

Radioactivity Standards Laboratory
NMISA
Cape Town, South Africa

**Review of the activities at the National Metrology Institute
of South Africa
(May 2011 to May 2013)**

Contribution to the 22nd meeting of Section II, CCRI , May 2013

Staff Members

M.J. van Staden (Section Head: Radioactivity Standards), W.M. van Wyngaardt, J. Lubbe and B.R.S. Simpson (on part-time contract)

International Activities

- Freda van Wyngaardt participated in the CCRI(II) meeting held in June 2011, as well as in three working group meetings (Extended SIR WG, Key Comparison WG and Uncertainties WG).
- Freda van Wyngaardt participated in the CCRI(II) Key Comparisons Workshop held in November 2011, as well as in the ESIR and KC WG meetings held during the same week. She participated in the ESIR and KC WG meetings in May 2012 by WebEx.
- Freda van Wyngaardt attended the International Conference on Radionuclide Metrology and its applications (ICRM 2011) held in Tsukuba, Japan, during September 2011. She presented a paper on the absolute standardization of Pu-241 orally and another on the activity measurement of Lu-177 in poster form. As a member of the Scientific Committee, she refereed 3 papers in the session on Liquid Scintillation Counting. She also attended the ICRM General meeting.
- Freda van Wyngaardt attended the International Conference on Radionuclide Metrology Low-Level Radioactivity Measurement Techniques (ICRM-LLRMT 2012) held on Jeju Island, Korea, during September 2012. She presented a paper on the first participation by the NMISA in a low-level comparison in poster form.
- Freda van Wyngaardt participated in the ICRM Liquid Scintillation Counting (LSC) and Life Sciences (LS) working group meetings held at the PTB in November 2012. She presented work on the standardization of Tc-99 by three liquid scintillation counting methods at the LSC WG, and work on the automation of the NMISA Vinten ionization chamber at the LS WG meeting.
- The NMISA participated in the CCRI(II)-K2.Tc-99 key comparison of the measurement of the activity concentration of the same Tc-99 solution. The NMISA also participated in the CCRI(II)-S9 supplementary comparison of the measurement of the activity concentration of Cs-137 and K-40 in rice material.

- Joline Lubbe attended an IAEA Regional (AFRA) Training Course on Gamma-ray Spectrometry for Determination of Radionuclides in Environmental and Food Samples held at MSB, Moka, Mauritius during August 2012.
- Joline Lubbe attended an IAEA Regional (AFRA) Training Course on Alpha Spectrometry and Radiochemical Techniques held at NECSA, Pretoria, South Africa during October 2012.
- Reviewed radioactivity CMCs submitted by various national laboratories (EURAMET, APMP and SIM regions) on behalf of the AFRIMETS region.
- A manuscript that was submitted to an international scientific journal for publication was reviewed on request.

Research, maintenance of standards and laboratory services

- During December 2011 the Radioactivity Standards laboratory successfully underwent an 18-month surveillance assessment by the South African National Accreditation System (SANAS) for continued ISO/IEC 17025 accreditation purposes.
- Preparation is in progress on a manuscript that was accepted for the ICRM 2013 conference. The paper on the standardization of Tc-99 was accepted for oral presentation.
- Joline Lubbe attended the 50th Annual Congress of the South African Association of Physicists in Medicine and Biology (SAAPMB) held in Pretoria in September 2011. She presented work on a Proficiency Testing Scheme for Nuclear Medicine Departments: I-131 activity measurements.
- The NMISA RS lab organised a bilateral comparison of I-131 solution measurement with the nuclear medicine department of a local hospital in response to concerns raised during a previous national I-131 proficiency testing scheme. Good agreement was achieved between the NMISA and the three hospital ionization chambers tested.
- A number of I-131 capsules, which are administered orally to patients, were measured for clients for verification and calibration purposes. The activities of Cs-137 check sources were checked for two nuclear facilities. A number of ionization chambers maintained at a particle accelerator facility were checked for long-term stability and a F-18 calibration factor was determined for one of the chambers. Solutions of I-131 and Mo-99 were standardized for the isotope production group of a nuclear reactor facility. Calibration standards of Na-22 were prepared for a particle accelerator isotope production facility. A certificate of non-radioactivity was issued for a milk-containing product to facilitate export. Samples of O-18 water and decayed FDG were measured for radioactivity content and certificates of non-radioactivity issued.