



Australian Government

MSS027011 Select, commission and maintain environmental monitoring instruments

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSS027011A Select, commission and maintain environmental monitoring instruments

Application

This unit of competency covers the ability to provide fully functioning environmental monitoring instruments to implement a workplace's environmental management plan and monitoring programs. Personnel are required to identify the need for specific kinds of instruments, determine the suitability of available instruments, procure and commission instruments, check their serviceability and calibration, perform routine maintenance, train staff to operate instruments correctly and maintain relevant records.

This unit of competency is applicable to environmental site coordinators, environmental managers and senior environmental officers working in all industry sectors. Note that the term 'manager' is used to refer to management of a function, project and /or program and does not necessarily imply line management.

While no specific licensing or certification requirements apply to this unit at the time of publication, environmental monitoring and management activities are governed by relevant legislation, regulations and/or external accreditation requirements. Local requirements should be checked.

Pre-requisite Unit

Nil

Competency Field

Project management

Unit Sector

Environmental

Elements and Performance Criteria

Elements describe the essential outcomes.

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

1 Procure suitable instruments

1.1 Determine the types and specifications of instruments required by the workplace to implement the environmental monitoring program associated with

- site/project.
- 1.2 Research information about the features of instruments that may be suitable and their suppliers.
 - 1.3 Liaise with suppliers and/or conduct tests to compare the stated performance of available instruments against workplace specifications.
 - 1.4 Seek advice/assistance with evaluating instruments if beyond own technical competence.
 - 1.5 Select the most suitable instruments and arrange for their procurement.
- 2 **Commission new instruments**
- 2.1 Use manufacturer documentation to develop a thorough understanding of instrument operation, functional test procedures, routine instrument checks and maintenance requirements.
 - 2.2 Ensure that the instrument has been calibrated appropriately for intended use.
 - 2.3 Conduct component checks and test measurements to confirm instrument performance for intended use.
 - 2.4 Enter all required information about the new instrument in the workplace information management system.
 - 2.5 Develop and document clear procedures for operating, caring for and maintaining the instrument.
- 3 **Train instrument operators**
- 3.1 Identify the knowledge and skills required to operate the instrument safely and reliably in the workplace and to interpret the environmental parameters measured.
 - 3.2 Develop an appropriate training program for instrument operators using established adult learning principles.
 - 3.3 Ensure that each operator can use the instrument competently for the required measurement applications.
 - 3.4 Record all training outcomes in accordance with regulator's requirements and workplace procedures.
 - 3.5 Audit operator's use of instruments at regular intervals

to ensure their ongoing competence.

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| 4 | Maintain instruments fit for purpose | 4.1 | Conduct regular instrument checks and minor maintenance in accordance with workplace procedures. |
| | | 4.2 | Check instrument calibration using specified standards and/or procedures and record all relevant information. |
| | | 4.3 | Troubleshoot basic faults and determine whether local repair/maintenance is technically possible and economic. |
| | | 4.4 | Arrange for repair or servicing from an accredited agent or other appropriate personnel in accordance with workplace procedures. |
| | | 4.5 | Check instrument performance after repair/service before approving it for use. |
| | | 4.6 | Ensure all required instrument records are complete, accurate, legible and secure. |

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

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

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

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| Legislation, regulations, standards, codes, workplace procedures and requirements include the latest version of one or more of: | <ul style="list-style-type: none"> • federal legislation, such as the Environment Protection and Biodiversity Conservation Act, Australian Heritage Council Act, Native Title Act and National Environmental Protection Measures • state/territory government legislation and local government by-laws, policies, regulations and plans dealing with land use, acquisition, planning and protection; environmental protection; cultural/heritage protection; vegetation management; nature conservation and wildlife/plant |
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protection; water, water management; soil conservation; pollution and contaminated sites; fisheries, forestry and mining operations

- legislation, standards and codes of practice for work health and safety (WHS)
- Australian and international standards covering environmental management (e.g. AS/NZS ISO 14000 Basic Set:2007 Environmental Management Basic Set); sampling, testing and/or monitoring of air, water, soils, noise and stationary source emissions
- industry methods and guidelines
- registration/licensing and/or accreditation requirements
- site/project-specific information, such as applicable legislative requirements and approval requirements; work schedules; industrial processes; environmental management plans; monitoring/inspection procedures and management actions to prevent/control environmental impacts or risks; methods for sampling and in-field testing; procedures for recording, processing, presenting and reporting data; job hazard analyses; safe work procedures and work method statements
- workplace documents, such as standard operating procedures (SOPs); equipment manuals and warranties; supplier catalogue and handbooks; safety data sheets (SDS); waste minimisation, containment, processing and safe disposal procedures.

Environmental monitoring instruments include one or more of:

- water quality measuring instruments, such as:
 - specific meters or multi-probes for measuring water parameters, such as dissolved oxygen, electrical conductivity, pH, turbidity, nitrates, phosphates and temperature
 - field test kits to determine water parameters, such as dissolved gases, chemical anions and cations, heavy metals, E. coli and biological oxygen demand (BOD)
 - portable colorimeters and field microscopes
- air monitoring instruments, such as:
 - air sampling pumps, flow meters and sampling trains
 - continuous gas monitors
 - tapered element oscillating microbalance (TEOM)
 - portable gas monitors and analysers
 - weather stations
 - odour monitoring instruments, such as dynamic olfactometers

- noise monitoring instruments, such as:
 - type 1 and type 2 portable sound level meters
 - integrating and non-integrating sound level meters
 - noise dose meters
 - statistical analysers
 - sound monitoring stations
 - data loggers, recorders, telemetry equipment and global positioning system (GPS)
- radiation instruments and survey meters, such as:
 - Geiger-Muller (beta and gamma)
 - scintillation (alpha, beta and gamma).

