IRA-METAS Report to the CCRI(II) 2007 meeting

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1. Introduction

The IRA-METAS laboratory is in charge of establishing, maintaining and diffusing the Becquerel in Switzerland. The Swiss Federal Office of Metrology (METAS) has given this mandate to the Institut de Radiophysique Appliquée (IRA) since 1993.

Besides ensuring that radioactivity measurements are accurate, reliable and traceable to the *Système International de Référence*, IRA's ionising radiation metrology group has other missions such as maintaining secondary radioactive and dose standards, and calibrating or verifying instruments for measuring ionising radiations (air-kerma, dose, activity).

2. Human resources

At the moment, IRA's radiation metrology group has seven staff in total: a group leader, three scientists, two laboratory assistants, and a physics laboratory assistant trainee.

3. Material resources

- Laboratory and equipments for quantitative handling of radioactive solutions (fume cupboards, systems for handling sources and dispensing solutions, very accurate electronic scales, etc.)
- Equipments for preparing gold-coated polyvinyl source supports
- Primary standardisation facilities
    - Equipments for 4π β-γ coincidence counting
    - Apparatus for 4πγ integral counting
    - Systems for liquid scintillation counting (Efficiency tracing, CIEMAT-NIST, TDCR)
    - Equipments for measuring radon activity with the defined solid angle method
- Secondary measurement resources
    - High resolution gamma and X spectrometers
    - Radionuclide calibrators
    - Reference ionisation chamber

4. Quality Assurance

IRA-METAS runs a quality assurance system which is ISO17025 compliant.

5. Recent and ongoing projects

- Participation in the P-32 international key comparison and the Sb-124 Euromet comparison.

- Purification and standardisation of a Ho-166m solution, and contribution to the BIPM's SIR system.

- Measurement of the half-life of Ho-166m.

- Standardisation of Rn-222 using 4π NaI(Tl) integral counting
- Revision of the solid source preparation process (study of the effects of the wetting and seeding agents, and the freeze-drying)
- Development of a TDCR counting system
- Development of a 4πβ-4πγ counting system
- Characterisation of the materials and geometry of a HPGe detector for Monte Carlo simulations
- Organisation of national gamma spectrometry inter-comparisons (Cesium in dried grass, Ba-133 and Co-57)
- Provision of reference solutions and radon gas standards