



Australian Government

Department of Education, Employment and Workplace Relations

MSAPMOHS401A Assess risk

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor

On completion of this unit, the worker will be able to identify hazards and operability problems and then analyse them by hazard analysis techniques to assess risk.

Application of the Unit

Application of this unit

A team with a broad knowledge of the system and its operation will carry out the analysis. It is expected that the risk assessment processes are already defined for the enterprise and that the risk acceptance criteria have already been established. The team will be steered by engineering experts or risk assessment specialists in the industry. This competency applies to workers who, in a typical scenario, take an active role in a HAZOP or similar methodology. They are not expected to lead the HAZOP. This unit is not restricted to HAZOPs and may be applied to other methodologies requiring similar competency. The risk assessment should be consistent with AS 4360 - Risk Management.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites

This unit has **no** prerequisites.

Employability Skills Information

Employability Skills

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency	Performance Criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT ELEMENT	PERFORMANCE CRITERIA Performance Criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the Evidence Guide.
1. Identify hazards and potential operability problems.	1.1 Contribute to the compiling of a system description of all the machinery, equipment, operations, products and materials relevant to the everyday working procedures of the facility. 1.2 Contribute to the compiling of a checklist containing process parameters (primary key words) and guide words (secondary key words) relevant to the system. 1.3 Identify hazards, existing control measures and potential operability problems or breakdowns in control measures using the compiled system descriptions and the checklist.
2. Assess impact of risk and determine alternative strategies.	2.1 Screen for causes of deviations and establish consequences. 2.2 Determine alternative strategies for action in relation to each deviation within the range of competency and responsibility. 2.3 Review, clarify and/or analyse risk information to determine its relevance and reliability depending upon the task assigned, level of competency and area of responsibility.
3. Assess risk information against established risk criteria in risk management plan.	3.1 Check risk acceptance criteria for any changes over past period. 3.2 Compare risk information against risk acceptance criteria and procedures to assess acceptability of risk. 3.3 Conduct liaison with other Internal departments to assess impact on business if applicable. 3.4 Document findings according to company policies and procedures.
4. Develop a risk register.	4.1 Develop a risk assessment chart for each system studied containing deviation, cause, consequence, control measures and action. 4.2 Develop action plan for implementation of control measures, including any changes to procedures. 4.3 Establish or review the procedures by consulting relevant/different work groups. 4.4 Inform relevant work groups of any changes and

ELEMENT	PERFORMANCE CRITERIA
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	implement, within area of responsibility, changes in the procedures. 4.5 Monitor effectiveness of the control measures including revised procedures.
5. Establish and maintain procedures for identifying hazards, and assessing and controlling risk.	5.1 Identify and develop procedures for routine hazard identification, assessment and control of risks. 5.2 Address identification of all hazards at the planning, design and evaluation stages of any changes in the workplace to ensure that new hazards are not created by the proposed changes. 5.3 Develop and maintain procedures for selection and implementation of risk control measures in accordance with the hierarchy of control. 5.4 Identify inadequacies in existing risk control measures in accordance with the hierarchy of control and, within area of responsibility, promptly provide resources enabling implementation of new measures.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit. This unit requires the ability to apply a consistent risk assessment methodology which is appropriate to the workplace being assessed. One example of this is the HAZOP methodology, but other methodologies may be used.

Some understanding of quantitative risk assessment, such as HAZAN, is also required. The requirements of the relevant OHS act and regulations with regard to risk assessment should be known and followed.

Knowledge includes:

- identification of hazards and how hazard controls may break down
- an understanding of risks and how they may be reduced
- the modelling and evaluation of a wide range of failure modes
- analysis which is auditable, repeatable, verifiable and usable by other staff
- analysis systems appropriate to the system operating in the given domain and appropriate for the particular life cycle phase at which it is to be applied
- determining valid results from data of the quality and quantity actually available
- use of standard pro-formas to support the technique
- a rational technical base which may include reference to national or international standards, defence standards or published reference books.

Language, literacy and numeracy requirements

This unit requires the ability to interpret process plant descriptions and drawings.

