



Australian Government

PSPRAD003 Perform basic radiation measurements

Release: 1

PSPRAD003 Perform basic radiation measurements

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 PSPRAD301 Perform basic radiation measurements. • 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 directly measure radiation using instruments calibrated by others. Basic radiation measurements will be straightforward involving one or two steps, take a short time and produce results that can be easily compared with specified limits. Measurements that are part of this unit would be performed under the authorisation and supervision, or delegated supervision, of a responsible person.

The activities may take place:

- 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.

This unit applies to those undertaking radiation-related work activities, including:

- extracting, milling, processing and packing radioactive ores
- operating, installing, servicing and calibrating fixed radiation gauges, bore hole logging or industrial radiography equipment, and moisture/density gauges
- decontaminating and servicing equipment that has been in contact with radioactive material
- XRF and XRD analysis
- collecting, preparing and testing samples containing radioactive materials.

- using radionuclides in a laboratory

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. Prepare for radiation measurements	1.1 Confirm purpose, priority and nature of required ionising radiation measurements and any site access arrangements with supervisor. 1.2 Use organisation's radiation management plan to obtain information about the hazards associated with performing the measurements, measuring instruments and safe working rules to be used and refer to radiation protection safety standards, codes and guidelines as necessary. 1.3 Perform and record pre-use checks of measuring instruments and tag or replace faulty items as necessary. 1.4 Check that personal protective equipment (PPE) and other task-related equipment is fit for purpose. 1.5 Stow measuring instruments and task-related equipment to ensure safe transport to the site and within the boundaries of the site.
2. Obtain reliable radiation data	2.1 Operate measuring instruments in accordance with radiation management plan and manufacturer specifications and applying safe working rules to minimise personal radiation exposure. 2.2 Perform measurements at specified locations and times. 2.3 Seek advice if required measurements cannot be made or if specified procedures require modification. 2.4 Conduct regular instrument checks and minor maintenance if required. 2.5 Take sufficient measurements to ensure reliable data.

	2.6 Recognise obvious errors and atypical data, and take appropriate corrective actions. 2.7 Record data with the required precision, accuracy and units. 2.8 Record environmental/site conditions or observations that may impact on data quality.
3. Finalise radiation measurements	3.1 Check for contamination and, if necessary, perform personal decontamination. 3.2 Re-stow measuring instruments and task-related equipment to ensure safe transport from the site and within the boundaries of the site. 3.3 Record use of PPE and measuring instruments according to radiation management plan. 3.4 Check condition of measuring instruments, PPE and task-related equipment before storing them.
4. Report results	4.1 Record results. 4.2 Compare results with relevant radiation limits and identify/record significant differences or atypical results. 4.3 Maintain required records that are complete, accurate, legible and secure.
5. Respond to potential or actual radiation incidents	5.1 Recognise unusual situations, unexpected hazards, and potential or actual emergency radiation incidents. 5.2 Inform relevant personnel about the situation, hazard or incident and seek their advice. 5.3 Initiate appropriate workplace emergency first response.

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 PSPRAD301 Perform basic radiation measurements.

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 PSPRAD003 Perform basic radiation measurements

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.

- applying manufacturer's recommended procedures for using and caring for radiation measuring instruments
- applying safe working rules and those parts of the organisation's radiation management plan relevant to job role
- conducting pre-use checks and simple maintenance for radiation measuring instruments and task-related equipment used in job role
- reading scales and displays accurately for a wide range of values
- regularly assessing and reassessing hazards and taking appropriate protective measures
- seeking advice and further directions when faced with unforeseen circumstances or situations that may require decisions or response actions beyond technical competence
- using and caring for PPE used in job role

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, radionuclide, and safe distance
- types and properties of ionising radiation, sources and shielding methods
- radiation measuring instruments used in job role, 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)
- definitions of radiation quantities
- international system (SI) of units for radiation quantities, multiples and sub-multiples, and significant figures
- function of key components and operating principles of radiation measuring instruments used in job role
- effects on results of modifying instrument settings and variables
- basic instrument troubleshooting and maintenance procedures
- guidelines and safety procedures for working with radiation sources, based on principles:
 - reducing exposure time
 - maintaining greatest distance
 - using as much shielding as possible
- techniques for assessing radiation hazards likely to be encountered in job role
- 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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