



Inspection report

Licence holder: Australian National University (ANU)	Licence number: S0027
Locations inspected: Research School of Physics (RSPHys)	Date/s of inspection: 5–6 December 2019
	Report no: R19/13557

This 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 the Source Licence S0027.

The scope of the inspection included an assessment of performance at the Australian National University (ANU) Acton premises within RSPHys against the Source Performance Objectives and Criteria (PO&C). The inspection consisted of a review of records, interviews, and a physical inspection of sources.

Background

ANU is a research-intensive university located in Acton, Australian Capital Territory (ACT) and specialises in a range of activities that require the use of radioactive materials and ionising and non-ionising radiation apparatus. The ANU source licence covers several schools at the Acton campus and one at Mt Stromlo, ACT many of which use controlled apparatus and controlled materials as part of their research and teaching roles. ANU is licensed under section 33 of the Act to deal with controlled material and controlled apparatus for research purposes in its various schools.

The main codes and standards applicable to this licence are those that appear in section 59 of the Regulations plus:

- Radiation Protection Series No. C-4 *Code of Radiation Protection Requirements for Industrial Radiography* (2018) (RPS C-4)
- Australian Standard *Safety in Laboratories – Ionizing Radiations* (2018) (AS 2243.4-2018) (the IR Standard)
- Radiation Protection Series No. 12 *Radiation Protection Standard for Occupational Exposure to Ultraviolet Radiation* (2006) (RPS12)
- Radiation Health Series 9 *Code of practice for protection against ionizing radiation emitted from X-ray analysis equipment* (1984) (RHS9)
- Australian/New Zealand Standard *Safety in laboratories - Non-ionizing radiations-Electromagnetic, sound and ultrasound* (2004) (AS/NZS 2243.5:2004) (the NIR Standard)
- Australian/New Zealand Standard *Safety of laser products Part 1: Equipment classification* (AS/NZS IEC 60825-1:2014)
- Australian/New Zealand Standard *Safety of laser products Part 14: A user’s guide* (AS/NZS IEC 60825-14:2011)

Observations

In general, the management of radiation safety at RSPHys in relation to controlled material and controlled apparatus was found to be sound. However, in some cases there appeared to be room for improvement as follows:

- There was no evidence that interlock checks were being carried out on the industrial radiography cabinets in accordance with the requirements of RPS C-4.
- Some lasers did not bear durable and clearly discernible labels on them, specifically the manufacturer's labels on some laser devices were not clearly visible during operation.
- Some of the lasers were stored with the keys left in the controller.
- Some laser eyewear did not cover fully the range of the accessible emissions

Observations of the laser products need to be verified by the RSO/LSO during the audit of all controlled apparatus and material for compliance.

Performance reporting verification

Radiation matters are reported quarterly at the Work Health and Safety Committees of RSPHys and the ANU Radiation Safety Advisory Group.

The ANU Work Health and Safety Consultant, as a member of the ANU Radiation Safety Advisory Group, coordinates information for quarterly reports through the Work Environment Group (WEG) with input from each school, including RSPHys. Once collected, this information is consolidated into one final report to ARPANSA. ANU 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.

Configuration management

Of those controlled material and controlled apparatus seen during the inspection, all were noted as matching the internal designations assigned to those sources and listed in the source inventory workbook (SIW) for RSPHys. Further, all sources chosen to be inspected were present and accounted for in relation to the SIW.

There was no licence identifier label readily available on one X-ray unit although the label was later found on the inside on one of the panels of the X-ray unit.

Inspection, testing and maintenance

WEG undertake regular inspections in RSPHys laboratories as part of the overall Work Health and Safety inspections and the records are maintained by the laboratory manager. Copies of these reports were seen during the inspection.

Training

All personnel using controlled apparatus or controlled material at ANU are required to undertake training related to the particular type of source they will use. This training includes school induction, individual laboratory induction and specific use training, the extent of which depends on the proposed dealing for the given individual. Training records are kept in hard form (in folders) and electronically. The ARPANSA inspectors verified these records for several individuals authorised to use the controlled apparatus and controlled materials in RSPHys as having completed the training.

Any worker visiting or working in a radiation area is required to undertake induction training. Access to laboratory areas is restricted to those personnel who have undergone appropriate induction training and

the Facilities and Services supervisor ensures that the appropriate approval and access has been granted before the commencement of any work. The ARPANSA inspectors observed induction-training records and the chain of approval and access for such personnel during the inspection.

Event protection and emergency preparedness and response

Event Protection and Emergency Preparedness and Response were handled under the broader ANU policy and work health and safety plans and was not assessed during the inspection.

Radiation protection

ANU has demonstrated a commitment to radiation protection by establishing a policy to facilitate the safe and effective use of radiation and the safe storage of radioactive sources throughout all schools at the university. This is supported by a comprehensive radiation management plan to achieve and maintain best practice and compliance with radiation legislation and ARPANSA licence conditions.

Warning signs restricting access to only approved staff are displayed on the entrance to laboratories where radiation material and apparatus is used. Although present, some of these signs were small and not readily discernible unless the person viewing them was quite close.

Laboratory staff perform dose rate measurements on the industrial radiography cabinets approximately twice yearly and the results are kept in a notebook in the given laboratory as seen during the inspection. Although the staff stated that the interlocks on the equipment were also checked at the same time, there was no record of interlock checks giving rise to an area for improvement.

Inspectors noted that some lasers were stored with the control key left in the laser controller and that clearly discernible and durable labels were not present on some lasers. Further, some eyewear for laser use did not encompass the full range of the accessible emissions. These aspect were also considered to be areas for improvement.

Spectral measurements were taken during the inspection of various UVR sources to assess whether the lamps were considered controlled apparatus for the purpose of the Act and Regulations. ANU will be advised of the outcome of the assessment in due course.

Security

Access to all RSPHys buildings is protected by an electronic access control system. The aggregation of all sources under RSPHys control do not invoke enhanced security requirements and the existing security measures were therefore considered appropriate.

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**:

- There were no records of interlock checks on industrial X-ray cabinets.
- Some laser devices were being stored without their control key being removed.
- The manufacturer's labels on some laser devices were not clearly visible during operation.
- Eyewear for some lasers did not cover the full accessible emission range of the given laser.

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

No written response to this report is required