

APMP/TCRI Activity Summary To 2009 CCRI

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1. Introduction

The Asia Pacific Metrology Program (APMP) Technical Committee on Ionizing Radiation (TCRI) was established in August 1998. The chairperson is elected by the committee from among its members. The former chairpersons are Mr. Wen-Song Hwang from INER, Taiwan (1998-2000), Dr Tae-Soon Park from KRISS (2000-2002), Dr. David Webb from ARPANSA (2002-2005), Dr. Yoshio Hino from NMIJ/AIST (2005-2008). The present chairperson is Mr. Ming-Chen Yuan from INER/Taiwan (2008-2010).

The TCRI has 4 working groups (WG). Three working groups, TCRI(I), (II) and (III), are to support the program of regional key and supplementary comparisons for Photon & Electron Dosimetry, Radioactivity and Neutron Measurement, respectively. The fourth is the CMC Review working group which undertakes the assessment of submissions to the JCRB for external review. This WG also evaluates the CMCs from other RMOs in the inter-RMO review process.

The last TCRI meeting was held corresponding to the 24th APMP general assembly in Jakarta on 3rd and 4th November 2008, and 26 delegates from 9 economies took part in this meeting.

2. CMC submission and review schedule

The CMCs of APMP.RI.1.2003 (activity) from 5 countries (Japan, Australia, China, Korea and Taiwan) were published in the BIPM/KCDB in 2005. The APMP.RI.2.2004 (dosimetry and neutron) was once abandoned because the review process was too long, so it was re-submitted with a new number of APMP.RI.3.2006 in March 2006. This new CMC table was finally published in the BIPM/KCDB in October 2006.

In the meantime, Nuclear Malaysia (NM, former MINT) informed their designation and also the establishment of quality system. Their CMC table was submitted as the APMP.RI.4.2007 and published in the BIPM/KCDB in September 2008.

BARC has also obtained the designated institute status and is now also an APMP member. The Office of Atoms for Peace (OAP) in Thailand has been designated as a MRA signatory and a similar status is being arranged for the Department of Medical Sciences (DMSC). Both organizations maintain radiation standards for Thailand.

During the meeting in Jakarta, we didn't submit new CMCs for review nor review CMCs

from other RMOs. We decided to postpone the submission of BARC and OAP until they finish the assessment of quality system.

● CMCs under inter-RMO review

APMP.RI.4.2007 (15 CMCs of Dosimetry from Nuclear Malaysia) was approved on NOV/09/2008, and has been published in the BIPM/KCDB.

● CMCs under intra-RMO review

| Economy | NMI | Number of CMCs | Expected Date for Review | Date of Submission |
|----------|--------------|---------------------------------|--------------------------------|--------------------|
| Thailand | OAP and DMSC | 34 (Activity) 13 (Dosimetry) | (waiting for QS certification) | 2009 |
| India | BARC | 18 (Activity) | (waiting for QS certification) | |

3. Review scheme and procedure

The files and accompanying documents were evaluated by appointed experts in the areas of three categories corresponding to the three sections of CCRI. Those were TCRI(I) of Photon & Electron Dosimetry, TCRI(II) of Radioactivity and TCRI(III) of neutron measurements, and experts were nominated to form a CMC Review Working Group as follows:

| | | |
|-----------|-------------------------------|-----------------------------|
| TCRI(I) | Dr. Ing-Jane Chen (INER) | Photon & Electron Dosimetry |
| | Dr. Norio Saito (NMIJ/AIST) | “ |
| | Dr. David Webb (ARPANSA) | “ |
| TCRI(II) | Dr. Tae Soon Park (KRISS) | Radioactivity |
| | Dr. Yoshio Hino (NMIJ/AIST) | “ |
| | Mr. Ming-Chen Yuan (INER) | “ |
| TCRI(III) | Dr. Hideki Harano (NMIJ/AIST) | Neutron Measurements |
| | Mr. Kil-Oung Choi (KRISS) | “ |
| | Mr. U.V. Phadnis(BARC) | “ |

4. Key comparison schedule

Currently, APMP/TCRI has no neutron measurements comparisons. The other comparisons are listed as below:

