Australian Government
Department of Education, Employment and Workplace Relations

RIIUND401B Apply and monitor the ventilation management plan

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

RIIUND401B Apply and monitor the ventilation management plan

Modification History

Not applicable.

Unit Descriptor

This unit covers the application and monitoring of the ventilation management plan in the resources and infrastructure industries. It includes planning and preparing for the application of the ventilation management plan, applying the plan, and applying ventilation system maintenance procedures. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in a supervisory role or as a technical specialist, at worksites within:

- Coal Mining
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for the application of the ventilation management plan	1.1. Access, interpret and apply ***compliance documentation*** relevant to the work activity 1.2. Access and interpret the ***ventilation management plan*** 1.3. Identify and clarify roles and responsibilities, as specified in the ventilation management plan 1.4. Communicate and clarify work group and individual responsibilities and tasks in an effective and timely manner 1.5. Identify, obtain and allocate resources required for the application of the ventilation management plan 1.6. Identify individual training needs and provide access to the established ***ventilation management training*** program and systems
2. Apply the ventilation management plan	2.1. Identify and interpret the impact of changes to the ventilation system on the ***mine atmosphere*** 2.2. Apply installation and operation procedures for monitoring systems and equipment 2.3. Install, monitor and maintain ***ventilation control device*** in the ventilation system 2.4. Apply procedures for monitoring, recording and reporting on mine ventilation including ***defects*** to ventilation control devices 2.5. Adjust mine control devices 2.6. Carry out collection and analysis of ventilation data 2.7. Record and report monitoring system data 2.8. Apply ***water*** management procedures 2.9. Respond to alarms raised 2.10. Apply ventilation emergency and evacuation 2.11. Contribute to systems audit and review requirements
3. Apply ventilation system maintenance procedures	3.1. Schedule and carry out inspections, repair and maintenance activities

	3.2. Record, report and review maintenance requirements and activities

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to apply and monitor the ventilation management plan:

- apply legislative, organisation and site requirements and procedures for application and monitoring of the ventilation management plan
- interpret and apply a limited range of mathematical and scientific theorems/laws related to ventilation
- collect, collate and interpret ventilation data
- interpret and apply ventilation device construction/installation specifications
- conduct enquiries/investigations and prepare reports
- communicate effectively in the workplace
- access, interpret and apply data from monitoring systems and equipment
- operate hand-held monitoring equipment
- apply risk management processes and techniques
- initiate ventilation training

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to apply and monitor the ventilation management plan:

- legislative and statutory requirements for ventilation including air quality, maximum values, control and distribution, flammable gas and dust limits, ventilation fans, gas monitoring, respirable dust limits and inspections and recording/reporting
- methods of mine ventilation and their applications/limitations
- methods of panel ventilation and their applications/limitations
- impact of mining techniques and mine and panel design on ventilation
- mine roadways and shafts and their impact on mine ventilation
- impact of geological characteristics and seam gradients on mine ventilation design
- impacts on the ventilation system of gas drainage, spontaneous combustion, outburst and windblast
- mine gases; the types and their characteristics, sources, physiological effects and methods of detection
- dust, fumes and other particulate matter; the types, sources, physical and physiological effect and control/mitigation methods
- mine fires; the types, sources of ignition, possible effects on the ventilation circuit

and prevention/control/mitigation methods
- mine explosions; the types, ignition sources, possible effects on the ventilation circuits and prevention/control/mitigation methods
- pressure changes; causes, the impacts on the ventilation system, and responses
- heat/humidity; the sources and factors which may impact on mine ventilation and personnel
- mine fans
- ventilation control devices
- de-gassing
- methods of control
- fixed ventilation monitoring systems types, uses and limitations
- portable monitoring equipment, types, characteristics, uses and limitations
- ventilation management plan development requirements and processes
- ventilation surveys including the types, frequency and method for conduct including pressure/quantity/temperature and gas
- dust surveys for irrespirable quantity
- processes and techniques for determining alarms and trigger points/levels
- emergency and disaster plan response

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for application and monitoring of the ventilation management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient application and monitoring of the ventilation management plan • working with others to plan, prepare and conduct application and monitoring of the ventilation management plan • evidence of the consistent successful application and monitoring of the ventilation management plan
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

	• Customisation of assessment and delivery environment should sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate requirements, procedures and techniques for the safe, effective and efficient achievement of required outcomes
	  • consistent achievement of required outcomes
	• first hand testimonial evidence of the candidate's:
	  • working with others to undertake and complete the application and monitoring of the ventilation management plan
	  • provision of clear and timely instruction and supervision by the individual of those involved in the application and monitoring of the ventilation management plan

Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures
	• standards and procedures required to support the ventilation management plan, which may include those for:
	  • construction
	  • action response
	  • permit to work
	  • condition monitoring
	  • auditing
	  • maintenance
	  • document control
	  • atmosphere monitoring
	  • ventilation system control
	  • communication systems
	  • survey procedures
	  • sealing procedures
	  • changes
	  • training and systems recording/reporting
	• manufacturer's guidelines and specifications
	• Australian standards
	• Employment and Workplace Relations legislation
	• Equal Employment Opportunity and Disability Discrimination legislation

Ventilation management plan may include:	• establishing procedures for maintaining optimum mine ventilation including:
	  • hazard identification and quantification
	  • relevant emergency and evacuation procedures
	  • risk assessment
	  • authority and responsibility
	  • controls established to manage identified risks

	• reporting and communication • document control • audit and review
Ventilation management training applies to:	• mine workers • trades people • permanent employees • contractors • mine officials • other relevant special requirements
Mine atmosphere includes:	• areas in the general mine district • areas into waste working • goafs in the mine and may include, but is not limited to: • temperature • gases • humidity • air flow • dust • other particulates • take out areas

Ventilation control device includes:	• door
	• regulator
	• seal
	• stopping
	• air crossings
	• pressure chambers
	• other control device to control or direct ventilation flows in a mine, and may include:
	  • doors
	  • regulators
	  • seals
	  • stoppings
	  • air crossings
	  • bulk heads
	  • goaf seals and pressure chambers
	  • air locks
	  • fans
	  • walls/barricades
	  • vent bags
	  • shafts

	• rises
Defects may include:	• inferior design/deterioration of materials • inadequate quality of construction • physical damage • water damage
Water may impact on the mine ventilation management plan through liberation of:	• dissolved gases • capture of soluble gases and fumes • gas drainage efficiency • seam moisture infusion or drainage • dust liberation and suppression • large ingresses disrupting ventilation networks • ventilation requirements for pumping stations • influence on sponcom propensity • humidity • hydrostatic pressure

Unit Sector(s)

Underground Mining

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.