

Radioactivity Standards Laboratory
CSIR–NML
Cape Town, South Africa

Review of the activities at the CSIR–National Metrology Laboratory (June 2001 to March 2003)

Contribution to the 17th meeting of Section II, CCRI , May 2003

Staff Members

B.R.S. Simpson and W.M. Morris

International Activities

- Participated in the ICRM 2001 conference held at the PTB, Braunschweig, Germany.
- Attended the ICRM Executive Board (EB) meeting held in Dublin, Ireland, during June 2002 and the ICRM EB/Scientific committee meetings held in December 2002.
- Participated in the BIPM full-scale international comparisons of ^{204}Tl , ^{65}Zn and ^{192}Ir activity measurements.
- Submitted a standardized sample of ^{60}Co to the SIR (type K1 key comparison).
- CMC submissions accepted into the Appendix C database after successful inter-regional review.
- Reviewed the COOMET radioactivity CMC submissions on behalf of SADCMET.
- Prepared three papers for the ICRM 2003 conference that were accepted for poster presentation.

Research, maintenance of standards and laboratory services

- Investigated the preparation of solid water-equivalent volume sources.
- Examined the viability of a non-extrapolation method for the activity measurement of ^{54}Mn and ^{65}Zn .
- Obtained improved radionuclide factors for the NML's calibrated ionisation chamber (^{65}Zn and ^{192}Ir).
- Measured the activity concentration of a ^{33}P solution for an isotope production facility. Used the TDCR efficiency calculation technique and a liquid scintillation tracer method.

- Prepared volume sources (plastic bottle and Marinelli beaker) comprising ^{152}Eu , ^{137}Cs and ^{60}Co mixed in weakly acidic solutions for an accelerator research facility.
- Standardized a solution of ^{22}Na . Prepared a number of accurate low-activity ^{22}Na sources in plastic scintillation source holders for a medical radiation project.

Publications

1. B.R.S. Simpson, *Radioactivity standardization in South Africa*, Appl. Radiat. Isot. 56 (2002) 301-305.
2. B.R.S. Simpson and W.M. Morris, *The standardization of ^{33}P by the TDCR efficiency calculation technique*, ICRM 2003 International Conference on Radionuclide Metrology and its Applications, Dublin, Ireland, June 2003 (in preparation).
3. B.R.S. Simpson and W.M. Morris, *Direct activity determination of ^{54}Mn and ^{65}Zn by a non-extrapolation liquid scintillation method*, ICRM 2003 International Conference on Radionuclide Metrology and its Applications, Dublin, Ireland, June 2003 (in preparation).
4. W.M. Morris and B.R.S. Simpson, *Preparation of solid water-equivalent radioactive standards*, ICRM 2003 International Conference on Radionuclide Metrology and its Applications, Dublin, Ireland, June 2003 (in preparation).