

Report to the Euramet GA on Euramet TC-IR activities

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and
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1. General Aspects

This report summarizes activities of the Euramet Technical Committee for Ionising Radiation. In the last years the activity has developed in a direction away from the established three subfields dosimetry, radioactivity and neutrons. At the last Contact Person meeting in October 2012 it was proposed to lay down the subfields and instead establish three working groups that are focussed on science related to the grand challenges and a working group for CMCs. New roadmaps for three science areas have been established and reviewed by a stakeholder organisation – HERCA (Heads of the European Radiological protection Competent Authorities).

The TC-IR has 27 contact persons including IRMM from the European Commission. The TC-IR also has two 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 (Susanne Picard) and the Chinese NIM. The new roadmaps were presented and discussed during the meeting.

The NMIs/DIs in TC-IR are working in eight EMRP supported joint research projects with a total of 86 partners.

2. Projects (non-EMRP)

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

Euramet TC-IR projects			No of institutions		Status
Refr.no	Title	Coordinator	EURAMET	Non-EURAMET	
1257	Comparison on the activity concentration of the same 166mHo 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 Izweska (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. Hourdakakis (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 set up to manage this topic. At the moment there are one member reviewing CMCs for Dosimetry (Istvan Csete from the IAEA) and five for Radioactivity lead by Bruno Chauvenet from LNE-LNHB. This review team is composed of Marco Capogni (ENEA), Dirk Arnold (PTB), Franz Josef Maringer (BEV) and Laszlo Szucs (MKEH).

Several EURAMET NMIs have still to update their CMCs, at least by completing column P. In dosimetry 8 laboratories have already 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.

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				7
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	88	19/11/2010		28	158	20/01/2010			20	19/05/2005	xxx	266
Greece/GAEC	35	12/10/2009										35
Hungary/MKEH	26	31/01/2012			84	15/09/2003		71				110
IAEA	13	23/02/2007	XX									13
IRMM					110	15/09/2003						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						34
Slovakia/SMU	30	15/05/2008	XX		37	15/05/2008			9	15/05/2008		76
Spain/CIEMAT	52	15/05/2008	XX		97	15/05/2008						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	632	182	51	110	1165		139	87	107		0	1904
X passive lab during 2th round in 2012, XX scheduled in 2013, xxx reviewing by the CCRI(III)												

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

[MetroMeta](#), 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; the 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 cancer treatments. In Europe the cancer death rate is 1.7 million per year. Susanne Picard, BIPM reported from the work in the TC-IR meeting in Bucharest. Many European NMIs are in the plan for comparison in the next years. For the future, all TC-IR Contact Persons were in 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 produced on health care common for radionuclide metrology, dosimetry and neutron measurements. Another roadmap drafted is 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 (the roadmaps can be found here: <http://www.euramet.org/index.php?id=roadmaps0>). New working groups are proposed to work on the different parts of the strategy going forward.