

Radioactivity Standards Laboratory  
NMISA  
Cape Town, South Africa

**Review of the activities at the National Metrology Institute  
of South Africa  
(June 2005 to April 2007)**

Contribution to the 19th meeting of Section II, CCRI , May 2007

**Staff Members**

B.R.S. Simpson and W.M. Van Wyngaardt

**International Activities**

- Participated in the ICRM 2005 conference held at Oxford, UK in September 2005.
- The Local Organising Committee started arrangements in 2005 for hosting the ICRM 2007 conference to be held in Cape Town in September 2007. The ICRM 2007 website was set up and the second announcement sent out in March 2007.
- Attended the ICRM Executive Board (EB) meeting held in Cape Town, South Africa, during June 2006 and the ICRM EB/Scientific Committee meetings held at the JRC, Ispra, Italy in March 2007.
- Participated in and made presentations at both the ICRM Liquid Scintillation Counting Working Group and the Life Sciences WG meetings held in Paris, France in January 2007.
- Participated in the BIPM full-scale international comparison of  $^{55}\text{Fe}$  activity measurement.
- Participated in a multi lateral comparison of the measurement of  $^{63}\text{Ni}$  liquid scintillation sources by the TDCR method.
- Participated in an APMP regional key comparison of  $^{133}\text{Ba}$  activity measurement in 2006.
- Submitted a sample in January 2007 of  $^{22}\text{Na}$ , measured by  $4\pi[\text{LS}]\beta^+ - \gamma$  coincidence counting, to the International Reference System (SIR) maintained at the BIPM.
- Reviewed EUROMET (Latvia) radioactivity CMCs on behalf of SADC MET.
- Involved with the organisation of the Metrologia Special Issue on radionuclide metrology.

- In the process of preparing two papers that were accepted for the ICRM 2007 conference (both selected for oral presentation).

### **Research, maintenance of standards and laboratory services**

- In January 2006 underwent an 18 month quality assessment by the South African National Accreditation System (SANAS). The Radioactivity Standards Laboratory was recommended for continued accreditation (ISO/IEC 17025).
- Presented a paper on  $^{32}\text{P}$  activity measurements at the CSIR Research and Innovation conference held in Pretoria during February 2006. The paper was subsequently published in the South African Journal of Science in 2006. Also presented a poster at the conference on the development of a stable non-commercial liquid scintillation cocktail.
- Presented a poster on maintaining South Africa's  $^{90}\text{Y}$  activity standard at the local conference of the South African Association for Physicists in Medicine and Biology (SAAPMB) held near Cape Town in March 2006.
- Developed a simple counting technique for extracting the activities of a mixture of two pure beta-emitting radionuclides by combining aspects of the TDCR and CIEMAT/NIST methods. Published a paper on this work in Nuclear Instruments and Methods A in 2006.
- Measured the activity of a  $^{99\text{m}}\text{Tc}$  source in 2006 that was used for the calibration of seven dose calibrators used in nuclear medicine. This required careful logistical arrangements since the regional exercise was some 1600 km from Cape Town.
- Provided measurements of an  $^{131}\text{I}$  capsule and an  $^{131}\text{I}$  solution standard for local hospitals; calibration check of three ionization chambers maintained at a particle accelerator facility; undertook  $^{22}\text{Na}$  measurements and provided a standard for their radionuclide production department; measured the activity of  $^{99}\text{Mo}$ ,  $^{131}\text{I}$ ,  $^{90}\text{Y}$ ,  $^{33}\text{P}$  and  $^{35}\text{S}$  solutions for a radioisotope department at a reactor facility; certified the activities of two  $^{137}\text{Cs}$  encapsulated solid sources.