● Photon & Electron Dosimetry

| Comparison No. | Field | Pilot Lab | Participating Laboratories | Period or Status |
|-----------------|---|-----------|---|--|
| APMP.RI(I)-K1 | Measurement of air Kerma for Co-60 | KRISS | ARPANSA, BARC,IAEA, INER, KRISS, NM, NIM, NMIJ, NMISA, PNRI | Final report in progress |
| APMP.RI.(I)-K2 | Measurement of air Kerma for low energy X-rays | NMIJ | AEC, ARPANSA, BARC, IAEA, INER, KRISS, NMIJ, NM, NMISA, OAP | Measurement in progress (started from 09/2008) |
| APMP.RI(I)-K2.B | Measurement of air Kerma for low energy X-rays | NMIJ | INER | Final report in progress |
| APMP.RI(I)-K3 | Measurement of air Kerma for medium energy X-rays | INER | ARPANSA, AECS, BARC, DMSC, IAEA, INER, KRISS, NM , NMIJ, NMISA, PTB | Approved for equivalence (Metrologia, 2008, 45, Tech. Suppl., 06012) |
| APMP.RI(I)-K4 | Measurement of absorbed dose to water for Co-60 | INER | AEC, ARPANSA, BARC, BATAN, DMSC, INER, KRISS, NIM, NM, NMIJ, NMISA, NSCL, PTB | Comparison schedule revision, (Will start from May, 2009) |
| APMP.RI(I)-K5 | Measurement of air Kerma for Cs-137 | KRISS | ARPANSA, BARC, NMISA, INER, IAEA , KRISS, NM, NMIJ, OAP, PNRI | Protocol in preparation. |

● Radioactivity

| Comparison No. | Field | Pilot Lab | Participating Laboratories | Period or Status |
|------------------------|--|-------------------------|---|--|
| APMP.RI(II)-K2. Ba-133 | Activity of ¹³³ Ba solution | NMIJ | ANSTO, BARC, INER, INST, KRISS, NIM, NMIJ, NMISA, OAP, P3KRBiN, | 2006.03 to 2006.07 – Completed Final report in progress |
| APMP.RI(II)-K2.I -131 | Activity of ¹³¹ I solution | 1st: KRISS 2nd: NMIJ | ANSTO, BATAN, BARC INER, KRISS, NIM, , NMIJ, OAP | ● 1 st run was finished (2005.11 to 2005.12) ● Measurement in progress for the 2 nd run |

5. Discussion matters at TC level

Through the discussion for approval of APMP.RI.4.2007 CMCs, we did have some claims from APMP/TCQS chair and also from EURAMET that our quality system (QS) did not completely fit to the JCRB rules. At this moment, because the NM is the secondary lab, and all standards have been transferred from outside and NM did have calibration certificates, so that APMP.RI.4.2007 has been approved. However, their QS should be approved by the APMP/TCQS before the submission of CMCs, and also if we do not have enough key comparison results, we will face the same difficulties.

So, we need stricter peer review process and also inter-RMO key comparisons to be approved and to maintain our CMC items.

The Office of Atoms for Peace (OAP), the Department of Medical Sciences (DMSC) in Thailand were formally designated, and OAP has sent an official letter to the APMP to be a full member. We heard that OAP will have peer review to establish their QS system, and we are looking forward to receiving the certification forms from OAP.

6. Discussion matters at RMO-WG level

There are several designated institutes in TCRI. These institutes have some difficulties to establish QS to submit their CMCs because the main object of their institute is nuclear research and sometimes standardization groups can not get enough support from the institute. We have to wait a long time for them to establish their QS, so we would like to request principal NMIs to take actions on the headquarters of designated institutes and inform them the importance of QS to keep the standards and to publish their CMCs.

7. Discussion matter in CC level

These years, it has become more and more difficult to transport radioactive materials and measuring instruments (such as "fission chambers"). We would like to express stronger appeal to all member governments to provide special allowance for exchanging the materials for inter comparisons.

8. Other discussion matters

The WG members of TCRI (Ionizing Radiation) are, in some cases, not included in the national metrology institute, and they do not have enough information and support to take part in the TCRI comparisons and meetings.