



Australian Government

Department of Education, Employment and Workplace Relations

PSPRAD705A Handle and transport radioactive material

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Modification History

PSPRAD705A Release 2: Layout adjusted. No changes to content.
PSPRAD705A Release 1: Primary release.

Unit Descriptor

This unit covers the ability to safely pick up and deliver an item containing radioactive material. This involves checking the item and paperwork before transport; loading, segregating and unloading; safely and securely transporting; and handing the material over to the user or consignee.

These tasks may be performed with the authorisation of the competent authority in the Australian states or territories in which the transport occurs and in accordance with relevant radiation protection and safety codes, regulations and guidelines.

Application of the Unit

This unit of competency applies to personnel who handle and transport materials, articles, instruments and/or containers that emit ionising radiation within Australia by road, rail, waterways, sea or air.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

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 statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for pick-up of items	1.1. Ensure compliance with licence, permit and vehicle requirements that apply to carrier of consigned items. 1.2. Confirm pick-up arrangements and specific requirements for loading, segregation, stowage, carriage, handling and unloading of the items. 1.3. Check that vehicle and communication devices are in good working order. 1.4. Ensure that required emergency response information is in vehicle cabin.
2. Check items prior to transport	2.1. Check that each item is intact. 2.2. Quarantine any item not safe for transport or with inconsistent paperwork, and promptly advise relevant personnel. 2.3. Check that size, weight, contents, packaging and label information for each item matches accompanying consignor's declaration. 2.4. Check that carrier copies of required transport documents are present, accurate and complete. 2.5. Obtain confirmation that non-fixed external contamination of items does not exceed specified limit. 2.6. Obtain confirmation that maximum radiation level from any surface of items does not exceed specified limit.
3. Safely stow and transport items	3.1. Apply organisation's radiation protection and safety procedures and manual safe-handling procedures when handling items. 3.2. Ensure that each item is securely stowed and segregated in accordance with consignor's instructions, and relevant codes and regulations. 3.3. Record receipt of items in accordance with organisation's procedures. 3.4. Ensure that required dangerous goods signs/placards are attached to vehicle in correct positions. 3.5. Deliver items using agreed routes and schedules and in accordance with organisation's procedures. 3.6. Ensure security of items when vehicle is unattended. 3.7. Arrange for safe, secure storage of items in accordance with the relevant code during extended stops or breaks in transit, during trans-shipment and if delivery cannot be completed.

4. **Complete delivery of items**
 - 4.1. Check that each item is intact and matches consignor's declaration before handover to user or consignee.
 - 4.2. Quarantine any item that has visible damage or inconsistent paperwork and promptly advise relevant personnel.
 - 4.3. Advise user or consignee of any specified requirements for the ***safe and secure interim storage*** of items.
 - 4.4. Complete and file relevant transport documents.
5. **Respond to potential or actual emergency incidents**
 - 5.1. Recognise unusual situations, unexpected hazards, and potential or actual ***emergency incidents***.
 - 5.2. Inform relevant personnel about the situation, hazard or incident and seek their advice.
 - 5.3. Initiate appropriate workplace emergency first response in accordance with instructions, radiation management plans and organisation's ***response procedures***.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- applying transport documents relevant to job role
- recognising radiation labels, placards and safety signs relevant to job role
- completing carrier's documentation accurately with close attention to detail
- seeking advice or further directions when faced with unexpected situations that may require decisions or actions beyond own technical competence
- using communication equipment, such as radio and telephone
- using and caring for radiation monitoring equipment, if required in job role

Required knowledge

- guidelines for consignors, carriers and consignees defined in local regulations and relevant codes (e.g. RPS No.2 and RPS No.2.1)
- meaning of words such as radioactivity, radioactive material, ionising radiation, contamination, contamination controls, shielding, transport index, and safe distance
- types and properties of ionising radiation (e.g. alpha, beta, gamma)
- relevant dose limits
- information on radiation labels, placards, emergency information sheets and safety signs and in transport documents relevant to job role
- internal and external exposure pathways and protective measures
- radiation health effects
- layers of protection, including:
 - avoiding exposure, where practicable
 - isolating sources of radiation where practicable through shielding, containment and remote handling techniques
 - engineering controls
 - adopting safe work practices, including work methods which make appropriate use of time, distance and shielding to minimise exposure
 - using approved personal protective equipment (PPE) where other means of controlling exposure are not practicable
- health, safety and workplace emergency response procedures, safe working rules, personal hygiene requirements and safe operating procedures for equipment relevant to job role
- procedures for safe, secure storage of items during extended stops or breaks in transit, during trans-shipment and if delivery cannot be completed

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessment must confirm the ability to:

- handle and transport radioactive material in accordance with the organisation's procedures, based on relevant safe transport regulations, codes and guidelines
- provide appropriate workplace emergency first response.

Consistency in performance

Competency should be demonstrated by safely delivering a variety of items containing radioactive material and completing relevant documents.

Context of and specific resources for assessment

Competency should be assessed in the workplace or a simulated workplace environment.

Assessment must comply with:

- organisation's radiation management/transport plan and health and safety procedures
- commonwealth regulations and codes such as:
 - RPS No.2 Code of Practice for the Safe Transport of Radioactive Material (2008)
 - RPS No.2.1 Safety Guide for the Safe Transport of Radioactive Material (2008)
- local, state and territory regulations.

