Transport Management Plan

Transport Management Plan for use in the ACT

# Introduction

Transport Management Plan of (company/organisation name):

Document Number:

Prepared by:

Date **Prepared**:

Date **submitted** to the ACT Radiation Council:

Date of scheduled **review**:

Scheduled annual review date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date of last review: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The ACT Radiation Council (the Council) has determined that, whilst advice can be sought externally, the responsibility for radiation safety cannot be delegated to a third party, and the Council therefore requires that the RSO must be: someone within the organisation; suitably qualified and located within the ACT; available to immediately attend the site if required; and the holder of a current ACT Radiation user licence.

Radiation Safety Officer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ACT Radiation Licence number or file number: \_\_\_\_\_\_\_\_\_\_\_\_/\_\_\_\_\_\_\_\_\_\_\_\_\_

Work location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Responsible Person: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Position: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Work location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Guidance on the use of this template**

This template is designed as an aid to the development of a Transport Management Plan only. The template may not apply to your company or organisation. As the radiation protection requirements are unique for each situation a plan which is appropriate to your situation must be prepared. ACT Health does not take responsibility or liability for any protection measures in this template. The use of the template does not imply that approval will be granted, applications are assessed by the Radiation Council.

All text in this document must be reviewed to ensure that it is appropriate to the specific context of the company or organisation. In general the un-highlighted text provides generic information which will apply to many companies or organisations. Some text is **bolded** as an aid to readability only, which does not infer any additional meaning.

Sections which are highlighted in dark grey, such as this, provide information to the person completing the template and example information that may be applicable to the practice. They must be reviewed and, if appropriate, the highlighting should be removed or the example replaced by practice-specific information.

These guidance notes should be deleted before submitting the plan.

For further information please contact the Health Protection Service at HPS@act.gov.au or on (02) 5124 9700

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## Scope

**Employers** have a responsibility to provide employees with a **safe working environment**.

The purpose of this plan is to ensure that all transportation carried out by this company/organisation/individual is conducted as safely as possible and in compliance with the *Radiation Protection Act 2006* (the Act)*,* *Radiation Protection Regulation 2007* and the *Code for the Safe Transport of Radioactive Material (2019)* (RPS C-2 (Rev. 1)).

This plan should be **read by all employees of companies/organisations** who transport radiation sources, and must be readily available to all staff. Employees have responsibility for their own safety and that of their co-workers.

## Fundamental Principles of Radiation Protection

Justification:

The principle of justification requires that the **radiation exposure** situation should **do more good than harm**. That is, the potential risk due to exposure should be less than the benefit to an individual or to society.

Justification is primarily based on **judgement** of the persons with regard to the specific **procedure,** in relation to radiation source transportation. The justification must take into account **exposure to workers** and other persons.

Optimisation:

Protection must be optimised so that **radiation risks** are **as low as reasonably achievable (ALARA),** social and economic factors taken into account.

**Dose reduction** strategies for **staff** include minimising **time** exposed to radiation, maximising **distance** from the radiation source, and using appropriate **shielding**.

Limitation:

Radiation dose limits are set for **Occupational** **Exposure** and **Public Exposure.** Applicable values are published in the *Code for the Radiation Protection in Planned Exposure Situations* (RPS C-1). Limits ensure that no individual bears an unacceptable risk of harm.

**By themselves, limits are insufficient** to ensure the **best achievable protection** under the circumstances. Both the optimisation of protection and the limitation of doses and risks to individuals are necessary to achieve the highest standards of safety.

# Sources of Radiation

## Types of Radiation Sources and Tasks Performed

Include a brief description of the tasks carried out which involve radiation sources below.

Transportation of:

* an X-ray apparatus
* unsealed radioactive material, a Mo-99/Tc-99m generator
* sealed Cs-137 source

Packaging, lifting, transporting, delivering, etc. radiation source.

## Risks Associated with Tasks Performed

 Detail the risks associated with each piece of equipment, sealed or unsealed radioactive material, and each task listed above, including during routine and non-routine operations, and potential incidents.

E.g.

There is a risk of road accident of the transport vehicle, which may dislodge in-built radiation shielding or may result in the radioactive material becoming free from the vehicle.

## List of Radiation Sources

List the sources of radiation including all relevant details, such as registration number, manufacturer’s serial numbers, radionuclide and calibration information for sealed sources, type of radiation emitted, maximum dose rate measured at any accessible surface of the package (in uSv).

The following sources are transported under this Transportation Management Plan:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Registration Number** | **Registered jurisdiction(s)** | **Manufacturer/Model** | **Serial Numbers** | **Expiry date** |
| 45622/15 | ACT | Toshiba / intraoral | 455455, 4455564 |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

# Staff

## The Responsible Person

The **Responsible Person** is the legal person who has **overall transportation and management responsibility** for the company/organisation and in whose name the transportation of the radiation source is to be governed. This includes having responsibility for the security of the sources, and control over who may transport them.

