



Australian Government

UEECD0050 Use and maintain the integrity of a portable gas detection device

Release: 2

UEECD0050 Use and maintain the integrity of a portable gas detection device

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Duplicate content in Knowledge Evidence removed and typographic errors fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to ensure a workplace, including hazardous areas, is safe from dangerous gases and/or vapours by using and maintaining a portable gas detection device.

Portable gas detection devices are used to detect combustible, flammable and toxic gases and/or vapours in a work area. Portable gas detectors transmit warnings via audible and visible signals, such as alarms and flashing lights, when dangerous levels of gas and/or vapours are detected.

Hazardous areas are defined as areas where fire or explosion may occur due to flammable gases, vapours, combustible dusts and/or ignitable fibres are present in the air, in quantities sufficient to produce explosive or ignitable mixtures.

Competency in this unit requires the ability to use measuring instruments such as portable gas detection devices, establish the safety of an area, monitor dangerous gases and/or vapours, follow workplace procedures in maintaining gas detection devices and completing all required documentation. Individuals will typically work, under supervision, as part of a hazardous area maintenance and repair team.

Site-specific work permits maybe required to work in the hazardous environment. In addition, other permits may be required, such as confined space and to operate specific pieces of equipment such as elevated work platforms (EWPs) in various jurisdictions.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to use portable gas detection device

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS policies and procedures for work in hazardous areas are identified and applied
 - 1.2** Safety processes, relevant permits and material safety data sheet (MSDS)/safety data sheet (SDS) and safe work method statements (SWMS) related to entering a hazardous area are obtained in accordance with workplace procedures and clearance to undertake work is obtained from supervisor
 - 1.3** Emergency and evacuation plans are reviewed prior to entering hazardous area
 - 1.4** Gas and/or vapour is identified in accordance with workplace procedures from plant and/or site records and in consultation with relevant person/s
 - 1.5** Portable gas detection device is checked for calibration and response in accordance with manufacturer instructions and workplace procedures
 - 1.6** Portable gas detection device is checked for damaged casing from use of incorrect batteries and/or chargers and use of incorrect spare parts and accessories which would nullify its Ex rating
-
- 2 Establish safety of area**
 - 2.1** WHS/OHS policies and procedures relating to gas/vapour detection are followed
 - 2.2** Hazards are monitored and risk controls are implemented in accordance with workplace procedures

- | | |
|--|--|
| | <p>2.3 Personal protective equipment (PPE) is worn for work in potentially dangerous atmospheres and/or hazardous areas</p> <p>2.4 Portable gas detection device is used in accordance with manufacturer instructions and workplace procedures</p> <p>2.5 Environmental impacts of gas and/or vapour readings in hazardous areas are taken into consideration when using a portable gas detection device</p> <p>2.6 Gas detection readings are recorded in accordance with workplace procedures</p> <p>2.7 Safe to work is determined from gas detection reading and then clearance to start or resume work is issued in accordance with workplace procedures</p> |
| <p>3 Provide training in using portable gas detection devices</p> | <p>3.1 Monitoring schedule for detecting dangerous gas and/or vapours in hazardous areas is implemented in accordance with workplace procedures</p> <p>3.2 Training is provided to relevant person/s in the use of portable gas detection devices, as required</p> <p>3.3 Documentation on training provided is maintained in accordance with workplace procedures</p> |
| <p>4 Maintain portable gas detection devices</p> | <p>4.1 Portable gas detection devices are stored and maintained in accordance with workplace procedures and manufacturer recommendations</p> <p>4.2 Gas detection devices are checked and calibrated regularly in accordance with workplace procedures, hazardous area requirements and manufacturer instructions</p> <p>4.3 Calibration records of portable gas detection device are maintained in accordance with the workplace procedures</p> |

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

- Using and maintaining portable gas detecting devices must include:
- at least two of the following classified hazardous areas:
 - confined spaces
 - drains
 - pits
 - excavations

