to be assessed against in conjunction with other competencies appropriate to the work to be done, such as operation, installation, maintenance, or servicing of plant or machinery in explosive atmospheres.
- 4 References
AS/NZS 1826:2008, *Electrical equipment for explosive gas atmospheres – Special protection – Type of protection 's'*;
AS/NZS 3000:2007, *Electrical installations (known as the Australian/New Zealand Wiring Rules)*;
AS/NZS 4641:2007, *Electrical apparatus for detection of oxygen and other gases and vapours at toxic levels – General requirements and test methods*;
AS/NZS 4761.1:2008, *Competencies for working with electrical equipment for hazardous areas (EEHA) Part 1 – Competency standards*;
AS/NZS 4761.2:2008, *Competencies for working with electrical equipment for hazardous areas (EEHA) Part 2 – Guide to assessing competency*;
AS/NZS 60079.0:2008, – *Explosive atmospheres – Equipment – General requirements*;
AS/NZS 60079.1:2007, *Explosive atmospheres – Equipment protection by flameproof enclosures 'd'*;
AS/NZS 60079.10.1:2009, *Explosive atmospheres – Classification of areas – Explosive gas atmospheres*;
AS/NZS 60079.11:2006, *Explosive atmospheres – Equipment protection by intrinsic safety 'i'*;
AS/NZS 60079.14:2009, *Explosive atmospheres – Electrical installations design, selection and erection*;
AS/NZS 60079.17:2009, *Explosive atmospheres – Electrical installations inspection and maintenance*;
AS/NZS 60079.20:2000, *Explosive atmospheres – Data for flammable gases and vapours, relating to the use of electrical apparatus*;
AS/NZS 60079.29.1:2008, *Explosive atmospheres – Gas detectors – Performance requirements of detectors for flammable gases*;
AS/NZS 60079.29.2:2008, *Explosive atmospheres – Gas detectors – Selection, installation, use and maintenance of detectors for flammable gases and oxygen*;
Standards Australia HB13-2007, *Electrical equipment for hazardous areas*;
Electricity Act 1992;
Electricity (Safety) Regulations 2010;
Hazardous Substances and New Organisms Act 1996;
Health and Safety in Employment Act 1992;
Workplace Exposure Standards and Biological Exposure Indices, available from the Department of Labour, <http://www.osh.govt.nz/order/catalogue/329.shtml>, and associated regulations;
and their subsequent amendments and replacements.

5 Definitions

Appropriate personnel – individuals with responsibilities for co-ordination, design, installation, maintenance, production, or servicing activities. This can include: site managers, project managers, engineers and technicians, technical experts, line managers or supervisors, regulatory personnel, team leaders, other personnel designated by an organisation or enterprise.

Established procedures – formal documented arrangements of an organisation, enterprise or statutory authority in regard to how work is to be done and by whom and may include but are not limited to – quality management systems, safety management systems, work clearance systems, work instructions, reporting systems, and arrangements for dealing with emergencies.

Explosion-protection techniques – techniques applied to the design of electrical apparatus, components, and systems to prevent the electrical energy from becoming an ignition source in the presence of flammable vapours and gases or combustible dusts in explosive atmospheres. See *explosion-protected apparatus*.

Explosion-protected apparatus – electrical apparatus to which specific measures are applied to avoid ignition of a surrounding explosive atmosphere. Such apparatus employs one or more of the following explosion-protection techniques:

For gas and vapour atmospheres

Ex d – flameproof;

Ex e – increased safety;

Ex i – intrinsic safety; with levels of protection Ex ia, Ex ib and Ex ic;

Ex n – non-sparking;

For dusts

Ex iD – intrinsic safety (dusts);

Ex tD – enclosed;

Others, less common

Ex p – pressurisation; Ex pD (dust);

Ex m – encapsulation, with levels of protection Ex ma, Ex mb, Ex mc (gases and vapours), and Ex mD (dusts);

Ex s – special protection; categorised by Zone of application; e.g. 'Ex s (Zone 0);

Ex o – oil immersion;

Ex q – sand filled;

Ex v – ventilation.

6 Range

a Assessment is to take account of variations between the industry sectors and enterprises. For example, apparatus used in underground coal mining will be different in some respects from that used in a petrochemical plant.

b Occupational Safety and Health (OSH) policies and procedures may include but are not limited to – work permits and clearances, hazard monitoring, evacuation procedures, plant and electrical isolation.

c The application of contingency management skills must be demonstrated for all outcomes and evidence requirements.

d Established maintenance procedures must be followed.

e All activities and evidence presented for all outcomes and evidence requirements in this unit standard must be in accordance with safe working principles and practices, legislation, policies, procedures, ethical codes and Standards, safe and sound practice, and industry practice; and, where appropriate, manufacturers' instructions, specifications, and data sheets.

Outcomes and evidence requirements

Outcome 1

Prepare to use portable gas detection device.

Evidence requirements

- 1.1 The gas or vapour to be detected is established from plant/site records or consultation with appropriate personnel.
- 1.2 Gas detection devices for the gas and/or vapour to be detected are checked for calibration and/or response in accordance with manufacturer's instructions, to ensure their integrity.
- 1.3 Gas detection devices are checked for factors that could nullify the Ex rating.

Range damaged or incorrectly assembled casing, use of incorrect batteries and/or chargers, use of incorrect spare parts and accessories, evidence or knowledge of any maintenance which is not explicitly described in the manufacturer's instructions.

Outcome 2

Establish safety of the area with regard to the presence of gases or vapours.

Range monitor hazards, follow evacuation procedures.

Evidence requirements

- 2.1 Gas detection device is used in accordance with manufacturer's instructions and with regard to environmental conditions.
- 2.2 Observations of gas detection readings are recorded in accordance with established procedures.
- 2.3 Clearance to work is issued in accordance with established procedures when safe-to-work condition is determined from gas detection reading.

Range gas or vapour level in a work area is at a safe level from explosion, toxicity, and/or oxygen deficiency.

Outcome 3

Monitor gas detection devices for the presence of gases or vapours.

Evidence requirements

- 3.1 The frequency of monitoring is determined from the nature of the gas or vapour and the effects of environmental, propagation, and local conditions.
- Range ambient temperature rise, density of gas or vapour, flash point, dew point, detector poisons.
- 3.2 Other people as required are instructed in procedures to carry out monitoring for a particular type of gas detector and industrial situation and these instructions are documented.

Outcome 4

Follow procedures to maintain the integrity of gas detection devices.

Evidence requirements

- 4.1 Gas detection devices are stored in accordance with manufacturers' recommendations.
- 4.2 Gas detection devices are formally checked and calibrated periodically in accordance with instrument accuracy and established site requirements.
- 4.3 Storage, use, and calibration record of gas detection devices is maintained in accordance with established procedures.

Planned review date	31 December 2016
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	20 May 2011	N/A

Consent and Moderation Requirements (CMR) reference	0003
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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 (CMRs). 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 the ElectroTechnology Industry Training Organisation (ETITO) reviewcomments@etito.co.nz if you wish to suggest changes to the content of this unit standard.