



Australian Government

Department of Education, Employment and Workplace Relations

PSPRAD704A Consign radioactive material

Revision Number: 2

PSPRAD704A Consign radioactive material

Modification History

PSPRAD704A Release 2: Layout adjusted. No changes to content.
PSPRAD704A Release 1: Primary release.

Unit Descriptor

This unit covers the competencies required to prepare an item containing radioactive material for shipment, and arrange for its transport and/or interim storage. This involves packaging, labelling, certifying and documenting an item in order to ensure its safe carriage and prompt delivery.

These tasks may be performed with the authorisation of the competent authority in the Australian state or territory in which the transport originates 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 prepare material, articles, instruments and/or containers that emit ionising radiation for transport by road, rail, waterways, sea or air within Australia or overseas.

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 shipping documentation

- 1.1. **Define the item** to be consigned using relevant code or organisation's radiation protection and safety procedures and refer to the **radiation protection and safety codes, regulations and guidelines**, if necessary.
- 1.2. Determine **consignment type** and applicable schedule using activity levels and material restrictions listed in relevant code or organisation's radiation protection and safety procedures.
- 1.3. Determine **carriage provisions** that apply to the item.
- 1.4. Prepare **required transport documents** and ensure they are complete and accurate.

2. Prepare item for shipment

- 2.1. Determine required package design appropriate for consignment type.
- 2.2. Use organisation's radiation protection and safety procedures and equipment if personally packing the item.
- 2.3. Confirm that packaging used for the item meets requirements of relevant code and organisation's radiation protection and safety procedures and, if required, that package approval certificate is current and valid for intended use.
- 2.4. Ensure that packaging is in good condition and that any seals are intact.
- 2.5. Ensure that external contamination does not exceed the specified limit.
- 2.6. Ensure that radiation above any surface does not exceed the specified limit.
- 2.7. Ensure that **required labelling information** is accurate, complete and attached in specified positions on the package.
- 2.8. If required, arrange for **safe and secure interim storage** of item in accordance with relevant code.
- 2.9. Seek advice to deal with any atypical situation.

3. Confirm transport arrangements with the carriers

- 3.1. Confirm that carrier meets requirements for transporting the item.
- 3.2. Confirm that relevant competent authorities have been notified prior to shipment, if required.
- 3.3. Specify requirements for loading, segregation, stowage, carriage, handling and unloading of the package, overpack or freight container.

- 3.4. Specify any necessary route instructions and restrictions on the mode of transport and conveyance.
 - 3.5. Specify relevant emergency arrangements for consignment.
 - 3.6. Provide required transport documents, including any approval certificates from the relevant competent authority.
 - 3.7. Ensure that size, weight, contents, packaging and label information for consigned items match consignor's declaration before shipment.
 - 3.8. Ensure consigned items are stowed and secured and that vehicle is placarded if necessary.
- 4. Respond to potential or actual radiation incidents**
- 4.1. Recognise unusual situations, unexpected hazards, and potential or actual emergency ***radiation incidents***.
 - 4.2. Inform relevant personnel about the situation, hazard or incident and seek their advice.
 - 4.3. Initiate 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

- using relevant information sources to locate and interpret information about the safe transport of radioactive materials
- interpreting radiation labels, placards and safety signs
- completing 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 monitoring equipment to measure radiation
- using and caring for personal 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, RPS No.2.1, RPS No.14.1 and RPS No.14.2)
- meaning of words such as radioactivity, radioactive material, ionising radiation, contamination, contamination controls, shielding, half-life, transport index, and safe distance
- types and properties of ionising radiation
- 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
 - where other means of controlling exposure are not practicable, using approved personal protective equipment
- health, safety and workplace emergency response procedures, safe working rules, personal hygiene requirements and safe operating procedures for equipment relevant to job role

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.

Overview of assessment

Competency must be demonstrated in preparing an item containing radioactive material for shipment, and arranging for its transport and/or interim storage.

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

Assessment must confirm the ability to:

- prepare accurate shipping documentation
- prepare items containing radioactive material for shipment
- arrange for the transport and/or interim storage of items containing radioactive material in accordance with organisational procedures, based on relevant safe transport regulations, codes and guidelines.

Consistency in performance

Competency should be demonstrated by consigning a variety of items containing radioactive material.

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

Method of assessment

The following assessment methods are suggested:

- review of transport documents prepared by candidate for a variety of radioactive materials

- feedback from peers and supervisor that the candidate is able to consistently consign radioactive material in accordance with relevant organisational 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 procedures
- observation of the candidate preparing an item for shipment.

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.

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

Guidance information for assessment

- PSPRAD703A Perform basic radiation measurements.

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.

Definition of the item
includes:

- type of radioactive material (i.e. isotope or mixture of isotopes)
- chemical and physical form
- total activity for consignment.

Radiation protection and safety codes, regulations and guidelines 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)
 - RPS No.14 Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (2008)
- 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 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

Consignment type
includes:

- Australian Dangerous Goods Code, 7th Edition (ADG7)
- definition of a responsible person.
- 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.

Carriage provisions may
include:

- external contamination limits
- prescribed radiation levels at all surfaces of the package
- containment requirements for radioactive liquids
- specified package labelling
- transport documentation, including approvals
- vehicle placarding.

Required transport documents may include:

- multiple copies of the 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 may be required, 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, as prescribed in RPS No.2 Code of Practice for the Safe Transport of Radioactive Material (2008)
- consignors may also have to provide evidence of a:
 - source transport security plan if a security enhanced source is being transported
 - transport emergency (response) plan.

Required labelling information includes:

- all packages require 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.

Safe and secure interim storage may include:

- storage in a secure area with restricted access and well away from:
 - 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 separate from other classes of dangerous goods as required by Australian Dangerous Goods Code, 7th Edition (ADG7)
- storage of a security enhanced source that meets RPS No.11 Code of Practice for the Security of Radioactive Sources (2007).

Radiation incidents may include:

- exposure of unauthorised personnel entering a controlled or supervised area
- spill of package contents into environment
- exposure from an uncontrolled, high hazard radioactive material that:
 - has loss or destruction of shielding
 - is involved in a transport accident
 - is lost, missing or stolen
 - has been dropped during removal from its container
- 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 • notifying relevant competent authority if required.
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Unit Sector(s)

Not applicable.

Competency field

Radiation Safety.