May 2015

Report to the EURAMET GA on TC-IR activities

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TC-IR Chair

1. General Aspects

This report summarises activities of the EURAMET Technical Committee for Ionising Radiation. The TC-IR had representatives from 28 of the 38 members of EURAMET, including JRC-IRMM of the European Commission. In 2014, Bosnia-Herzegovina joined the TC-IR with a nominated contact person as a new member.

The TC-IR was delighted to hear that the IAEA became a liaison organisation to Euramet in 2013. The TC-IR has close links with the IAEA in several research areas and István Csete from the IAEA has since many years taken a leading role in reviewing TC-IR CMCs.

The EURAMET TC-IR does not have any subcommittees but instead has organised three Working Groups to focus on CMCs and work related to the roadmaps.

The TC-IR Contact Person annually meeting was organised by the NRPA in Oslo, Norway, in October 2014. During that meeting it was decided that the next TC-IR CP meeting will be held in Ankara, Turkey in January 2016.

2. Projects

There are eighth EURAMET TC-IR projects on-going and seven projects that were completed in 2014.

On-going projects since last report:

ID	Date	Title	Coordination	Collaboration type
1331	2014-07-01	Comparison of primary absorbed dose to water standards in the medium-energy x-ray range	PTB	Comparison
1326	2014-09-01	Comparison of the air kerma standards for 137Cs and 60Co gamma-ray beams for radiation protection measurements	IST/ITN	comparison

1313	2014-06-01	On-site visit by external technical experts in the field of ionising radiation (radionuclide activity)	FTMC	consultation
1285	2013-03-01	Comparison of air kerma and dose to water standards for Co-60 radiation beams for radiotherapy	METAS	Comparison
1284	2013-10-01	Survey of European countries' legal regulations and practices in ionising radiation calibrations	NRPA	Consultation
1243	2013-02-28	The interlaboratory comparison of the radionuclide calibrators	FTMC	Traceability
1132	2013-01-17	Comparison of the ambient dose equivalent rate for photon radiation	PTB	Comparison
1104	2009-06-30	Comparison of the neutron spectra of reference neutron sources for the improvement of the ISO 8529 Standard series	NPL	Research

Completed projects in 2014:

1327	2014-04-27	Comparison of air kerma length measurements for CT diagnostic X-ray beam qualities	IAEA	comparison
1292	2014-01-01	Sm-151 activity measurement	LNE-LNHB	comparison
1257	2013-02-18	Comparison on the activity concentration of the same 166mHo solution	PTB	comparison
1221	2012-08-31	Comparison of air kerma measurements for diagnostic X-ray beam qualitiesis	IAEA	comparison
1219	2012-02-07	The peer review of the QMS of the IAEA Dosimetry Laboratory	IAEA	consultation

1200	2011-07-31	Comparison of air kerma measurements of the medium energy X-ray radiation in radiation protection measurements	MKEH	comparison
1177	2011-03-27	Comparison of calibration of KAP meters in terms of air kerma area product	IRCL/GAEC-EIM	comparison

3. CMCs and comparisons

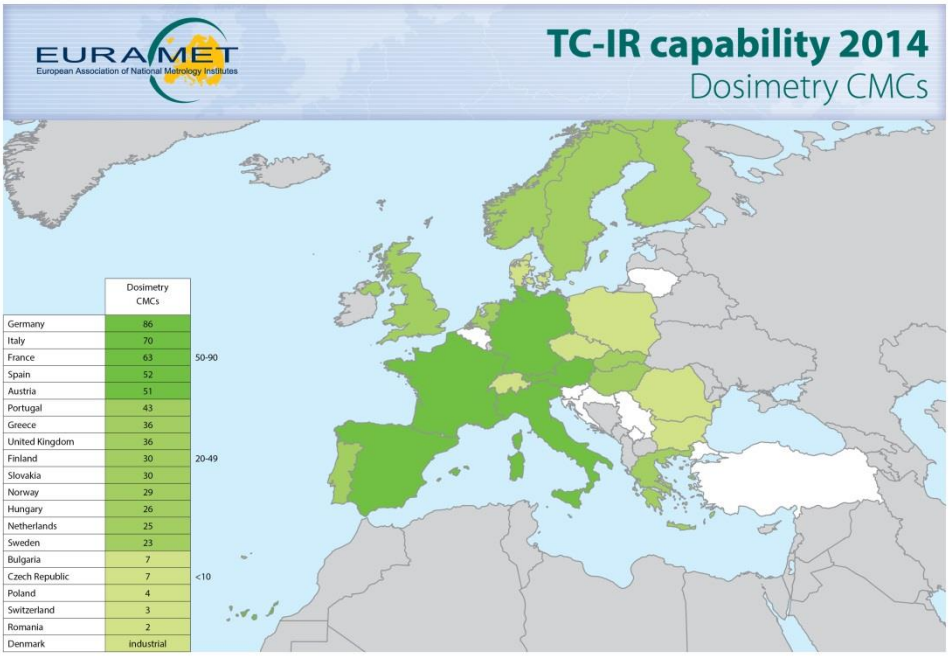
A working group has been organised for this topic. At the moment there are a handful of members reviewing CMCs in dosimetry and activity.

