

1. General Aspects

The work of the Technical Committee for Metrology in Chemistry, TC-MC, continues in its well-established form. The TC-MC members are actively participating in the European metrology programmes, i.e. the European Metrology Research Programme (EMRP) and the European Metrology Programme for Innovation and Research (EMPIR).

The eighth meeting of EURAMET TC-MC was held in Malta hosted by MCCA, from 3rd to 6th February 2015. All the four Sub-Committees (SCs) had separate meetings on the 4th of February and the TC-MC plenary meeting was held on 5th–6th February. About 80 representatives from various European NMIs/DIs participated in these meetings. An additional day on the 3rd of February 2015 was reserved for the periodic meetings of the EMRP project ENV52 and for the Convenors' meeting.

Running EURAMET and EMRP projects were discussed in detail. A workshop in preparation of the upcoming EMPIR calls was held during the TC-MC plenary meeting.

It was the last TC-MC meeting chaired by Michela Segà (INRiM), whose second mandate of TC-MC chairperson will end in June 2015; she will be replaced by Hanspeter Andres (METAS), who had already been nominated by EURAMET as new TC chairperson.

Pia Tønnes Jakobsen (DFM) was nominated as the new convenor of the Sub-Committee for Electrochemical Analysis (SCEA) in the plenary meeting. She replaces Francesca Durbiano (INRiM), who ended her second mandate of Convenor and had acted as the Convenor of SCEA for four years. Béatrice Lalere (LNE) was reappointed for a second two-year mandate as Convenor of the Organic Analysis SC (SCOA).

2. Projects

Many EURAMET projects are currently active. Most of them are comparisons and mainly carried out in the field of gas analysis. Detailed information on the projects is given in the TC-MC project webpage. During the first months of 2015 one comparison was agreed and one further comparison was proposed.

Year	Projects started/proposed	Projects completed
2003	5	4
2004	4	3
2005	5	4
2006	8	3
2007	4	4
2008	4	3
2009	3	3
2010	3	4
2011	9	8
2012	-	1
2013	2	3
2014	7	2
2015	2	-



3. Comparisons

Nine EUROMET.QM Supplementary Comparisons and nine Key Comparisons are registered in the BIPM KCDB:

KC/SC	Name	Status
KC	EUROMET.QM-K1.c	completed
KC	EUROMET.QM-K3	completed
KC	EUROMET.QM-K4	completed
KC	EURAMET.QM-K4.1	completed
KC	EURAMET.QM-K12	completed
KC	EUROMET.QM-K17	completed
KC	EURAMET.QM-K26.a	completed
KC	EURAMET.QM-K111	in progress
SC	EUROMET.QM-S1	completed
SC	EUROMET.QM-S2	completed
SC	EUROMET.QM-S3	completed
SC	EURAMET.QM-S4	completed
SC	EURAMET.QM-S5	completed
SC	EURAMET.QM-S6	completed
SC	EURAMET.QM-S7	completed
SC	EURAMET.QM-S8	completed
SC	EURAMET.QM-S9	completed

About the 80% of these comparisons are carried out in the field of gas analysis.

4. CMCs

In 2015, a review of new claims as well as a re-review of a range of existing claims was carried out in the regional CMC review process under cycle XVI of the CMC claim period. The files and accompanying documents were received by the relevant TC-MC SC convenors after discussion and evaluation in the SCs. Prior to the SC meetings appointed experts from different European NMIs/DIs pre-reviewed the submitted claims and the evaluation was completed during SC meetings on 4th February 2015. 130 new and 133 revised and re-reviewed claims (24 of which were withdrawn) have been proposed by 24 NMIs and DIs from 19 countries, including the European Union, covering 12 categories.

The collated claims from all the subcommittees were sent to the chairperson of the CCQM KCWG on the 20th of February 2015, according to CCQM rules, for the inter-regional review.

During the interregional review, the claims were divided into Fast Track and Non Fast Track ones and only 1 EURAMET claim was put among the Non Fast Track ones. The Cycle XVI claims are presently undergoing inter-regional review.

EURAMET experts also took part in the inter-regional review process of 323 claims submitted by AFRIMETS, APMP, COOMET and SIM.

5. Activities of the Sub-Committees

Meetings of all Sub-Committees were conducted together with the TC-MC plenary meeting in Malta in the week from 3rd to 6th February 2014.

