

February 2013

1. General Aspects

This report summarizes activities of the Technical Committee for Ionising Radiation. In the last years the activity has developed in a direction away from the established three subfields dosimetry, activity referred to a radionuclide and measurement of neutrons. At the last Contact Person meeting in October 2012 it was proposed to lay down the subfields and establish three working groups.

The TC-IR has 27 contact persons including IRMM of EC. The TC-IR also has observers, István Csete, IAEA and Velko Velez FYR Macedonia.

The TC-IR Contact Person annually meeting was organised by the IFIN-HH in Bucharest, Romania in October 2012. In addition to regular topics we had presentations from visitors of the BIPM and the Chinese institute NIM. New roadmaps were presented and discussed during the meeting.

The roadmaps for research have been reviewed and three new TC-IR roadmaps were built up from ground. These were reviewed among a stakeholder organisation the HERCA.

The Ionising NMIs/DIs are working in 8 EMRP supported research projects giving a total of 86 partners.

2. Projects

There is one large comparison project and several smaller going on.

Euramet TC-IR projects		Coordinator	No of institutions		Status
Refr.no	Title		EURAMET	Non-EURAMET	
1257	Comparison on the activity concentration of the same ^{166}mHo solution	Karsten Kossert (PTB)	5	0	Agreed/ started
1243	The interlaboratory comparison of the radionuclide calibrators	Arunas Gudelis (VMT/FMC)	2	0	Proposed
1221	Comparison of air kerma measurements for diagnostic X-ray beam qualities	Igor Gomola (IAEA)	2	0	Agreed/ started
1219	The peer review of the QMS of the IAEA Dosimetry Laboratory	Joanna Izewska (IAEA)	4	0	Agreed/ started
1200	Comparison of air kerma measurements of the medium energy X-ray radiation in radiation protection measurements	István Csete (IAEA)	2	0	Agreed/ started
1177	Comparison of calibration of KAP meters in terms of air kerma area product	Costas J. Hourdakos (IRCL/GAEC-EIM)	11	8	Agreed/ started
1132	Comparison of the ambient dose equivalent rate for photon radiation	Oliver Hope (PTB)	16	1	Agreed/ started

3. CMCs and comparisons

A working group has been organised for this topic. At the moment there are two members reviewing CMCs in dosimetry and activity.

Several EURAMET NMIs have still to update their CMCs, at least by completing column P. In dosimetry 11 laboratories have performed the periodical review, and their revised claims have been published. The second batch of the claims of five laboratories is being under internal review, some of them are waiting for supporting comparison reports. CMCs of the measurement of neutrons have been reviewed by István and other experts at the NMIs.

21 EURAMET members have 1941 ionising radiation CMCs. The rest of the world (15 countries) has 1877 RI CMCs.

Overview of the ionizing radiation CMCs (from István Csete).

Country/lab	dosimetry	date of publ.	review pending IRTC	review pending RMOs	activity	date of publ.	review pending IRTC	review pending RMOs	neutron	date of publ.	review required	published total
Austria/BEV	50	31/01/2012			100	15/09/2003						150
Bulgaria/BIM NCM	7	14/02/2007	8		16	2013						23
Czech Republic/CMI	7	11/03/2005	X		104	15/09/2003			12	19/05/2005	xxx	123
Finland/STUK	30	31/01/2012										30
France/LNE-LNHB	63	11/03/2005		82	166	15/09/2003	139		15	19/05/2005	xxx	244
Germany/PTB	116	19/12/2012			158	20/01/2010			20	19/05/2005	xxx	294
Greece/GAEC	35	12/10/2009										35
Hungary/MKEH	26	31/01/2012			77	2013						103
IAEA	13	23/02/2007	XX									13
IRMM					110	15/09/2003	85					110
Italy/ENEA	76	11/03/2005	X		13	15/09/2003			9	19/05/2005	xxx	98
Netherlands/VSL	21	31/01/2012			57	15/09/2003						78
Norway/NRPA	22	31/01/2012										22
Poland/GUM	4	31/01/2012			68	15/09/2003						72
Portugal/ITN	43	11/03/2005	43									43
Romania/IFIN					34	15/05/2008		36				34
Slovakia/SMU	30	15/05/2008	XX		37	15/05/2008			9	15/05/2008	xxx	76
Spain/CIEMAT	52	15/05/2008	25		97	15/05/2008	86					149
Sweden/SSM	26	31/01/2012										26
Switzerland/METAS	3	31/01/2012			21	15/09/2003						24
United Kingdom/NPL	36	11/03/2005	X		116	15/09/2003			42	19/05/2005	xxx	194
total	660	182	76	82	1174	93	310	36	107		0	1941

X passive lab during 2th round in 2012, XX scheduled in 2013, xxx reviewing by the CCRI(III) reviewed and republished

4. Activities of the Sub-Committees and Working Groups

The Sub-Committees were not a useful organisation for the ionising radiation committee's work. Three working groups were established at the TC-IR Contact Person meeting in 2012.