Environmental management plans include one or more of:

- an aim, vision and workplace policy statement
- roles and responsibilities
- potential environmental issues
- actions to avoid, remedy and mitigate the issues
- procedures and forms to minimise and manage specific environmental impacts and risks
- quality management plans
- communication and training requirements
- monitoring schedules, sampling/test procedures, and analysis and notification requirements (e.g. exceedance values and quality triggers)
- auditing and reporting requirements.

Environmental monitoring programs include surveys, sampling and measurements for one or more of:

- establishing baseline or quality parameters
- determining trends in parameters
- investigating causes for changes in parameters
- identifying and quantifying contamination at specific locations
- identifying sources of possible/actual contamination
- determining the effectiveness of environmental management plans, actions and control measures
- determining the effectiveness of remediation activities.

Specifications and features of instruments include one or more of:

- types of sampling and/or measurements to be performed
- parameters or analytes of interest
- detector type, sensitivity and detection limits
- response time
- linearity

- estimated uncertainty for each range
 - single or multi-probe functions
 - ease of interfacing with data loggers and computers
 - power and battery requirements
 - size, weight, robustness and portability
 - instrument operating conditions.
- Regular instrument checks and minor maintenance include one or more of:**
- cleaning
 - battery checks and replacement
 - zero, span and range checks
 - use of one or more references to check calibration/response in each range
 - adjustment of calibration if authorised to do so
 - simple fault-finding using instrument manual, error codes and recommended remedial actions.
- Required instrument records include details of:**
- purchase records, warranties and service agreements for instruments
 - instrument calibration status
 - instrument inspection (faults, servicing and repairs)
 - instrument use (operator, time/date, location)
 - instrument maintenance schedule and records.
- WHS and environmental management requirements include:**
- compliance with relevant federal/state/territory WHS legislation at all times
 - assuming that samples are potentially hazardous and applying standard precautions
 - accessing and applying current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and state/territory Departments of Health, where relevant.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS027011A Select, commission and maintain environmental monitoring instruments

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998>

Assessment Requirements for MSS027011 Select, commission and maintain environmental monitoring instruments

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Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- selecting, commissioning and maintaining at least one (1) environmental monitoring instrument
- training at least one (1) operator to use a monitoring instrument safely and reliably
- determining the required specifications for a monitoring instrument after consideration of its intended use
- locating, interpreting and comparing technical information for available instrument options
- liaising with suppliers to clarify instrument suitability and availability
- selecting suitable instruments on the basis of factors, such as intended use (fixed/portable, laboratory/field); suitable range, accuracy, sensitivity and response time; robustness, serviceability and advantages/disadvantages/limitations
- seeking advice/assistance with evaluating and procuring instruments if beyond own technical competence/responsibility
- arranging for instrument procurement in accordance with workplace procedures
- conducting instrument pre-use and calibration checks, troubleshooting common faults and conducting basic repairs
- safely operating environmental monitoring instruments to obtain reliable data
- interpreting manuals and writing operating instructions for monitoring instruments
- developing and delivering an appropriate training program for instrument operators using established adult learning principles
- maintaining accurate and complete records of instrument calibration, use, maintenance and operator training
- working safely and monitoring the safety of others.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- environmental monitoring terms and concepts, and measurement parameters used in job role
- workplace procedures/methods for conducting surveys, monitoring, sampling and in-situ measurements used in job role

- instrumentation terms and concepts, such as operating voltage, accuracy, response time, sensitivity, detection limit, linearity and instrument uncertainty
- characteristics, capabilities, limitations, function of key components and operating principles for monitoring instruments used in the workplace
- role and importance of regular calibration and pre-use checks and maintenance
- common instrument faults, troubleshooting, recommended remedial actions and repairs
- common instrument operator errors
- adult learning principles, such as:
 - explaining aims and objectives of training program and linking learning with work tasks
 - sequencing learning activities, presenting new information in manageable chunks and reinforcing important points
 - providing opportunities to practise new skills and solve common problems
 - using questions to check understanding and providing regular, constructive feedback
- relevant hazards, health, safety and workplace emergency response procedures.

Assessment Conditions

- Judgement of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event.
- This unit of competency is to be assessed in the workplace, or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- 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.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process such as workbooks, written assessments or interviews (provided a record is kept in each case).
- Holistic assessment methods include:
 - review of records of instrument selection, commissioning and maintenance generated by the candidate
 - review of instrument training materials and records generated by candidate
 - feedback from manager that sufficient monitoring instruments are fit for purpose and available when required
 - oral and/or written questions/calculations to assess the candidate's understanding of environmental monitoring parameters; and the operating principles, set-up, calibration and basic maintenance of environmental monitoring instruments used in job role
 - observation of the candidate checking, using and maintaining monitoring instruments and/or instructing others in their use.

- Access is required to all instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit including, but not limited to:
 - environmental management plans
 - environmental monitoring instruments, specifications and manuals
 - workplace procedures for procurement of equipment and materials
 - background information for environmental sites/projects/programs
 - workplace information management systems, project management procedures and tools.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
 - relevant VET or other qualification/Statement of Attainment AND/OR
 - relevant workplace experience
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment OR
 - having consulted with an organisation providing environmental monitoring, management or technology related services about performing the competency being assessed within the last twelve months.

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