



Australian Government

Department of Education, Employment and Workplace Relations

RIIMCU408A Apply the spontaneous combustion management plan

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the application of the spontaneous combustion management plan in the coal industry. It includes identifying and explaining the fundamentals of spontaneous combustions hazards and risks, identifying and explaining the fundamentals of spontaneous combustion control systems and procedures, identifying and applying resources to the spontaneous combustion management plan, indentifying and responding to spontaneous combustion indicators, applying mine atmosphere monitoring systems and procedures, and applying control measures. 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

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

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>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.</p>
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<p>1. Identify and explain the fundamentals of spontaneous combustion hazards and risks</p>	<p>1.1. Access, interpret and apply compliance documentation relevant to the work activity</p> <p>1.2. Identify the fundamentals of spontaneous combustion.</p> <p>1.3. Identify and explain the effects of mine gases and barometric variations on the risks of spontaneous combustion</p> <p>1.4. Identify and explain the hazards associated with goaf and waste working atmosphere</p> <p>1.5. Identify the impact of ventilation and ventilation structures on the risks of spontaneous combustion</p> <p>1.6. Identify spontaneous combustion risks associated with the coal stowage</p>
<p>2. Identify and explain the fundamentals of spontaneous combustion control systems and procedures</p>	<p>2.1. Identify the principles of ventilation design and related procedures and their impact on spontaneous combustion management</p> <p>2.2. Identify the methods and purposes of natural and induced inertisation in the goaf and waste workings, in relation to spontaneous combustion</p> <p>2.3. Identify the method, purpose, operation and procedures for installation of mine atmosphere monitoring systems, with regards to spontaneous combustion</p>
<p>3. Identify and apply resources to the spontaneous combustion management plan</p>	<p>3.1. Identify, access, interpret and apply relevant legislative requirements and site safety management systems including statutory inspection requirements related to spontaneous combustion</p> <p>3.2. Identify, interpret and apply procedures and responsibilities in the spontaneous combustion management plan</p> <p>3.3. Monitor the actions of the work group to ensure the application of required spontaneous combustion procedures are complied with</p> <p>3.4. Identify and apply appropriate response procedures in situations where trigger levels are reached</p> <p>3.5. Participate in the development, review and</p>

	enhancement of spontaneous combustion procedures as per site requirements
4. Identify and respond to spontaneous combustion indicators	<p>4.1. Identify, monitor, investigate, respond and report on spontaneous combustion indicators</p> <p>4.2. Respond to indicators in accordance with site procedures</p>
5. Apply mine atmosphere monitoring systems and procedures	<p>5.1. Conduct mine atmosphere monitoring, interpret the results and prepare and process reports in accordance with site procedures</p> <p>5.2. Identify and report defects to monitoring systems and, where appropriate, affect repairs in accordance with site procedures</p>
6. Apply control measures	<p>6.1. Identify, investigate and report changes in ventilation which may affect spontaneous combustion</p> <p>6.2. Report incidents of connection to other workings and take immediate action according to site procedures</p> <p>6.3. Select, apply and report on the appropriate action to remedy impact of water accumulation on the ventilation system</p> <p>6.4. Identify, rectify and report defects to ventilation structures and seals</p> <p>6.5. Identify hazards associated with the coal accumulations and transport systems and apply action to minimise the spontaneous combustion risks</p>

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 the spontaneous combustion management plan:

- apply legislative, organisation and site requirements and procedures for the application of the spontaneous combustion management plan
- access, interpret, apply:
 - technical information
 - site/legislative requirements
 - records and reports
 - briefing and handover details
- plan and coordinate work
- interpret and respond to spontaneous combustion indicators and ratios
- conduct inspections related to spontaneous combustion
- interpret and record data related to spontaneous combustion
- identify workgroup training needs related to spontaneous combustion management plans
- identify and investigate incidents and potential hazards associated with spontaneous combustion
- apply spontaneous combustion control procedures or methods
- conduct mine atmosphere monitoring

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 the spontaneous combustion management plan:

