

## Consultative Committee for Ionizing Radiation (CCRI) President K Carneiro, Executive Secretary J M Los Arcos

<p><b>Meets every</b> - 2 years (odd years) <b>Last meeting</b> - June 2012 (exception) <b>Members/Observers</b> Section I: 18/9 Section II: 20/8 Section III: 11/3</p>	<p><b>Working groups:</b> Regional Metrology Organizations <u>Section I:</u> X-ray and gamma rays, charged particles (Working Groups: Key Comparisons, Accelerator Dosimetry, Brachytherapy Standards). <u>Section II:</u> Measurement of Radionuclides (Working Groups: Key Comparisons, Extension of SIR, Transfer Instrument, Becquerel Chamber, High Efficiency Detectors). <u>Section III:</u> Neutron Measurements (Working Group: Key Comparisons)</p>		
<b>Comparison activity</b>	<b>Completed</b>	<b>In progress</b>	<b>Planned</b>
CC KCs (& CC Supplementary)	16 + (7)	17 + (6)	4/year
RMO KCs (& SCs)	20 + (21)	8 + (13)	3
BIPM comparisons (all on-going)	64 + (1)	11	21/year SIR+ dosimetry)
CC Pilot studies	None	None	None
CMC	3903 CMCs in 79 service categories		
<p><b>Pointers to the future, stakeholder needs and technological developments</b></p> <ul style="list-style-type: none"> <li>• <b>Absorbed dose primary standards:</b> The continuing trend to move from air kerma to absorbed dose primary standards (based on either graphite or water calorimetry). Status of this transition should be reviewed and continued expense by NMIs and BIPM needs a decision. CCRI(I) has proposed specific WG (CCRI to review and make recommendations).</li> <li>• <b>Personal equivalent dose standards:</b> NMIs need a comparison capability, but no progress at CC level, though EURADOS has organised a comparison of personal dose meters.</li> <li>• <b>Therapy level photon dosimetry:</b> new approach with new quantities and its physical feasibility is being developed by the NMIs, which has led to CCRI interest.</li> <li>• <b>Future needs for fusion:</b> Provision of neutron standards is challenging because of high intensities involved.</li> <li>• <b>Standards beyond 20 MeV:</b> Protection related to high energy accelerators beams and cosmic rays during aircraft flights are stimulating the need for standards above 20 MeV.</li> <li>• <b>Proton (and hadron) dosimetry:</b> Increasing use of hadron therapy in health but implications for CCRI are not yet clear.</li> <li>• <b>Stakeholder needs</b> to be considered through participation in CCs and specific workshops.</li> </ul>			
<p><b>Workload Trend &amp; Workload Management</b></p> <ul style="list-style-type: none"> <li>• CCRI developed a strategy in 2009, ahead of this current exercise, including prioritization and specific actions.</li> <li>• CCRI comparisons for dosimetry are based on the BIPM ongoing comparisons which include 3 new comparisons planned for high dose rate (HDR) <sup>192</sup>Ir sources (using transfer instruments) in 2013-2015 and to reconvene in 2015 the planning for low dose rate (LDR) <sup>125</sup>I seeds-based comparisons.</li> <li>• The removal of the need to calculate pair-wise degrees of equivalence in comparison reports has greatly streamlined the reporting process, and revisions to the 10-year plan for radioactivity comparisons have improved coverage of the Measurement Methods Matrix (MMM) to fully support CMCs. CCRI-specific planned comparisons include 1 nuclide/year for the MMM system, among them <sup>68</sup>Ge/<sup>68</sup>Ga, <sup>137</sup>Cs, <sup>222</sup>Rn, <sup>35</sup>S, <sup>109</sup>Cd, <sup>229</sup>Th, <sup>123m</sup>Te and <sup>133</sup>Xe until 2020.</li> <li>• To overcome difficulties associated with lack of high energy beam or circulation of radioactive sources among different countries, some off-site recent comparisons are already on going in which the BIPM transports transfer instruments to each NMI to make measurements in situ.</li> </ul>			
<p><b>BIPM – references to laboratory activity at the BIPM</b></p> <ul style="list-style-type: none"> <li>• Extension of the International Reference System (SIR): This system for radionuclides is valued as a highly stable and simple, with a track record of 900 measurements covering over 60 radionuclides. There is clear need for extension to alpha and beta emitters on demand, and through the SIRT transfer instrument to short lived radionuclides off-site measurements, in order to simplify the current logistics and to reduce the workload of multilateral comparisons.</li> <li>• Comparability of high energy photon beams: The current system using BIPM travelling standards will not remain adequate as the number of NMIs with LINACs increases, and the BIPM also needs appropriate tool for small field techniques already appearing in the NMIs (e.g. IMRT). Options are being explored as recommended in the BIPM Programme of Work 2013 – 2015.</li> </ul>			