Access may be required to:

- relevant organisation procedures, local regulations and codes, forms, packages and labels
- supervision by an experienced carrier
- radiation protection and safety procedures, required PPE and monitoring equipment
- dummy sources in a simulated workplace
- actual sources at a registered operator's premises.

Method of assessment

The following assessment methods are suggested:

- review of carrier records completed by candidate for a variety of radioactive materials
- feedback from peers and supervisor that the candidate is able to consistently handle and transport radioactive material in accordance with relevant organisation procedures, regulations and codes

- oral questioning about:
 - radiation terms
 - principles of radiation protection and safety
 - requirements for the safe transport of radioactive materials encountered in job role
 - workplace emergency response procedures
- observation of the candidate handling and transporting a consigned item.

In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency that are difficult to assess directly.

Guidance information for assessment

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Consigned items may include:

- radioactive material in the form of:
 - isotopes or a mixture of isotopes in solid, liquid or gas form
 - manufactured articles, instruments and containers that emit ionising radiation
- packaged items could be:
 - excepted packages
 - low specific activity material (LSA-I, -II, -III)
 - surface contaminated objects (SCO-I, -II)
 - material in type A, B(U), B(M) and C packages
 - material transported under special arrangement
- items may be enclosed in packages, overpacks or freight containers.

Label information requires:

- all packages having legible and durable markings with:
 - name of consignor, consignee, or both
 - appropriate United Nations (UN) classification number
- for non-exempt or non-excepted materials, packages also require:
 - proper shipping name for the material
 - Category I-White, Category II-Yellow or Category III-Yellow labels
 - transport index for Category II-Yellow or Category III-Yellow labels.

Required transport documents may include:

- consignor's declaration with:
 - details of the consignment
 - information for carriers, such as instructions for storage and segregation, air waybill or consignment note
 - stated compliance with the relevant transport code
- specific documentation, such as:
 - shipment approval from the relevant competent authority (land, waterways, air, sea) in Australia or overseas country
 - package design approval certificate
 - special form source certificate
 - carrier's consignment note that describes the radionuclide and total activity
 - storage and packing instructions
 - notification to relevant competent authorities along the route

Stowed securely and segregated items may include:

- under the transport code
- source transport security plan if a security enhanced source is being transported
- transport emergency (response) plan.
- separation of packages containing radioactive material from the driver and passenger compartment (e.g. type II and III)
- storage of small, light items in a box
- blocking and bracing of heavy items
- separation between groups of items to keep the transport index less than 50
- separation of packages containing radioactive material from other dangerous goods as required by the Australian Dangerous Goods Code, 7th Edition (ADG7)
- separation of radioactive material (DG Class 7) from rolling stock during transit
- appropriate physical security measures, particularly for security enhanced sources.

Relevant codes and regulations may include:

- Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) radiation protection series publications, such as:
 - RPS No.2 Code of Practice for the Safe Transport of Radioactive Material (2008)
 - RPS No.2.1 Safety Guide for the Safe Transport of Radioactive Material (2008)
 - RPS No.11 Code of Practice for the Security of Radioactive Sources (2007)
- regulations governing the handling and carriage of radioactive materials in Australian ports for interstate and international transportation:
 - Navigation (Cargo-Hazards Prevention) Regulations and the Navigations (Dangerous Goods) Regulations 1979
 - International Maritime Dangerous Goods Code
- regulations governing the consigning and carriage of radioactive materials by air are specified in:
 - s.23 (Dangerous Goods) of the Civil Aviation Act (1988)
 - Part 92 (Consignment and Carriage of Dangerous Goods by Air) of the Civil Aviation Safety Regulations (CASR) 1988
 - ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air (DOC9284)
- requirements of commonwealth, state and territory legislation, such as Victorian Radiation Act (2005) and Radiation Regulations (2007) and associated licensing requirements
- ADG7.

Safe and secure interim

- storage in a secure area with restricted access and well away from:

storage may include:

- flammable or other dangerous material
- foodstuffs
- livestock
- undeveloped film
- restrictions on the number of items in one location to ensure that total transport index is less than 50
- storage that enables safe dissipation of heat
- storage separate from other classes of dangerous goods as required by ADG7
- storage of a security enhanced source that meets RPS No.11 Code of Practice for the Security of Radioactive Sources (2007).

Emergency incidents may include:

- vehicle breakdown, accident or fire
- damage to items through shifting of load
- theft of vehicle and/or load
- exposure from uncontrolled, high hazard radioactive material that:
 - has loss or destruction of shielding
 - is involved in a transport accident
- exposure from equipment that emits ionising radiation and has:
 - loss or destruction of shielding
 - malfunction of its shutter or interlocks
- exposure from dispersed radioactive material caused by:
 - leakage or radioactive contamination
 - dispersion of contaminants following destruction of a high activity sealed source.

Response procedures will include:

- instructions for keeping exposures to a minimum, consistent with essential operations through evacuation or otherwise:
 - bringing the situation under control
 - providing access to necessary medical or counselling services
 - obtaining information for assessing the cause of accident or emergency
 - obtaining information for assessing any doses received as a consequence of accident
- instructions for notifying the relevant competent authority if required.

Unit Sector(s)

Not applicable.

Competency field

Radiation Safety.