A review of new claims as well as the compulsory re-review of a range of existing claims were carried out under Cycle XVI of the CMC claim period and a great part of the SC meetings was devoted to a face-to-face review of the claims of Cycle XVI.

Running and new projects in the framework of EURAMET and EMRP and also proposals for the upcoming EMPIR calls on "Metrology for Health", "SI Broader Scope" and "Metrology research for pre- and co-normative projects" were discussed in the sub-committees. Unfortunately, no inputs were given for the "Research Potential" call.

An overview of the technical work carried out in the four SCs is reported.

SC for Electrochemical Analysis (SCEA)

A major issue dealt with the presentation and discussion of possible future cooperation activities to be carried out within the SC. Some of the participants gave presentation concerning the recent developments in their NMIs/DIs. Various members of the SCEA are successfully taking part in EMRP projects and the outline of various JRPs related to electrochemistry was given during a joint meeting of the SCIA and SCEA, held on the 4th February in the afternoon.

SC for Inorganic Analysis (SCIA)

A large part of the technical work in SCIA is at present concentrated on ongoing EMRP projects. During the meeting, two project proposals were presented:

- Determination of transferrin in human serum, as outcome of the EMRP project HLT05 "Metallomics – Metrology for metalloproteins", coordinated by PTB
- Comparison of analytical capabilities for gold determination in gold jewellery alloy coordinated by IMBiH.

Two members gave technical presentations on the activity in inorganic analysis carried out in their institutes. The outline of various JRPs related to inorganic analysis was given during a joint meeting of the SCIA and SCEA, held on the 4th February in the afternoon.

SC for Organic Analysis (SCOA)

For the SCOA is considered to be of vital importance to be proactive and to arrange EURAMET activities that complement OAWG activities. During the meeting, a project proposal related to a comparison on determination of Aflatoxins in dried figs coordinated by UME was discussed. The outline of the EMRP project ENV 08 "WFD traceability - Traceable measurements for monitoring critical pollutants under the 'European Water Framework Directive' (WFD- 2000/60/EC)" was also given. Some ideas for the upcoming EMPIR calls were discussed.

SC for Gas Analysis (SCGA)

The SCGA is very active in various EURAMET projects, some of them also registered as EURAMET Supplementary or Key Comparisons in the KCDB. Its activities involve also many participants from outside Europe. Eleven active projects were discussed during the meeting.

- EURAMET 708 is an ongoing bilateral comparison between VSL and NIST dealing with different challenging analytes.
- EURAMET 1112 (PTB) is a comparison on ethanol in water saturated air with the purpose of comparing the realisation process of mixtures to be used in the breath ethanol analysis
- EURAMET 1220 (NPL) is a project for the analysis of trace level impurities in hydrogen used in fuel cells.
- EURAMET 1255 deals with coal mine methane and is coordinated by BAM

- EURAMET 1274 is a bilateral comparison between SMU and MKEH on automotive mixtures.
- EURAMET 1280 (PTB) deals with establishing the equivalence of TILSAM and gravimetry-based analytical capabilities.
- EURAMET 1258 “Guidelines for CMC”, which concentrates on a document that clarifies existing guidelines for setting up CMCs and to specify for a couple of scenarios what supporting evidence is to be delivered, e.g., extension of ranges, extension of range of components, claims for purity analysis, smaller uncertainties and guidance on CRMs with reference to existing CCQM GAWG documents.
- EURAMET 1290 (VSL), which is also registered as Key Comparison EURAMET.QM-K111, deals with C_3H_8 at 1000 $\mu\text{mol/mol}$ in N_2 . This is a core comparison in the gas field and the first organised CCQM KC linked with regional KCs. From each RMO there are only 2 participants (as a maximum) in the CCQM KC and one of those has to organize the regional comparison. For EURAMET VSL and NPL are participating in the CCQM KC and VSL is coordinating both the CCQM and the EURAMET KCs.
- EURAMET 1293 (NPL) on $C_6 - C_{10}$ hydrocarbons in methane. Previous natural gas comparisons have only covered hydrocarbons up to n-C6. VSL and NPL are the only participants.
- EURAMET 1305 (NPL), bilateral comparison between NPL and VSL on 5 $\mu\text{mol/mol}$ of oxy-VOCs to underpin global monitoring of key components which alter the oxidising capacity of the atmosphere and therefore is important for the WMO-GAW.
- EURAMET 1329 (LNE) on SO_2 at 100 nmol/mol in synthetic air.