Unit Mapping Information

This unit replaces and is equivalent to UEENEEM076A Use and maintain the integrity of a portable gas detection device.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEECD0050 Use and maintain the integrity of a portable gas detection device

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Duplicate content in Knowledge Evidence removed and typographic errors fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying legislation, industry standards, codes of practice and regulations
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including:
 - applying safe work practices
 - determining safety of area
 - identifying and monitoring hazards
 - implementing risk control measures
 - using material data safety sheets (MSDS)/safety data sheets (SDS) and safe work method statements (SWMS)
 - wearing personal protective equipment (PPE)
- following workplace procedures to maintain gas detection devices
- interpreting manufacturer specifications
- meeting workplace compliance requirements
- preparing to use portable gas detection devices
- using and maintaining the integrity of portable gas detection devices, including:
 - determining whether gas/vapour level in a work area is safe from explosive, toxic and oxygen deficiency
 - following work permits and clearance procedures
 - following workplace procedures to maintain integrity of gas detection devices
 - instructing others in use of a portable gas detection devices
 - monitoring hazards and following evacuation procedures
- using portable gas detection devices to monitor gases and/or vapours
- using site-specific documentation, including plans, records and schedules
- utilising relevant equipment and tools.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- actions or conditions that would void hazardous area/equipment protections
- characteristics and liabilities of equipment and tools
- principles of gas detection and the use and care of portable gas detection devices, including:
 - fundamental principles in the use of gas and vapour instruments
 - use of manufacturer instruction manuals (operating instructions, adjustment procedures, operational limitations and storage)
 - calibration and response checking
- detecting gases and vapours, including:
 - apparatus capability and users' knowledge of gases and vapours
 - common properties of gases and vapours, including density of gases, complication of evaporation, condensation and temperature effects of vapours and their mixtures; effect of temperature on density; lower explosive limit (LEL) and upper explosive limit (UEL) of combustibles and toxicity
 - detection and non-detection of gases
 - environmental effects and intended application
 - propagation of gases, including the release of gas and vapours, ventilation, density, temperature and location
 - safety when monitoring for flammable gases where personnel could be present
 - the differences between detecting gases and vapours, including added complication of evaporation, condensation and temperature effects of vapours and their effect on propagation, calibration and detection, including sampling
- oxygen deficiency and effects on safety, including:
 - chemical reaction of oxygen with solid and gaseous products
 - dilution of the air by displacement by some other gas or vapour
- measuring principles of catalytic sensors, electrochemical sensors, infrared sensors and semi-conductor sensors, including:
 - common applications, limitations and safety
 - interferences of other gases with the measurement
 - poisoning of the sensor
 - note: detailed information on gas detection is given in AS/NZS 60079.29.2 Explosive atmospheres Gas detectors - Performance requirements of detectors for flammable gases
- limits of gas detection of flammable (combustible) gas equipment, including:
 - limit to which flammable gas detection equipment will only detect gases and vapours that are present in the vicinity of the detector or in the line of sight of open path apparatus
 - limit to which flammable gas equipment will not detect combustible liquids and not detect combustible liquids as such, or combustible mists, dusts or fibres

- limits of vapour detection of flammable (combustible) gas equipment (flammable gas detection equipment will only detect those vapours that do not condense at the temperature of the detector or its sampling equipment)
- interpretation of gas detection instrument readings (behaviour), including:
 - upscale reading in the presence of a gas for which an instrument is not calibrated
 - causes of erratic indications
 - reading of low concentrations of gas of interest
 - off-scale readings
- toxicity level of flammable gases and vapours and their potential for occurring in a given situation
- issues with gas and vapour detection in hazardous areas which may include confined spaces
- manufacturer instruction manuals (operating instructions, adjustment procedures, operational limitations and storage)
- relevant hazardous area classification principles and techniques, including calibration and response checking
- relevant legislation, industry standards, codes of practice and regulations
- relevant manufacturer specifications
- relevant risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures for testing and inspection of electrical equipment in hazardous atmospheres
- environmental conditions that may impact explosion-protection techniques
- flammable material properties and ignition characteristics.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>