The **Responsible Person** of this Company/Organisation is:

List the name and contact details of the Responsible Person (and where applicable the Radiation Safety Officer), as well as a short summary of their qualifications and/or experience.

The Responsible Person must be familiar with all requirements of the regulatory authority in relation to the transportation of radiation sources, including packaging, lifting, transporting, delivering, consignment signing, documenting, monitoring, recording of personal doses, reporting, maintaining, and quality control checks.

The **Responsible Person** must:

* ensure this **plan is being complied** **with**;
* ensure that the **Company/Organisation** complies withthe *Code for the Safe Transport of Radioactive Material (2019)* (RPS C-2 (Rev. 1));
* ensure that **radiation doses** are kept as low as reasonably achievable (ALARA), and do not exceed applicable dose limits;
* ensure that all workers are appropriately trained to transport radiation sources;
* ensure that all **radiation** **sources** are **appropriately recorded**; and
* ensure that **safety is the highest priority in relation to radiation source transportation.** Any changes, to the working procedure or other factors, that affect radiation safety must be notified to the HPS.

## Radiation Safety Officer (RSO)

A **Radiation Safety Officer** must be appointed to **assist** the Responsible Person in ensuring that the following duties are carried out. The Radiation Safety Officer must have sufficient knowledge and experience to ensure that radiation safety requirements are fulfilled. The Radiation Safety Officer may be the same person as the Responsible Person.

The **Radiation Safety Officer** for this company/organisation is:

Name and Contact details of the Radiation Safety Officer (who could be the Responsible Person), as well as short summary of qualifications and/or experience.

The **Radiation Safety Officer**, who may be the responsible person, must:

* **provide supervision** with regard to radiation protection in order to minimise personal radiation doses;
* **consult** and liaise with the **regulatory authority**;
* ensure that all relevant regulatory matters are duly processed;
* arrange for **monitoring** of radiation sources, for safety, security, and dose estimation, for the transportation purpose and operations as required;
* ensure that suitable **personal monitoring devices,** both thermo-luminescent dosimeter (TLD) or optically stimulated luminescence (OSL) dosimeter, and electronic personal dosimeter (EPD), are provided to the persons involved with packing, lifting, driving, delivering the sources where required and that the devices are properly used;
* arrange for applicable **personal monitoring dose records** tobe **assessed** and **stored**;
* record and **report** to the Responsible Person and the appropriate authorities any unsafe practices or accidents;
* **investigate** any radiation incidents and report any such incidents to the regularity authority;
* **maintain** current **records** of all persons transporting radiation sources and their pickup and delivering details;
* provide **training** and **advice**, instruction and local rules on radiation safety in an easily understandable form; and
* perform any other tasks that may be necessary to maintain a high standard of radiation safety in relation to the transportation of radiation sources.

## List of Authorised Persons

The following **people deal with radiation sources** for transport purposes:

List personnel who are likely to deal with radiation sources, and include a description of their roles and responsibilities. Include names, positions and licence numbers in the table as appropriate.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Person** | **Position** | **Company/Organisation** | **ACT Radiation Licence number** | **Expiry date** |
| John Smith | Driver |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
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# Procedures and Controls

## Strategies for Limitation and Minimisation of Dose

All dealing with the radiation source must be done only by the appropriate persons listed in this document.

## General Procedures

* Only persons who hold the appropriate training and/or knowledge of radiation safety are allowed to be involved in radiation source transportation.
* No person employed at this company/organisation, who is **under the age of 18**, will be directly involved in work with radiation.
* The persons involved in the transportation must r**eport** any **incidents** or unusual occurrences involving the radiation source to the Radiation Safety Officer or Responsible Person.
* Maintain proper packaging of radiation sources and carry out measurements to confirm that the package meets transport requirements.

## Warning Signs

**Each radiation source/package** must have a **visible warning sign**. The warning sign displays words such as “Caution, Radiation Source” as well as the radiation warning trefoil. The text and symbol are black on a yellow background.

If X-ray radiation is produced when the equipment is connected to a power supply, the additional words “X-rays produced when energised” should be included on the sign.

## Training

The following training is provided for **all staff** associated to the radiation source transportation:

* Radiation hazards and how to minimise them
* Specific responsibilities of each category of employee
* Regulatory obligations
* Other details of this Transport Management Plan.

The following training is provided to **staff involved in transporting radiation sources**:

* Awareness of the ARPANSA *Code for the Safe Transport of Radioactive Material (2019)* (RPS C-2 (Rev. 1)).

