



Australian Government

MSL943001 Work safely with instruments that emit ionising radiation

Release: 1

MSL943001 Work safely with instruments that emit ionising radiation

Modification History

Release 1. Supersedes and is equivalent to MSL943001A Work safely with instruments that emit ionising radiation

Application

This unit of competency covers the ability to safely store, transport and operate instruments that emit ionising radiation following established safe work practices and in accordance with laboratory procedures and licensing requirements. Examples include, use of process control instrumentation, such as fluid level gauges using radioactive sources, on-site non-destructive testing of weldments using X-ray and gamma ray sources and density testing of asphaltic concrete.

This unit of competency is applicable to laboratory or field assistants working in construction materials testing or similar industry sectors. They work under supervision or direction of paraprofessionals.

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

Pre-requisite Unit

Nil

Competency Field

Work health and safety

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

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

1	Store instruments safely and securely	1.1	Identify state or territory requirements for storage facilities and associated document processes
		1.2	Store instruments in accordance with state or territory requirements and documented procedures

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| | | 1.3 | Secure instruments to prevent unauthorised access |
| | | 1.4 | Record instruments' movements and usage in accordance with documented procedures |
| 2 | Transport instruments safely and securely | 2.1 | Select vehicle suitable for the purpose |
| | | 2.2 | Attach regulation signage in accordance with state or territory requirements to indicate that radioactive sources are being carried |
| | | 2.3 | Ensure that instruments are properly located and fixed securely in place |
| | | 2.4 | Ensure security of instruments when the vehicle is unattended |
| 3 | Use instruments safely and maintain security | 3.1 | Follow safe working practices to minimise own exposure to radiation |
| | | 3.2 | Use radiation dosimeter to monitor own exposure to radiation |
| | | 3.3 | Follow safe work practices to minimise exposure of others to radiation |
| | | 3.4 | Follow safe work practices to protect the instrument from damage |
| | | 3.5 | Maintain instrument security |
| 4 | Monitor radiation levels | 4.1 | Check operation and calibration status of radiation survey meter |
| | | 4.2 | Perform radiation survey following documented procedure |
| | | 4.3 | Report atypical conditions and/or problems to appropriate personnel |
| 5 | Maintain records | 5.1 | Record observations, data and results in accordance with workplace procedures |

		5.2	Maintain confidentiality of workplace information
6	Perform emergency procedures	6.1	Identify potential emergency situations
		6.2	Respond to emergencies in accordance with documented procedures
		6.3	Report emergency situations to appropriate personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills 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.

Standards, codes, procedures and/or workplace requirements

Standards, codes, procedures and/or workplace requirements include the latest version of one of more of:

- Australian and international standards covering the competence of testing and calibration laboratories; and safety, such as AS 2243.4-1998 *Safety in laboratories - Ionising radiations*
- national standards and codes of practice for work health and safety (WHS), and national environment protection measures
- registration/licensing and/or National Association of Testing Authorities (NATA) accreditation requirements, and radiation licensing requirements
- Australian and international standards, codes and guidelines covering measurement management, accuracy of measurement methods and results, expression of uncertainty, principles of good laboratory practice (GLP), Australian Dangerous Goods Code, Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Codes of Practice, and National Health and Medical Research Council (NHMRC) Guidelines
- workplace documents, such as standard operating procedures (SOPs); equipment manuals and warranties; calibration and maintenance schedules; material safety data sheets (MSDS) and

safety procedures; material, production and product specifications; production and laboratory schedules; and recording and reporting procedures

Instruments that emit ionising radiation

Instruments that emit ionising radiation include, but are not limited to, one or more of:

- soil moisture and density gauges
- borehole logging probes
- fluid density and level detectors
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Atypical conditions and problems

Atypical conditions and problems include, but are not limited to, one or more of:

- incidents during transportation
- on-site accidents and fire
- jamming of the source rod in the exposed position
- theft of equipment containing radioactive sources
- keeping other personnel clear of instrument
- instrument breakdown

WHS and environmental management requirements

WHS and environmental management requirements include:

- complying with WHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of samples
- accessing and applying current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health, where relevant

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSL943001A Work safely with instruments that emit ionising radiation

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa>

Assessment Requirements for MSL943001 Work safely with instruments that emit ionising radiation

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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:
- safely handling, storing and transporting at least one (1) instrument that emits ionising radiation in accordance with established safe work practices, laboratory procedures and licensing requirements
- safely checking the operation and calibration status of at least one (1) instrument that emits ionising radiation and then operating it to conduct a radiation survey
- maintaining instrument security and keeping other personnel clear of radiation sources
- using a radiation dosimeter to accurately monitor personal exposure to radiation
- recording and reporting instrument condition and use, observations, data and survey results in accordance with workplace procedures
- recognising and reporting atypical conditions and problems to appropriate personnel promptly

following procedures for working safely, minimising environmental impacts and responding to emergency incidents and accidents.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- radiation concepts and principles, including nature of radiation; different types of radiation, their characteristics, sources and shielding methods; radiation intensity; physiological effects of ionising radiation; external radiation protection and practical methods of minimising radiation exposure
- methods of measuring and detecting ionising radiation
- national codes of practice and state or territory licensing requirements for use of instruments that emit ionising radiation
- function of key components, pre-use and calibration status checks and safe operating procedures for the instrument used
- work health and safety (WHS) and emergency procedures for safe handling of radiation sources and working with the instrument used
- critical elements of radiation safety, including:
 - time (reduce the exposure time)
 - distance (maintain greatest distance possible at all times)

- shielding (interpose as much radiation shielding as possible between yourself and the radiation source).

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).
- This unit of competency may be assessed with:
 - MSL924001 Process and interpret data
 - MSL943002 Participate in laboratory or field workplace safety
 - MSL974010 Perform mechanical tests
- Holistic assessment methods include:
 - review of the quality of survey data/results achieved by the candidate over time
 - review of records and workplace documentation completed by the candidate (for accuracy and completeness)
 - observation of candidate safely handling, storing, transporting and using the instrument
 - feedback from peers and supervisors about the candidate's consistent ability to safely use instruments that emit ionising radiation
 - review of the candidate's response to suitable emergency simulations, case studies or scenarios
 - oral or written questioning to check required knowledge of radiation concepts and principles and the safe use of instruments that emit ionising radiation.
- Access is required to all instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
 - instruments that emit ionising radiation and radiation monitors/dosimeters and associated equipment, such as battery chargers
 - documentation, including user manuals, workplace safety procedures and test/survey methods
 - radiation warning signs and barriers
 - storage areas for nuclear sources

- motor vehicles.
- 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 competence 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 a laboratory about performing the competency being assessed within the last twelve months.

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