Writing is required to the level of making the required reports for the process.

Numeracy is required to interpret hazard and probability data and determine risk profiles.

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Overview of assessment

A holistic approach should be taken to the assessment.

Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.

Assessment will occur by analysing an appropriate industrial site and will be undertaken in a work-like environment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- know and understand the workplace systems and the importance of critical procedures
- apply a working knowledge of all relevant workplace procedures.

Consistent performance should be demonstrated. For example, look to see that the techniques used:

- enable identification of hazards and how hazard controls may break down
- enhance the understanding of risks and how it may be reduced
- permit the modelling and evaluation of a wide range of failure modes
- enable the analysis to be carried out in a manner that is auditable, repeatable and verifiable
- are usable by other staff
- are appropriate to the system operating in the given domain
- give valid results from data of the quality and quantity actually available
- are appropriate for the particular lifecycle phase at which it is to be applied
- provide standard pro-formas to support the technique
- have a rational technical basis which may include reference to national or international standards, defence standards or published reference books.

These aspects may be best assessed using a range of scenarios/case studies and 'what ifs' as the stimulus with a walk through forming part of the response. These assessment activities should cover a range of problems, including new, unusual and extreme situations that may have been generated from the past incident history of the plant/equipment, incidents on similar plants around the world, past hazard analysis activities and similar sources.

Assessment method and context

Competence in this unit may be assessed:

- on an appropriate, industrial plant/site
- in a situation allowing the generation of evidence of the ability to respond to problems
- by using a suitable simulation and/or a range of case studies/scenarios
- through a combination of these techniques.

In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions.

Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

Specific resources for assessment

This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent they form part of the assessment method.

Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.

Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

Range Statement

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. Add any 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. Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.

Context

This unit will be completed as a specialist unit (eg by plant technicians) requiring technical knowledge.

The aim of this competency unit is to apply a methodical examination of the system and its elements to identify hazards and the states or conditions where there may be loss of control of the hazard and the resultant consequences. The results of the hazard analysis should be expressed clearly and concisely, and include where possible tables and diagrams. Team members would contribute their understanding of the process and particularly the operational aspects, and then carry out whatever tasks are assigned to them by the analysis team.

While this competency aims to enable a person to identify hazards and assess risk through a systematic approach, more than 80% of recommendations can be operability problems and are not, of themselves, hazards. Although hazard identification should be the main focus, operability problems should be identified to the extent that they have the potential to lead to a breakdown in hazard controls resulting in a health, safety or environmental violation or have a negative impact on profitability.

The degree of depth of a checklist should be dependent on the knowledge of the system at the time the study is carried out. This technique can therefore be applied at any stage of the project/process lifecycle.

Screening for deviations includes accessing internal and external data that may provide information about previous incidents or warnings of incidents. Sources of such information may include:

- internal hazard and incidents reports, maintenance records, audit reports
- reports from similar plants, factories, industry bodies, regulators, journals etc of actual incidents or reports that have relevance to the situation being analysed.

Examples of risk assessment tools may range from relatively simple to more complex HAZOP analyses and other methodologies requiring similar competency.

Procedures

All operations are performed in accordance with procedures.

Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Hazards

Typical hazards include:

- handling chemicals and hazardous materials
- chemical and or hazardous materials spillage
- gases and liquids under pressure
- moving machinery
- materials handling
- working at heights, in restricted or confined spaces, or environments subjected to heat, noise, dusts or vapours
- fire and explosion.

Problems

Typical process and product problems may include:

- incidents with a potential for injury
- fires, explosions
- chemical spills
- bomb scares.

Process Parameters

Specific process parameters (primary key words) relevant to the system may include:

- flow
- temperature
- pressure
- relief
- instrumentation
- sampling
- addition
- safety
- reaction
- reduce (grind, crush)
- absorb
- isolate
- vent
- start-up
- composition
- phase
- level
- corrosion
- erosion
- services
- utilities
- maintenance/maintain
- inserting
- purging
- contamination
- separate (settle, filter, centrifuge)
- mix
- drain
- shutdown.
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Unit Sector(s)

Not applicable.