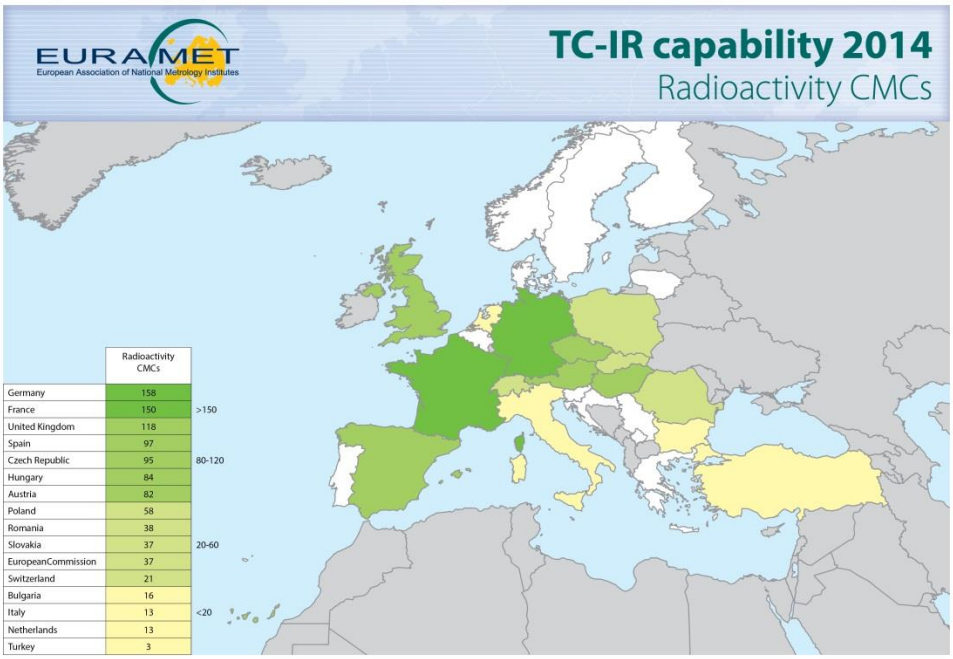
Several EURAMET NMIs have still to update their CMCs, at least by completing column P. The CMC Working group is led by Bruno Chauvenet, LNHB, France and István Csete, IAEA. Other experts at NMIs that are contributing to the CMC review process is for Dosimetry: Hans Bjerke (NRPA, Norway), Costas Hourdakis (IRCL/GAEC-EIM, Greece) and Ulrike Ankerholt (PTB, Germany). For Radioactivity: Franz-Josef Maringer (BEV, Austria), Dirk Arnold (PTB, Germany) and Laszlo Szűcs (MKEH, Hungary). For Neutrons: Helmut Schumacher (PTB, Germany), Jean-Marc Bordy (LNHB, France), Miloslav Kralik (CMI, Czech Republic)

