



Australian Government

Assessment Requirements for UEEHA0018

Classify areas where flammable gas or vapour hazards may arise

Release: 1

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Modification History

Release 1. This is the first release of this unit of competency in the 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 and performance criteria on at least two separate occasions and include:

- establishing the likelihood of an explosive atmosphere arising including:
 - reviewing process, instrumentation and plant layout drawings and specifications to identify sources and grades of release
 - obtaining properties of materials relevant to the area classifications
 - estimating/calculating the rates of release and release conditions
- considering means of eliminating or reducing risks of an explosive atmosphere arising in the presence of a potential ignition source including:
 - elimination or relocation of potential ignition sources
 - elimination or relocation of sources of release
- investigating the application and influence of ventilation and dispersion factors including:
 - determining the rate and availability of ventilation and dispersion factors
 - applying guidance given in standards to assess the degree of dilution and the persistence of an explosive gas atmosphere
- establishing the types and extent of zones for the final plant/process design including:
 - analysing the collected data
 - using appropriate analysis methodologies
 - consulting process and engineering specialist personnel
- documenting area classification in accordance with provisions of standards.

Knowledge Evidence

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

- safety principles and objectives of area classification encompassing safety and economic aspects including:
 - reducing the likelihood of a gas atmosphere occurring
 - using equipment that has a low likelihood of creating an ignition source

- relative cost of compliant equipment within the classified zones
- properties of hazardous materials including:
 - properties of materials relevant to area classification such as, molecular mass, flash point, boiling point, ignition temperature, vapour pressure, vapour density, explosive limits, equipment group and temperature class
 - sources from which properties of explosive hazardous material can be obtained
 - fundamentals of all alternative analysis methodologies
- sources and grades of release of a flammable gas or vapour hazard including:
 - items of plant that should be considered as potential sources of release including those giving:
 - continuous grades of release
 - primary grade of release
 - secondary grade of release
 - the criteria on which openings are considered a source of release
 - the criteria for establishing the zones in which an explosive atmosphere may arise
 - release rate of gas or vapour including:
 - geometry of the source of release
 - release velocity
 - concentration
 - volatility of a flammable liquid
 - liquid temperature
 - methods and equations for estimating the release rate of liquid and the release rate of gas, including the limitations and accuracy of the selected equations
- ventilation and dispersion including:
 - location of sources of release in relation to ignition sources
 - effects of climatic conditions and topography
 - nature and mechanisms for dispersion and dilution
 - ventilation including:
 - purpose
 - types and degrees of ventilation
 - methods for estimating and calculating ventilation and dispersion criteria
 - influence of independent ventilation on types of zones
 - multiple sources of release
- acceptable methods for establishing the type and extent of zones including:
 - limitations and application in the use of illustrative examples
 - generalized methods
 - limitations and use of calculation methodologies in relevant standards
 - suitability and use of modelling tools such as CFD
 - alternative codes
 - relationship to 'equipment protection level' (EPL) and risk assessment

- fundamentals of all alternative analysis methodologies
- recommendations for documenting classification decisions including:
 - steps which lead to the final area classification including:
 - recommendations from relevant standards and codes
 - gas and vapour characteristics and calculations
 - study of ventilation and dispersion characteristics
 - data sheets and tables listing flammable material characteristics and sources of release
 - drawings showing the type and extent of zones, equipment groups and ignition temperature.

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 tools and testing devices and PPE currently used in industry
- the following equipment and documentation in relation to several different processes:
 - plant specification and design including:
 - plan and elevation drawing
 - process drawings such as PID diagrams
 - relevant pipe work diagrams
 - relevant details of process equipment including vessels and storage tanks
 - relevant climatic and topographic information of the site
 - process specification including:
 - liquids and gases involved
 - flow rates, pressures and temperatures
 - process and operational (if available) descriptions
 - relevant standards and codes.

Links

Companion Volume Implementation Guides are found in VETNet -

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