

# Progress Report on Radionuclide Metrology (2007-2009)

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Information for CCRI Section II Members

## 1. Organisation

After the merging of OMH into the Hungarian Trade Licensing Office in 2007 its Metrology Department, as Hungarian NMI, it has remained responsible for maintaining the 22 national standards. The department has 30 graduated staff members including the 7 dealing with ionising radiation. There was no change in the radioactivity staff and working environmental since last report

## 2. Activity measurements

- **Standardization** Three radionuclides were standardized in the last two years:
  - $^{241}\text{Am}$  ( $4\pi\alpha$ - $\gamma$  coincidence counting method),
  - $^{89}\text{Sr}$  ( $\beta$  particle counting method),
  - $^{18}\text{F}$  (calibrated Ge spectrometer, secondary standard)
- **SIR (IRS)** The MKEH participated in the IRS (SIR) program with  $^{241}\text{Am}$ .
- **Key comparison** The MKEH has been participating in the  $^3\text{H}$  key-comparison.
- **Research program** Determination of CENTRONIC IG12 chamber response as a function of  $^{241}\text{Am}$  radioactive solution density is ongoing measuring program.
- **Measuring facilities** Some old electronic units of activity primary standard have been updated (Timing SCAs, Coincidence unit, ADCs, BIN Power Supply).
- **New facility.** A new LSC equipment has been installed for pure  $\beta$ -particle emitting radionuclide measurements
- **Gamma spectrometry.** On the gamma spectrometry field a Digital Spectrum Analyzer has been installed.

## 3. Legal metrology

- **RCRMs.** 152 radioactive certified reference materials (RCRMs) have been prepared and distributed in the last two years.
- **Metrology supervision** The MKEH carried out the periodical metrology supervision of 30 radionuclide calibrators and about 450 pieces of surface contamination monitors.

- **Type test** The MAB HFM 2102 type hand-foot monitor and CANBERRA ARGOS 5AB whole body contamination monitor were type tested on the basis of the relevant IEC standards.

#### **4. Quality assurance**

All the CMC claims of MKEH (104 IR lines among them) suspended on 28 March due to the lack of QMS re-evaluation presentation at the EURAMET TC Q meeting 18 February 2008. After the successful presentation of it all claims reinstated in March 2009

#### **5. Future works**

- Standardization of  $^{60}\text{Co}$  and  $^{56}\text{Co}$  radionuclides.
- Participation in the key comparisons of BIPM CCRI(II) and IRS (SIR) program.
- Development of the new LSC data processing and evaluation for establishing it as primary standard.

#### **5. Publications**

G. Ratel, C. Michotte, D. Kryezin, M. Moune, J. Keightley, L. Johansson, L. Szücs and I Csete: Activity measurements of radionuclide  $^{54}\text{Mn}$  for the LNE-LNHB, France, NPL, United Kingdom and the MKEH, Hungary in the ongoing comparison BIPM.RI(II)-K1.Mn-54  
Metrologia 45, Technical Supplement , 2008.

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