



Australian Government

Australian Radiation Protection and Nuclear Safety Agency

INSPECTION REPORT

Licence Holder: National Measurement Institute – Department of Industry and Science	Licence Number: S0142
Location inspected: Kensington, WA	Date of inspection: 10 November 2015
	Report No: R15/15697
<p>An inspection was conducted under Part 7 of the <i>Australian Radiation Protection and Nuclear Safety Act 1998</i> (the Act). The purpose of the inspection was to assess compliance with the Act, applicable regulations, and licence conditions. The inspection was conducted as part of ARPANSA’s baseline inspection program.</p> <p>The scope of the inspection included an assessment of National Measurement Institute’s (NMI) performance based on the source licence Performance Objectives and Criteria. The inspection consisted of a review of records, interviews and a physical inspection of the controlled apparatus at the Kensington, WA premises.</p> <p>Background</p> <p>The NMI develops and maintains Australia’s primary measurement standards. They deliver a broad suite of measurement services to government, industry and the community covering calibrations, chemical and biological analysis. To perform this function they have a variety of laser products, optical sources and microwave and radiofrequency systems.</p> <p>Observations</p> <p>In general, the management of radiation safety at the NMI was found to be satisfactory.</p> <p>The <i>Radiation Safety Manual</i> (RSM), NMI’s Plans and Arrangements for the Kensington site, were comprehensive. It covered Source Licence, Compliance Requirements, Management Responsibility, Safety Management, and Radiation Protection – Controlled Apparatus and Controlled Material. There were, however, inconsistencies and ambiguities noted within the document which was discussed at the Lindfield and North Ryde inspections of June and August 2015, respectively, and these were being addressed.</p> <p>There were no sealed or unsealed radioactive materials at the Kensington premises of NMI.</p> <p>The following laboratory was examined as part of this inspection:</p> <p>Inorganic, ICP Room 1C17;</p> <p>In the laboratory there were three ICP Spectrometers containing RF plasma tubes,</p> <ul style="list-style-type: none"> • Anatytkjena PlasmaQuant PQ 9000 40MHz RF generator (1500W) SN: 13-5850BAO003 – NA137, • Varian Vista Pro 27MHz RF generator (1500W) SN: IPO1085066/C0021253 – NA70, • Varian 820 MS 27MHz RF generator (1200W) SN: ELO0608388/C0024129 – NA79. 	

All the controlled apparatus were labelled with signage to indicate that they are licensed with ARPANSA. Apart from NA70 the other two spectrometers were incorrectly labelled with the ionising radiation symbol. The ICP spectrometers had work instructions near the equipment and the three personnel that were required to use the equipment were appropriately trained by the manufacturers. Staff at any of the NMI sites working with controlled material or apparatus is required to complete the Radiation Safety Course. These training records were sighted during the inspection. Documentation was provided during the inspection which showed the procedure to be used when using the ICP instruments.

The May 2015 scheduled service was viewed for spectrometer NA137 which included safety assessment of the plasma compartment and operation of the interlock. Servicing of the spectrometers is done annually. The interlock on the door to the plasma compartment was tested during the inspection and found to be operating satisfactorily.

It was noted that NMI's quarterly reports have been submitted to ARPANSA in a timely manner, and have contained relevant information, including details of compliance with Regulation 52 and 53 submissions for the acquisition, relocation and disposal of sources. The quarterly reports contained no reports of incidents or accidents, which was confirmed by NMI personnel during the inspection.

In regards to safety, management and staff collaboratively identify and discuss safety issues and work together to action improvements. The Kensington site at which NMI resided was shared with and owned by CSIRO. All emergency procedures and building access was therefore in accordance with CSIRO requirements and a personal swipe card was necessary to access the building.

Findings

It appeared that the licence holder has complied with the Act, applicable regulations, and licence conditions.

While the plans and arrangements were recently reviewed, there were some minor issues as follows:

- signage on the entrance to the laboratory related to chemical hazards and restricting entry except for authorised persons. There was, however, no non-ionizing radiation signage on the entrance to the laboratory, although there were unambiguous warning signs on each of the apparatus in accordance with the option provided in clause 1.5.5 of AS/NZS 2243.5 Safety in Laboratories,
- section 6.2 of the RSM referred to Ni-63 sealed sources used in gas chromatography. This section could be reworded to reflect recent changes to Schedule 2 of the ARPANS Regulations relating to exempting such dealings,
- section 6.5.1 and Appendix A of the RSM referring to Class 3B (restricted) laser product should in fact be Class 3R. As Class 3R lasers are not controlled apparatus under ARPANS Regulation amending this would clarify the situation,
- reference 20 refers to old laser standard AS/NZS 2211.1 should be AS/NZS IEC 60825.1.

Furthermore, section 4.4.3 of the RSM specified requirements for a 'Radiation Safety Officer' to be a technically qualified person experienced in radiation safety matters. This was not evident for the Kensington site.

Summary tables in section 5.6 'Reporting Requirements' of the RSM referred to notification reporting requirements relating to disposal and transfer of controlled apparatus had some inconsistencies with the Regulations. Better referencing of relevant clauses within the ARPANS Regulations could improve this situation.

Section 6.8.3 (c) of the RSM states 'The laboratory must ensure that an initial risk assessment including a survey of RF levels is conducted prior to commissioning of new equipment'. The RSM for RF producing systems state that an initial risk assessment of RF levels is conducted, there was no evidence this was being done.

Non-ionizing controlled apparatus (NA137 and NA79) showed the ionizing radiation trefoil symbol on the warning label.

These issues were raised with the quality manager for reference and action where necessary.

During the inspection of the laboratory there were discussions with the licence holder in regards to the controlled sources at the Kensington site. The ICP Spectrometers are fully enclosed devices with access to the RF generator only when the door to the chamber is open for cleaning. The interlocks prevent the door from opening whilst RF/UV radiation is being emitted from the plasma tube. The ARPANSA Regulatory Guide on 'How to determine whether a RF Source is a Controlled Apparatus' prescribes which non-ionizing apparatus are classed as controlled apparatus. One of the criteria is accessibility of the source. Observing the operation of the ICP Spectrometers and the safety features in place, excess levels of radiation would not be readily accessible to personnel during the operation of the apparatus. Therefore the ICP Spectrometers are not controlled apparatus and can be removed from the NMI SIW.

The following performance deficiencies, if properly addressed, will support performance improvement efforts.

Performance Deficiencies:

1. The RSO for the Kensington site has not yet received formal radiation safety training.
2. The RSM contained some inconsistencies relating to reporting the disposal and transfer of controlled apparatus.
3. There was no initial risk assessment, including a survey of RF levels, conducted prior to commissioning of new equipment.
4. Incorrect radiation symbols were displayed on the warning label on some controlled apparatus.