Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

Inspection report

Licence holder: ARPANSA Medical Radiation Services	**Licence number:** S0003
Location inspected: Yallambie, Victoria	**Date/s of inspection:** 9-10 September 2019
	Report no: R19/10973

An inspection was conducted as part of ARPANSA's baseline inspection program to assess compliance with the *Australian Radiation Protection and Nuclear Safety Act 1998* (the Act), the Australian Radiation Protection and Nuclear Safety Regulations 2018 (the Regulations), and conditions of source licence S0003.

The scope of the inspection included an assessment of ARPANSA Medical Radiation Services – Source Licence S0003 (MRS Sources) performance against the Source Performance Objectives and Criteria. The inspection consisted of a review of records, interviews, and physical inspection of sources.

An independent inspector from the NSW Environment Protection Authority participated in the inspection and also reviewed and agreed to the contents and findings of this inspection report.

Background

MRS branch is authorised under section 33 of the Act to deal with the following:

- Sealed sources for calibration purposes
- Sealed sources in storage awaiting disposal
- Unsealed sources in a laboratory or premises
- Partially enclosed X-ray analysis units
- Fixed medical X-ray units used for research purposes

Note: At the time of inspection MRS Sources were not in possession of any partially enclosed X-ray analysis units

The main codes and standards applicable to the above sources are those that appear in section 59 of the Regulations and Australian/New Zealand Standard™ *Safety in laboratories Part 4: Ionizing radiations* (AS/NZ 2243.4:2018).

Observations

In general, the management of safety and security at MRS Sources was found to be sound. In some cases, however, there appeared to be room for improvement. The details of which are contained in this report and summarised in the findings.

619 Lower Plenty Road, Yallambie VIC 3085
+61 3 9433 2211
PO Box 655 Miranda NSW 1490
+61 2 9541 8333
info@arpansa.gov.au
arpansa.gov.au

Configuration control

There are three licenses issued under the Act to ARPANSA: MRS Sources – licence S0003, Medical Radiation Branch – licence F0046 and Radiation Health Services – licence S0002. In accordance with paragraph 47(1)(d) and subsection 60(2) of the Regulations, MRS Sources utilises numerous documents which constitute its plans and arrangements (PA) for managing safety. In the main, the PA applying to MRS Sources are ARPANSA documents administered at the corporate level and apply to all ARPANSA licence holder functional areas that use controlled material, controlled apparatus or prescribed radiation facilities. MRS Sources also utilises task specific PA relating to work undertaken within its functional area.

The inspection revealed that not all PA documents were reviewed in accordance with the requirements of section 61 the Regulations and previously under regulation 50 of Australian Radiation Protection and Nuclear Safety Regulations 1999. There were issues concerning the frequency of review, document version control, revision history and approval. In response, the inspection team was informed that ARPANSA is currently working towards implementing an integrated management system which should integrate safety management and documentation review processes.

The findings in this report are informed by the fact that the above described non-compliance issue with regard to the requirements of section 61 the Regulations has been identified and covered in a recent regulatory inspection of Medical Radiation Branch - licence F0046, resulting in the determination of a breach of the Act.

Performance reporting verification

The details of controlled material and controlled apparatus (e.g. make, manufacturer, serial number, operating parameters) were found to be consistent with those listed in the MRS Sources, Source Inventory Workbook (SIW) other than a minor inaccuracy concerning an incorrect serial number.

An electronic radiation source register, a radiation source record log book and SIW were kept in accordance with ARPANSA-RSM-SOP-010 *Management of Radiation Sources*.

MRS Sources provides ARPANSA with timely quarterly reports. The contents of the reports contained relevant information, including:

- information regarding source transfers and disposals in accordance with Section 65 of the Regulations
- information regarding acquisitions of new sources, and
- information detailing the implementation of corrective actions from previous inspections.

Inspection testing and maintenance

Document OHS-RSM-SOP-011 *Monitoring Ionizing Radiation* specifies the calibration requirements for monitoring instruments in accordance with AS/NZ 2243.4:2018. With regard to calibration, the instruments inspected were found to be in compliance with the requirements and were appropriately labelled with calibration details.

Quality assurance checks were performed in accordance with OHS-RSM-SOP-011 and document ARPANSA-WI-0859 *Fortnightly Equipment Checks Basement on instruments under the control of MRS Sources*.

Records of wipe testing of sources were kept in accordance with AS/NZ 2243.4:2018 and OHS-RSM-SOP-011. MRS Sources has in place a work instruction IR-WI-8100 *Wipe Test of a Sealed Radioactive Source* to be followed when wipe testing sources.