TC-IR WG CMCs and Comparisons, Convenor István Csete (IAEA) and member Bruno Chauvenet (LNE-LNHB)

This working group will have the CMC reviewing as main task. The work is under the supervision of the CIPM MRA. In the reviewing technical competence is needed in the measurement application and methods, and in the technical rules set up by the JCRB. There are strict deadlines and a large metrology network to coordinate. The group will follow the results from comparison projects and update the EURAMET project data base.

TC-IR WG Health care and new dose quantities, Convenor Jean Marc Bordy (LNE-LNHB)

This working group will have focus on topics given in the roadmaps 1 and 3; Dosimetry and radionuclides in health care and Novel dosimetry concepts for IR. Neutron measurements are included. The work will be on strategy (updating of roadmaps) and planning for new research projects. The tasks related to traditional EURAMET projects lay also here.

TC-IR WG Radionuclides and Dosimetry in Energy, Industry and Environment (nuclear and non-nuclear), Convenor Franz-Josef Maringer (BEV).

This working group will have focus on topics given in the roadmaps 2; Anthropogenic and natural radionuclides in environment and industry. The work will be on strategy (updating of roadmaps) and planning for new research projects. The tasks related to traditional EURAMET projects lay also here.

5. Participation in EMRPs

EMRP JRPs in progress:

[MetroFission](#), Metrology for New Generation Nuclear Power Plants, coordinator Lena Johansson (NPL), UK, 12 partners

[MetroMetal](#), Measuring radiation in scrap metals, coordinator Eduardo Garcia-Toraño (CIEMAT), Spain, 14 partners

[MetroRWM](#), Metrology for radioactive waste management, coordinator Petr Kovar (CMI), Czech Republic, 13 partners

[MRI safety](#), Metrology for new generation safety standards and equipment in MRI, Bernd Ittermann (PTB), Germany, 3 partners

[MetrExtRT](#), Metrology for radiotherapy using complex radiation fields, Jean-Marc Bordy (CEA), France, 10 partners

[MetroMRT](#), Metrology for Molecular Radiotherapy, Vere Smyth (NPL) UK, 14 partners

[BioQuaRT](#), Biologically weighted quantities in radiotherapy, Hans Rabus (PTB) Germany, 7 partners

[MetroNORM](#), Metrology for processing materials with high natural radioactivity, Franz Josef Maringer (BEV), Austria

6. Meetings

The Consultative Committee for Ionising Radiation (CCRI) called for a meeting 15th May 2012. The main topics were linked to the CCRI strategic plan for 2020. Each RMO was asked before the meeting to report on actions taken according to the plan. The TC-IR was the only RMO that could report on a common base, because of the EURAMET's research projects. The strategic plan was updated in the meeting.

7. Issues

Linac at the BIPM. CCRI has proposed to build an international medical accelerator at the BIPM to be open to all Member States. A working group was set down by CCRI many years ago, and comparison of NMI primary standards are running. The costly and time consuming work is done by people from BIPM using the BIPM Graphite Calorimeter Standard for Absorbed Dose to Water. The plan is to do two comparisons per year, 5 reported since 2009. This issue is linked to the cancer treatment. In Europe the cancer death rate is 1.7 mill. per year. Susanne Picard, BIPM reported from the work in the TC-IR meeting in Bucharest. Many European NMIs is in the plan for comparison in the next years. For the future the Contact Persons were in the favour of having a facility at the BIPM.

8. Strategic planning

New roadmaps have recently been drafted in the frame of the European Metrology Programme for Innovation and Research (EMPIR). One roadmap has been published on health care common for radionuclide metrology, dosimetry and neutron measurements. Another roadmap published on environment and industry on anthropogenic and natural radionuclides and a third on novel dosimetry concepts in radiation therapy and radiation risk, and radiation sensitivity of nano-electronics. Two new working groups are proposed to work on the different parts of the strategy.

9. Outlook for 2013/2014

1. Many laboratories are engaged in the EMRPs also this year.
2. The reviewing of CMCs is going on.
3. The next contact person meeting will be organised by CMI in Prague, Czech Republic October 2013.
4. The TC-IR of EURAMET will continue to work on goals set up in the CCRI strategic plan up to 2020.
5. The TC-IR will work for a formal relationship between the EURAMET and the IAEA dosimetry lab.

TC-IR Chair Hans Bjerke (NRPA) and Lena Johansson (NPL), TC-IR Chair from May 2013.