## Records Management

The following records shall be kept:

A **source register** containing up-to-date information on the transportation of radiation sources.

A register of drivers who drives radiation sources under the company radiation licence.

A **radiation incident** report register, containing all internal reports pertaining to radiation-related incidents.

Provide details here e.g.

An electronic register is kept on file at the company/organisation

**Dose records** of the radiation doses received by each occupationally exposed person, who has been issued with a personal radiation monitoring device (e.g. TLD/OSL and EPD), in accordance with the requirements of RPS C-1.

Provide details here e.g.

An electronic register is kept on file at the company/organisation, including dose records from electronic personal dosimeters (EPDs).

A **training record** containing all radiation induction and annual refresher training delivered to and/or completed by staff.

Provide details here e.g.

An electronic register is kept on file at the company/organisation

Detail any other records which pertain to radiation sources and/or exposure and how they shall be kept

# Personal Monitoring

* **Personal Dosimeters,** such as a TLD or OSL badge (to obtain information about accumulated dose received over a duration) and an EPD (real-time monitoring with a bleeper), are **provided to each occupationally exposed person**.
* **Personal Dosimeters,** such as TLD or OSL and EPD, are used for ongoing monitoring of radiation dose to establish a radiation safety assessment which demonstrates that doses associated with the radiation source transportation of this company/organisation is within the recommended limit provided by ICRP.
* The TLD or OSL and EPD devices are allocated to and worn by the vehicle driver (and persons involved in the radiation source transportation), and if applicable, the co-driver, to estimate the dose they receive for the duration of the transport journey.
* **A record is kept** of the radiation doses received by each occupationally exposed person.

## Details of Personal Radiation Monitoring Provider

Where required list the methods of monitoring and recording of radiation sources and doses to workers. Include monitoring details (name of approved supplier etc.) and frequency of monitoring.

Records of badge readings will be kept with personnel files, and results will be communicated to all wearers. Abnormally high readings will be investigated and reported where necessary.

## Doses Exceeding Constraints

Where any personal monitoring results indicate greater than 100 µSv in any three-month period the Responsible person will investigate and review practices. If the annual exposure of any person is greater than 1 mSv for a member of public, or 20mSv for an occupational dose, the responsible person **must submit a radiation incident report** to HPS within 7 days of the receipt of the relevant dose report from the Personal Radiation Monitoring service provider (see section 7.1 below).

# Operational Checks

The operational checks are to be performed by appropriately trained persons authorised by the transportation licensee. Any identified problems are to be rectified.

Results of all operational checks are to be recorded in the operational check log book.

# Non-Routine Operation

Reference or detail any procedures which are designed to minimise the radiation hazard arising from a radiation incident or event which is not part of normal business.

## Radiation Incidents

Any staff member who becomes aware of an incident must ensure that the **incident is reported to the Radiation Safety Officer/ Responsible** **Person** of the company/organisation as soon as is practicable and within 24 hours.

Contact the Responsible person on, insert the phone number:

**In the event of a radiation incident**, the Responsible Person will:

* Ensure that the radiation incident is **investigated**
* **Submit a written report** of all reportable radiation incidents, including the preventative action to avoid a recurrence, to the Health Protection Service within 7 days. The Radiation Incident form is available at <http://www.health.act.gov.au/businesses/radiation-safety> should be used.
* In the case of a radiation source that is, or may be, **lost or stolen, immediately report** the event to the Health Protection Services on (02) 5124 9700.
* Ensure an **internal report** on each radiation incident is written and kept in the company/organisation’s radiation incident report register.
* Ensure that measures are implemented so that the possibility of the **recurrence** of the radiation incident investigated is **minimised**.

# Definitions and Related Documents

## Documents

*Radiation Protection* ***Act*** *2006*

*Radiation Protection* ***Regulation*** *2007*

ARPANSA Codes of practice (available from [www.arpansa.gov.au/publications/codes/rps.cfm](http://www.arpansa.gov.au/publications/codes/rps.cfm)):

**RPS C-1** *Code for Radiation Protection in Planned Exposure Situations (2016)*

**RPS 6** *National Directory for Radiation Protection, June 2017*

**RPS C-2** *Code for the Safe Transport of Radioactive Material (2019)* (RPS C-2 (Rev. 1)

List any specific procedures here.

## Dictionary

**ALARA** As Low As Reasonably Achievable

**EPD** Electronic Personal Dosimeter

**HPS** Health Protection Service

**OSL** Optically Stimulated Luminescence (dosimeter)

**RSO** Radiation Safety Officer

**TLD** Thermo-Luminescent Dosimeter (replaced by OSL dosimeters)

**TMP** Transport Management Plan