Training

ARPANSA has in place a corporate document OHS-RSM-IRSP-SOP-007 *Ionizing Radiation Safety Training*, which specifies that all employees must undertake a general radiation safety awareness course.

OHS-RSM-IRSP-SOP-007 also specifies that employees should attend an approved radiation safety training course based on the radiation sources involved in their work delineated into categories from lower to higher hazard sources – i.e. Yellow, Blue or Pink sources.

MRS Sources currently utilises an ARPANSA-wide 'On the job training competency matrix' which is kept for each employee and records 'date level of competency recognised by name of procedure'.

Information provided during the inspection indicated that MRS Sources personnel had received appropriate training.

Retraining is currently carried out as needed under the advice of local Radiation Protection Advisors. The inspection team was informed that ARPANSA is planning to implement a 12 monthly retraining scheme comprising:

- e-learning modules - ARPANSA Generic Radiation Safety Induction, and
- Specific training for each employee based on the work normally carried out and the sources of radiation used.

Event protection

For the activities undertaken by MRS Sources, the existing building construction and integrity provides sufficient protection from foreseeable external events such as fire, flood and utility failure.

Security

Sub-section 15.1.7 of ARPANSA-PLAN-1454 IRC *Lab Security Plan* specifies that there is an arrangement with VICPOL Local Area Command (LAC) and that the LAC and emergency services meet annually to undergo training in radiation protection and to ensure familiarity with the premises and the protective arrangements in place. Response arrangements are to be exercised annually. The inspection revealed that initial steps have been taken to implement the commitments and arrangements specified in the plan, however these have yet to be fully realised.

Radiation protection

MRS Sources staff were issued with appropriate personal dosimeters and records are kept centrally by ARPANSA of doses received. Dose records reviewed during the inspection show that doses are low and do not indicate any pattern that would lead to an exceedance of the dose limits set in the Regulations.

MRS Sources reported an incident in its April-June 2019 quarterly report to ARPANSA Regulatory Services concerning an 11 mSv dose received to a personal dosimeter issued to a MRS Sources employee. The incident was traced to an event, which occurred in September 2018 whilst the employee was participating in an off-site third party audit. The explanation provided for the dose to the dosimeter was that it had been inadvertently left in an exposure room and was irradiated. The subsequent analysis of the incident concluded that the employee had not received the dose.

The inspection team was informed that there is no protocol or checklist available for use by employees when undertaking off-site work to remind them of the steps to follow under such circumstances, for example on the correct use of personal dosimeters.

In connection to the incident, there was no evidence provided during the inspection that would indicate that there had been analysis leading to opportunities for information sharing or lessons to be learned amongst MRS Sources personnel and other ARPANSA personnel.

Storage of radioactive material under the control of MRS Sources was found to be in compliance with AS/NZ 2243.4: 2018.

Radiation warning signs were found to be mostly compliant with AS/NZ 2243.4: 2018. One example of where improvement can be made was evident in room 115, where a non-standard sign was used at a chain-cordoned area where shielded storage containers were kept. Signage was an area for improvement identified in the previous inspection report (June 2015).

An inspection of the medical X-ray unit used for research purposes located in room 131 revealed that when the single exposure setting is used (not fluoroscopy), the warning sign fitted in the corridor outside the room illuminates for the duration of the exposure (a fraction of second). This provides no prior warning of exposure. When medical X-ray units are used for diagnostic imaging and a radiation warning light is provided, the warning light illuminates whenever the X-ray tube is placed in the preparation mode before exposure and remains illuminated for the duration of the exposure. Subsection 4.7.1 of AS/NZ 2243.4: 2018 recommends that visible or audible signals, or both, should be provided inside and outside enclosures and in the vicinity of installations to provide warning before and during irradiations.

Emergency preparedness and response

Subsection 10.1 of ARPANSA-SOP-1468 – ARPANSA *Emergency Procedures – Yallambie* specifies that emergency evacuation exercises must be conducted at least once, preferably twice, in each 12 month period. Records of emergency evacuation exercises could not be provided during the inspection.

Findings

The licence holder was found to be in compliance with the requirements of the Act, the Regulations, and licence conditions.

The inspection revealed the following **areas for improvement**:

1. The periodic review and management of the licence holder's plans and arrangements
2. Not all commitments and arrangements with emergency first responders specified in the security plan have been fully realised
3. The need for protocols or checklists available for use by employees when undertaking off-site work
4. Processes leading to information sharing and lessons learned from incidents or events
5. Radiation warning signage including illuminated signs in accordance with AS/NZ 2243.4: 2018
6. Records of emergency evacuation exercises and their accessibility

It is expected that improvement actions will be taken in a timely manner.

No written response to this report is required

THIS REPORT WILL BE PUBLISHED ON THE ARPANSA WEBSITE