



Australian Government

PSPRAD009 Select, commission and maintain radiation measuring instruments

Release: 1

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Modification History

Release	Comments
1	This unit was released in PSP Public Sector Training Package release 1.0 and meets the Standards for Training Packages. This unit supersedes and is equivalent to PSPRAD709A Select, commission and maintain radiation measuring instruments. • Unit code updated • Content and formatting updated to comply with the new standards • All PC transitioned from passive to active voice

Application

This unit describes the skills required to provide sufficient, fully functioning radiation measuring instruments to implement an organisation's radiation management plan and monitoring programs. This involves identifying the need for specific kinds of instruments, determining the suitability of available instruments, procuring and commissioning instruments, checking their serviceability and calibration, performing routine maintenance, training staff to operate instruments correctly, and maintaining relevant records.

This unit applies to those working in a radiation safety coordination role. They may work as, or assist, a radiation safety officer working:

- at a mine or plant that processes radioactive ore and minerals
- with instruments that emit ionising radiation at geotechnical, construction, mining and manufacturing sites, or analytical and research facilities
- in a laboratory or licensed facility that handles radioactive materials or has radiation-emitting apparatus
- in a nuclear facility.

The skills and knowledge described in this unit must be applied within the legislative, regulatory and policy environment in which they are carried out. Organisational policies and procedures must be consulted and adhered to.

Those undertaking this unit would work under supervision, or be authorised by the responsible person, to perform routine tasks in familiar contexts.

No licensing, legislative or certification requirements apply to unit at the time of publication.

Competency Field

Radiation Safety

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section.
1. Procure suitable instruments	1.1 Determine types of ionising radiation measuring instruments required by the organisation to monitor hazards associated with current or future radiation-related work activities. 1.2 Research information about specifications and 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 the organisation's specifications. 1.4 Seek advice and 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's 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 its intended use. 2.3 Conduct component checks and test measurements to confirm instrument performance for intended use. 2.4 Enter required information about the new instrument into the organisation's 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 skills and knowledge required to operate the instrument safely and reliably in the workplace and interpret the radiation quantities measured. 3.2 Develop 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 training outcomes in accordance with regulator

	requirements and organisational procedures. 3.5 Audit operators' use of instruments at regular intervals to ensure their ongoing competence.
4. Maintain instruments fit for purpose	4.1 Conduct regular instrument checks and minor maintenance in accordance with organisation's radiation management plan. 4.2 Check instrument calibration using specified standards and procedures, and record relevant information. 4.3 Troubleshoot basic faults and determine whether local repair or maintenance is technically possible and economical. 4.4 Arrange for repair or servicing from an accredited agent or other appropriate personnel. 4.5 Check instrument's performance after repair or service before approving it for use. 4.6 Maintain required records that are complete, accurate, legible and secure.

Foundation Skills

Foundation skills are embedded within the elements and performance criteria of this unit.

Unit Mapping Information

This unit supersedes and is equivalent to PSPRAD709A Select, commission and maintain radiation measuring instruments.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623>

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Assessment Requirements for PSPRAD009 Select, commission and maintain radiation measuring instruments

Modification History

Release	Comments
1	These Assessment Requirements were released in PSP Public Sector Training Package release 1.0 and meet the Standards for Training Packages. Assessment Requirements created drawing upon specified assessment information from superseded unit

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least one occasion.

- Recognising types of measuring instruments and the advantages and limitations of their use, including at least one of:
 - air proportional
 - gas proportional
 - gas ionisation
 - Geiger-Muller (GM)
 - compensated GM
 - scintillation
 - neutron monitors
 - solid state
 - personal dosimeters (badge and electronic)
- locating, interpreting and comparing information about measuring instruments used by organisation
- selecting suitable instruments by analysing factors, including at least one of:
 - intended use (fixed/portable, laboratory/field)
 - range of radiation types
 - intensities and energies
 - accuracy
 - sensitivity
 - response time
 - robustness

- serviceability
- limitations
- conducting pre-use and calibration checks, troubleshooting common faults, conducting basic repairs of and maintaining radiation measuring instruments
- safely operating radiation measuring instruments to obtain reliable data
- processing and analysing radiation measurement data and applying established corrections
- interpreting manuals and writing operating instructions for radiation measuring instruments

Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- ionising radiation, radioactivity, radioactive material, activity, dose, contamination, contamination controls, shielding, half-life, and radionuclide
- operating voltage, accuracy, response time, sensitivity, detection limit, linearity, source-detector geometry and distance corrections, compensation
- types, energies and properties of ionising radiation, sources and shielding methods
- radiation quantities, including exposure, dose, tissue weighting factor, effective dose, dose rate, radiation weighting factor, dose equivalent, and dose limits
- international system (SI) of units for radiation quantities, multiples and sub-multiples
- techniques for conducting measurements and monitoring surveys
- characteristics, capabilities, limitations, function of key components and operating principles of radiation measuring instruments
- role and importance of regular calibration and pre-use checks and maintenance
- common instrument faults, troubleshooting, and recommended remedial actions and repairs
- common instrument operator errors
- techniques for assessing radiation hazards likely to be encountered in job role
- guidelines and safety procedures for working with radiation sources, based on principles of:
 - reducing exposure time
 - maintaining greatest distance
 - using as much shielding as possible
- health, safety and workplace emergency response procedures relevant to job role

Assessment Conditions

This unit contains no specific industry-mandated assessment conditions. Guidance on suggested and recommended conditions and methods can be found in the Implementation Guide.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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