Australian Government

MEM13013 Work safely with ionizing radiation

Release: 1

MEM13013 Work safely with ionizing radiation

Modification History

Release 1. Supersedes and is equivalent to MEM13013B Work safely with ionizing radiation

Application

This unit of competency defines the skills and knowledge required to work safely with ionizing radiation when performing radiographic testing in a range of open or closed industrial applications on fabrications, structures and components across a wide range of industries.

The work can relate to scheduled and unscheduled maintenance activities, using general tools, specific radiographic testing equipment as specified in maintenance documentation, testing procedures or operator instructions.

All testing must be completed with particular attention to personal and work health and safety (WHS) regulations. Certification against Australian Standards can be achieved where assessment in this unit of competency is carried out in conjunction with an examining authority as described in ISO 9712 Non-destructive testing – Qualification and certification of non-destructive testing (NDT) personnel.

Materials and chemicals which are subject to codes and regulations – for example, chemicals, explosives, solvents, dangerous materials, acids, or noxious waste products – must be subject to safe work habits and must be stored and used in accordance with safe work practices.

This unit is a prerequisite to undertaking any other radiographic units of competency.

Where interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measurement is required unit MEM12023 Perform engineering measurements should also be selected.

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

Band: **A**

Unit Weight: **4**

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Work health and safety

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, job sheets or work instructions
2	**Identify the hazards and effects of ionizing radiation in the workplace**	2.1	Identify the source of ionizing radiation in accordance with relevant organisational policy and procedures
		2.2	Outline attenuation factors of ionizing radiation and the biological effects on living tissue
		2.3	Identify the biological effects of radiation
3	**Apply radiation safety procedures/plans**	3.1	Employ appropriate ionizing radiation protective measures in accordance with relevant organisational policy and procedures
		3.2	State and adhere to exposure limits for personnel as laid down by the radiation authorities in Australia
		3.3	Determine minimum exposure rates/distances from calculations and charts
		3.4	Operate ionizing radiation sources in accordance with legislation, standards and/or organisational policy, procedures or guidelines
4	**Select and use radiation**	4.1	Select the tools and equipment necessary to monitor radiation and use, as required

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
	monitoring equipment	4.2 Select and apply techniques and system verification checks necessary to monitor radiation
		4.3 Document safety breaches and/or report in accordance with organisational policy and procedures
5	**Respond to emergency situations**	5.1 Demonstrate procedures for dealing with both X-ray and gamma ray emergency situations

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

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.

Radiation safe work practices and controls include the following:	• ensuring security of radiation sources during storage, transport and use • using signs, barriers, shielding to minimise radiation exposure of public • reducing personal exposure time • maintaining greatest feasible distance between radiation source and equipment operator • using maximum feasible shielding between radiation source and equipment operator • using a dosimeter to monitor personal radiation exposure • maintaining statutory records of the use of radiation sources and/or instruments that emit ionising radiation
Standards and codes include the following:	• the latest version of all relevant Australian and international standards and codes applicable to radiographic testing

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- AS 2177 Non-destructive testing—Radiography of welded butt joints in metal
- AS 3507.1 Non-destructive testing - Guide to radiography for ferrous castings
- ISO 9712 Non-destructive testing—Qualification and certification of NDT personnel
- codes of practice from Australian and overseas engineering and technical associations and societies

WHS, regulatory requirements and workplace procedures include:

- WHS Acts and regulations
- industry codes of practice
- risk assessments
- safe work practices
- workplace documents, such as:
  - SOPs
  - quality procedures
  - equipment manuals
  - calibration and maintenance schedules
  - safety data sheets (SDS)
  - safety procedures
  - work schedules
  - workplace recording and reporting procedures
  - waste minimisation
  - containment, processing and safe disposal procedures
- codes, regulations and safe work practices covering the use, handling, storage and transport of:
  - radiation sources
  - instruments that emit ionising radiation
  - dangerous materials such as chemicals, solvents, acids, or noxious waste products

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM13013B Work safely with ionizing radiation

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2