- spontaneous combustion management plan requirements
- fundamental knowledge of spontaneous combustion causes and hazards
- fundamental knowledge of methods of control of spontaneous combustion
- mine gases
- legislative, site requirements and instructions
- spontaneous combustion indicators and trigger points
- fundamentals of mine design and plan relating to spontaneous combustion
- basic knowledge of coal seam characteristics, depositional factors and geological conditions on spontaneous combustion
- basic types of environmental monitoring systems

- mine and goaf ventilation systems
- sealing procedures
- hazard assessment procedures
- site inspection requirements
- site reporting procedures
- training systems
- emergency response and evacuation planning processes and techniques

Evidence Guide

<p>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.</p>	
<p>Overview of assessment</p>	
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>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:</p> <ul style="list-style-type: none"> • knowledge of the requirements, procedures and instructions for the application of the spontaneous combustion management plan • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of the application of the spontaneous combustion management plan • working with others to plan, prepare and conduct the application of the spontaneous combustion management plan • evidence of the consistent successful application of the spontaneous combustion management plan
<p>Context of and specific resources for assessment</p>	<ul style="list-style-type: none"> • 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.

	<ul style="list-style-type: none"> • Customisation of assessment and delivery environment to 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	<p>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:</p> <ul style="list-style-type: none"> • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • implementation of appropriate requirement, 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: <ul style="list-style-type: none"> • working with others to undertake and complete the application of the spontaneous combustion management plan • provision of clear and timely instruction and supervision by the individual of those involved in the conduct of the application of the spontaneous combustion management plan
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

<p>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.</p>	
<p>Relevant compliance documentation may include:</p>	<ul style="list-style-type: none"> • legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
<p>Interpret is defined as: the understanding needed by the person within their job role</p>	
<p>Fundamentals of spontaneous combustion may include:</p>	<ul style="list-style-type: none"> • coal seam characteristics such as: <ul style="list-style-type: none"> • rank • moisture content • particle size • seam gas • pyrites • depositional factors such as: <ul style="list-style-type: none"> • seam thickness • multi seams • seam dip • depth of cover • geological conditions may include: <ul style="list-style-type: none"> • faults • dykes • intrusions • strata deformities
<p>Mine gases may include seam gases such as methane, carbon dioxide and hydrogen sulphide in addition to normal atmosphere gases or other gases,, which are produced from processes such as heating, goafs or released from</p>	

strata:	
Hazards may include:	<ul style="list-style-type: none"> • irrespirable atmosphere • noxious atmosphere • flammable atmosphere • explosive mixtures
Inertisation may be defined as the displacing or reducing of oxygen to a level that will not support combustion. It may be either a natural process using seam gases or a process of introducing incombustible gases.	<ul style="list-style-type: none"> • CO make • Graham's ratio • other ratios as determined suitable
Mine atmosphere monitoring may include:	<ul style="list-style-type: none"> • continuous monitoring • portable (hand) monitoring • collection of bag samples • gas chromatography • ventilation measurements from all areas of the mine including sealed areas • waste workings monitoring
Spontaneous combustion management plan may include procedures for:	<ul style="list-style-type: none"> • mine atmosphere monitoring • reporting requirements • auditing • ventilation systems and usage • inertisation techniques • mine plan • action plans • response plans • emergency procedures • individual group responsibilities • training and education procedures
Trigger level is a generic term used to describe a level determined at the mine site at which action is initiated or a response made.	
Spontaneous combustion indicators may include:	<ul style="list-style-type: none"> • smoke • haze • sweating • smell • heat • production of carbon monoxide • hydrogen

	<ul style="list-style-type: none"> • carbon dioxide • methane • higher hydrocarbons • Or use of indicator ratios such as: • CO make • Graham's ratio • other ratios included in the site safety management system
Ventilation structures and seals may include:	<ul style="list-style-type: none"> • stoppings • overcasts • regulators • preparation seals / fire doors • bulkheads • goaf seals • final seals • pressure chambers
Defects to ventilation structures may include:	<ul style="list-style-type: none"> • deterioration of materials • quality of construction • effects of surrounding strata • physical damage • water damage
Reports may be:	<ul style="list-style-type: none"> • verbal • written reports • electronic information • other work instructions
Transport systems may include:	<ul style="list-style-type: none"> • bins • conveyors • transfer points • bunkers

Unit Sector(s)

Coal Mining (Underground)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.