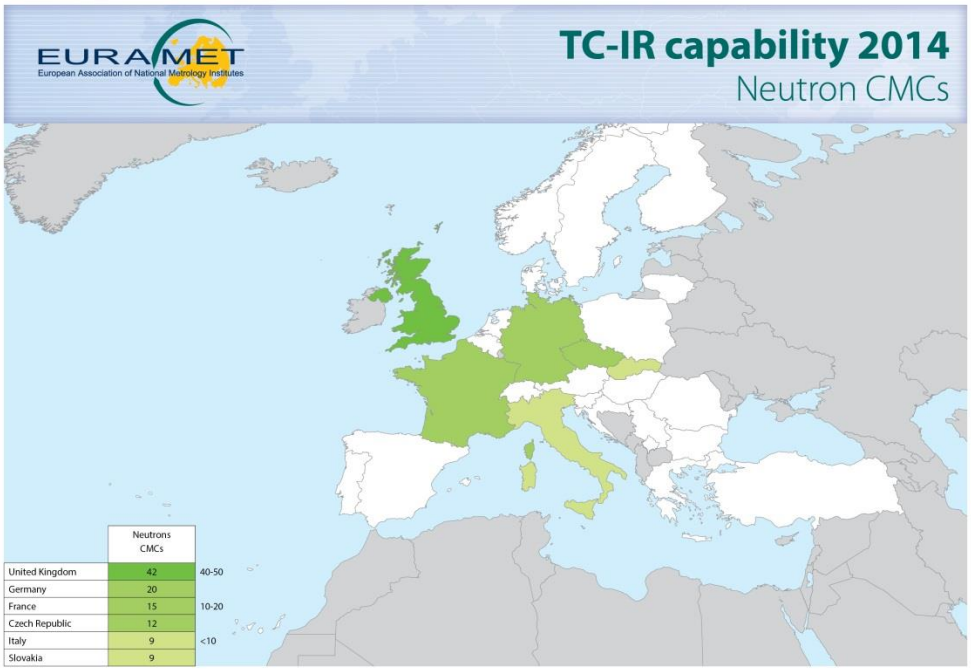
Overview of the ionizing radiation CMCs (from István Csete).

	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 pending IRTC	published total
1	Austria/BEV	50	31/01/2012			100	15/09/2003						150
2	Bulgaria/BIM NCM	7	14/02/2007	8		16	04/06/2013						23
3	Czech Republic/CMI	7	11/03/2005	7		104	15/09/2003			12	19/05/2005		123
4	Finland/STUK	30	31/01/2012										30
5	France/LNE-LNHB	82	10-04-2013			166	15/09/2003	139		15	19/05/2005		263
6	Germany/PTB	90	07/10/2014			158	20/01/2010			20	19/05/2005		268
7	Greec/GAEC	35	12/10/2009										35
8	Hungary/MKEH	26	31/01/2012			74	04/06/2013						100
9	IAEA	22	09-09-2013										22
10	IRMM					110	15/09/2003						110
11	Italy/ENEA	76	11/03/2005	76		13	15/09/2003			9	19/05/2005		98
12	Netherlands/VSL	21	31/01/2012			57	15/09/2003						78
13	Norway/NRPA	22	31/01/2012										22
14	Poland/GUM	4	31/01/2012			68	15/09/2003						72
15	Portugal/ITN	43	11/03/2005	38									43
16	Romania/IFIN					36	10/05/2013						36
17	Slovakia/SMU	30	15/05/2008			37	15/05/2008			9	15/05/2008		76
18	Spain/CIEMAT	52	15/05/2008	62		97	15/05/2008	97					149
19	Sweden/SSM	26	31/01/2012										26
20	Switzerland/METAS	3	31/01/2012			21	15/09/2003						24
21	United Kingdom/NPL	36	11/03/2005	36		116	15/09/2003	115		42	19/05/2005		194
22	Slovenia/MIRS-IJF-F2				12								
23	Turkey/TAEK					3	26/08/2014						
24	Denmark/Riso				9								
	total	**662**		**227**	**21**	1176		**351**	**0**	**107**		**0**	**1942**
	reviewed	376				287							
	%	**57**				**24**				**0**			

Geographical overview of Current Measurement Capabilities in the 28 countries represented in EURAMET TC-IR:


EURAMET
European Association of National Metrology Institutes
TC-IR capability 2014
Dosimetry CMCs
Dosimetry CMCs
Germany 86
Italy 70
France 63
Spain 52
Austria 51
Portugal 43
Greece 36
United Kingdom 36
Finland 30
Slovakia 30
Norway 29
Hungary 26
Netherlands 25
Sweden 23
Bulgaria 7
Czech Republic 7
Poland 4
Switzerland 3
Romania 2
Denmark industrial
50-90
20-49
<10


EURAMET
European Association of National Metrology Institutes
TC-IR capability 2014
Radioactivity CMCs
Radioactivity CMCs
Germany 158
France 150
United Kingdom 118
Spain 97
Czech Republic 95
Hungary 84
Austria 82
Poland 58
Romania 38
Slovakia 37
EuropeanCommission 37
Switzerland 21
Bulgaria 16
Italy 13
Netherlands 13
Turkey 3
>150
80-120
20-60
<20



4. Activities of the TC-IR Working Groups

Three working groups were established at the TC-IR Contact Person meeting in 2012. In the Contact Person meeting in 2014 an outline of the next steps for the working groups was decided and in 2015 separate Working Group meetings was held to get these actions started.

