Australian Government
Australian Radiation Protection and Nuclear Safety Agency

arpansa

Inspection report

Licence holder: Australian Institute of Marine Science	**Licence number:** S0007
Location inspected: 1526 Cape Cleveland Road, Cape Ferguson, Townsville 4816 QLD	**Date/s of inspection:** 18 September 2018
	Report no: R18/11821

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 1999 (the Regulations), and conditions of the Source Licence S0007.

The scope of the inspection included an assessment of the Australian Institute of Marine Science (AIMS) performance at Cape Ferguson against the Source Performance Objectives and Criteria (PO&Cs). The inspection consisted of a review of records, interviews, and physical inspection of sources.

Background

AIMS is a Commonwealth statutory authority operating under the *Australian Institute of Marine Science Act 1972* in recognition of a national need to know more about marine resources and to provide research assistance to those who manage our marine environment. To perform this function they use low level radioactive materials (radioisotopes) to tag small particles, chemicals and molecules from the marine environment. Specialised X-ray and UVR equipment is also used to analyse core samples collected from corals to measure distinct bands in the coral core. The licence holder is authorised under Section 33 of the Act to deal with low level radioactive materials, medical X-ray and UVR units.

The main codes and standards applicable to these sources are:

- Australian Standard *Safety in Laboratories - Ionizing Radiations (2018)* (AS/NZS 2243.4)
- Australian/New Zealand Standard *Safety in laboratories – Non-ionizing radiations- Electromagnetic, sound and ultrasound (2004)* (AS/NZS 2243.5)
- Radiation Protection Series No:12 *Radiation Protection Standard for Occupational Exposure to Ultraviolet Radiation (2006)* (RPS 12)

Observations

In general, the management of radiation safety at the AIMS facility in relation to controlled material and controlled apparatus was found to be satisfactory.

619 Lower Plenty Road, Yallambie VIC 3085
+61 3 9433 2211
38–40 Urunga Parade, Miranda NSW 2228
PO Box 655, Miranda NSW 1490
+61 2 9541 8333
info@arpansa.gov.au
arpansa.gov.au

In relation to the Radiation Safety Protection Plan for the use of Controlled Apparatus Producing Ionizing Radiation (RSPP-IR) and the Radiation Safety Protection Plan for the use of Controlled Apparatus Producing Non-Ionizing Radiation (RSPP-NIR) there appeared to be room for improvement in relation to:

- Inconsistencies and ambiguities noted within the documents such as reference to ionizing radiation, radioactive substances and the ALARA principle within the RSPP-NIR and updating both documents for outdated standards, codes and guidelines.
- A bottle containing radioactive material (LAD 102) was labelled as required by AS/NZS 2243.4. However, this was, in turn, stored inside an outer container that was not labelled.

Rectifying these issues will strengthen AIMS commitment to radiation protection and ultimately continuous improvement.

Performance reporting verification

The RSO and the safety committee meet quarterly to discuss radiation safety and procedures. Relevant information is circulated to staff via the intranet and newsletters.

AIMS quarterly reports have been submitted to ARPANSA in a timely manner in recent years and contained relevant information, including details of compliance with the Act and Regulations. Information for quarterly reports are coordinated by the RSO and consolidated into one final report to ARPANSA.

Configuration control

The storage requirements in AS/NZS 2243.4 require that radioactive materials be stored separately from other dangerous goods. However, a small quantity of radioactive material was stored in a dedicated locked and labelled safety storage cabinet on a steel frame above floor level in the solvent store. The radioactive materials were only marginally above the exemption limits and the solvents stored within were small vials of ethanol. Under these circumstances, it was considered that such storage does not constitute a significant risk. If, however, there is a change in the type or quantity of solvent or radioactive material to be kept in the solvent store, the risks would need to be reassessed. The requirement for a reassessment needs to be documented in the RSPP-IR.

One of the radioactive materials (LAD 101) stored in the cabinet was below the exemption limit and could be removed from the Source Inventory Worksheet (SIW).

During the inspection, non-ionising radiation source LAD 86 was determined to not be controlled apparatus. It may be removed from the SIW and reported in the next quarterly report.

Inspection, testing and maintenance

The RSO conducts annual inspections/audits to ensure that the radiation laboratories comply with the RSPP's and appropriate standards. AIM's have appropriate procedures in place for spills with laboratory staff having access to Hazchem spill response kits which are checked by the RSO during audits for outdated or missing contents. Contamination monitoring using calibrated radiation counters is performed regularly and appropriate calibration certificates and results were sighted.

Training

General Safety Induction, Field Work Induction and Laboratory Safety Induction are provided as part of the Health and Safety induction training for all staff and researchers. Short-term visitors and researchers receive general induction training but are supervised. In addition, Radiation Safety in Laboratories

training is provided by National On Site Training (NOST) for custodians of equipment and appropriate training requirements for the RSO is provided by a qualified and accredited training provider. Training records are maintained electronically and were sighted during the inspection. The RSO indicated that when staff is required to complete an annual refresher training course he is sent an email reminder prompting him to contact the staff.

Event protection and emergency preparedness and response

AIMs have a contingency plan for natural disasters that is reviewed annually. The AIMs Emergency Control Plan Ed. 10 November 2017 was sighted during the inspection. Evacuation exercises are scheduled every six months.

Security

The sealed sources are locked in a steel cabinet for which access to the key is controlled. This cabinet was located in a secured laboratory that with appropriate access control. Appropriate signage was positioned at the entry to the laboratory. A security firm is employed for after hours surveillance of the site. There are security cameras that monitor the buildings and the grounds for unauthorised access to the site.

Radiation protection

AIMS management demonstrates a commitment to radiation protection by establishing policies to facilitate the safe and effective use of radiation throughout the organisation. Radiation protection relating to the use of controlled apparatus and material was seen to follow the requirements of the relevant standards regarding access control, shielding and training.

Physical inspection

During the physical inspection, radiation warning signs were observed at the entrance to designated radiation areas in accordance with AS/NZS 2243.4.

All sealed sources were stored appropriately under lock and key and access to the laboratory containing unsealed sources is limited to authorised users.

For laboratories with non-ionising radiation sources radiation warning signs were observed at the entrance and/or adjacent to the source in accordance with AS/NZS 2243.5.

Standard operating instructions (SOP) contained information relevant to the particular device or material.

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**:

- Both the RSPP-IR and RSPP-NIR need to be reviewed for internal consistency
- Labelling of outer container enclosing radioactive material (LAD 102)

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