TC-IR WG CMCs and Comparisons, Convenor István Csete (IAEA) and Bruno Chauvenet (LNE-LNHB)
This working group have CMC reviewing as its 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.

The two other working groups are related to the Strategy of TC-IR and will firstly focus on the roadmaps and make sure that they are up-to-date. The WGs will also establish more formal connections with stakeholders and standard bodies in order to be able to realise the roadmaps in proposals for EMPIR and other funding bodies. Another important aspect of the WGs are to maintain a European view of current capability in IR and understanding of capacity building for the future. This part of the work was initiated with a survey sent out to TC-IR CPs that calified each country's current position and future aspirations.

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

TC-IR WG Radionuclides and Dosimetry in Energy, Industry and Environment (nuclear and non-nuclear), Convenor Franz-Josef Maringer (BEV, Austria).
This working group will focus on topics given in roadmap 2; Anthropogenic and natural radionuclides in environment and industry.

5. Participation in EMRP

EMRP JRPs in progress:

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

New EMRP JRPs in 2014:

MetroDECOM Metrology for Decommissioning of Nuclear Plants, Jiri Suran (CMI) Czech Republic
MetroEWR Metrology for Early Warning Networks, Stefan Neumaier, (PTB) Germany

EMRP JRPs that have ended by May 2015:

MetroFission, Metrology for New Generation Nuclear Power Plants, coordinator Lena Johansson (NPL), UK, 12 partners
MetroMRT, Metrology for Molecular Radiotherapy, Vere Smyth (NPL) UK, 14 partners
BioQuaRT, Biologically weighted quantities in radiotherapy, Hans Rabus (PTB) Germany, 7 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

SIP (Support for Impact) projects
The JRP ENG08 MetroFission has won a SIP project to write an IEC standard for the digital data format of nuclear instrumentation. The SIP07 is due to start 1st June 2015.

6. Meetings

CCRI meeting in 2015
The Consultative Committee for Ionising Radiation (CCRI) held at a meeting at BIPM on the 27th March 2015. The main topics were:

1. President's report from Dr. Vynand Louw, CIPM.
2. Reports from RMOs
3. Reports from CCRI(III), CCRI(II) and CCRI(I)
4. ICRU recent and future reports
5. Strategic view

Contact Person meeting in 2014
The TC-IR Contact Person annually meeting was organised by the NRPA in Oslo in October 2014.

TC-IR meeting to discuss EMPIR calls in 2015
A meeting to discuss the 2015 EMPIR call Health and SI Broader Scope was held at PTB, Berlin, 29-30 January 2015.

Collaboration with OPERRA
The EURAMET TC-IR have been invited to a meeting with the European project OPERRA that will be held in Munich on the 11th November 2015. Possible collaborations within the framework of the topic "radiation protection" between the two (and others) will be discussed in this meeting.

7. Issues

Key comparison exercises. There is a problem with supporting key comparisons for the CMCs. The WG will communicate with CCRI regarding this. Many key comparison exercises are not reported even ten years or more after initiated. This creates a significant problem with CMCs, especially in Radioactivity.

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. Susanne Picard from the BIPM reported from the work in the TC-IR meeting in Bucharest. This issue is linked to cancer treatment. In Europe the cancer death rate is 1.7 million per year. Many European NMIs is in the plan for the comparison in the next years. For the future, a majority of TC-IR Contact Persons were in the favour of having a facility at the BIPM.

8. Strategic planning

Work will continue to strengthen links with stakeholders, standard bodies, international organisations and efforts will be made to define cross-disciplinary projects within the grand challenges. Firstly, this will be addressed for Health topics.
The two new working groups will have as their main focus to keep the TC-IR strategy up-to-date and implemented.

9. Outlook for 2015

1. EMPIR Health and SI Broader Scope calls
2. The reviewing of CMCs is going on.
3. The next contact person meeting will be organised by TAEK in Ankara in January 2015. This will include separate working group meetings.
4. The TC-IR of EURAMET will continue to work on goals set up in the CCRI strategic plan up to 2020.
5. Possible collaborations with the European project OPERRA will be determined.

Lena Johansson (NPL, UK)
TC-IR Chairperson