No new projects were proposed. The SCGA members are actively involved in ongoing EMRP projects.

6. EMRP and EMPIR

The ongoing European Programmes EMRP and EMPIR represent a very important factor in the work and prospect of the TC-MC.

TC-MC has been strongly involved in the EMRP process and participates in about 15 running projects in all the EMRP fields, i.e. “Health”, “Energy”, “Metrology for environment”, “Metrology for industry”, SI broader scope, “New technologies”, indicating the cross-disciplinary nature of the TC itself.

The periodic meeting of the JRP ENV52 “HIGHGAS – Metrology for high-impact greenhouse gases” was carried out on 3rd February in Malta prior to the TC-MC meetings.

Chemical aspects related to the upcoming EMPIR calls on “Metrology for Health”, “SI Broader Scope” and “Metrology research for pre- and co-normative projects” were addressed in a specific workshop organised during the TC-MC plenary meeting. Eleven presentations were given by representatives of various European NMIs/DIs, dealing with the various TPs. The large amount of discussed topics underlines the interdisciplinary features of metrology in chemistry and the deep involvement of metrology in chemistry community in these subjects.

7. Meetings

TC-MC annual meeting 2015:

3rd to 6th February 2015 (Sub-Committees and TC-MC plenary meeting) in Malta.

Highlights:

Reports on:

- News from EURAMET, BoD and EMPIR, *Wolfgang Schmid, Head of EURAMET Secretariat*
- CCQM/CIPM February 2015 up date, *Robert Kaarls, CIPM Secretary and Immediate Past President of CCQM*
- Activities of the EURAMET Task Groups “Health”, “Environment”, Energy, *Hans Koch, Convenor of the TG Health, Richard Brown on behalf of Andrea Merlone, Convenor of the TG Environment, Hugo Ent on behalf of Gert Rietvelt Convenor of the TG Energy*
- BIPM metrology programmes in support of Health, Food Safety and the Environment, *Robert Wielgosz, Head of BIPM Chemistry Department*
- Eurachem 25 years – looking back and forward; Eurachem Guide “The fitness of purpose of analytical methods”, *Bertil Magnusson, SP (Sweden), Eurachem Past-Chair*
- Training in Metrology in Chemistry, *Ivo Leito, University of Tartu (Estonia)*
- CCQM WG activities, *Representatives of the 6 technical CCQM WGs*

An ad-hoc working group on TC-MC perspectives on European Metrology Centers was established, chaired by the TC-MC incoming chair Hanspeter Andres. Its members are the TC-MC present, past and incoming chairs (Michela Sega, Bernd Guettler, Hanspeter Andres), the SC Convenors (Hugo Ent, Pia Tønnes Jakobsen, Béatrice Lalere, Nilgün Tokman) and the Contact person from UK (Richard Brown).

An issue on how to give representativeness within TC-MC to the bioanalysis activities was raised. The possibility of having a new TC-MC subcommittee on Bioanalysis had already been considered in the past and within the TC-MC it had been decided not to create it as the activities of the European NMIs and DIs were well represented in the CCQM corresponding Working Group (BAWG). Considering the increasing number of European DIs, the spread up of activities in biology and also the change of CCQM name from “Consultative Committee on Amount of Substance”, the issue was taken into account again in the 2015 meeting. The decision was not to constitute any new SC waiting for the reorganisation of CCQM structure and to use the SCOA as a forum to discuss also the bio-related issues, thus inviting the chair of the CCQM BAWG, or other representatives, not only at the TC-MC plenary meeting but also to the SCOA meeting.

Workshop: “EMPIR workshop in preparation of the 2015 calls”:

- “Health metrology requirements in support of stratified medicine; improved cancer & neurodegenerative disease diagnosis & treatment; and anti-microbial resistance detection”, *Helen Parkes, LGC*
- “LNE’s proposals for next Health call”, *Vincent Delatour, LNE*
- “A metrological platform for drug/metabolite imaging to support improved targeted therapies & diagnostics”, *Heidi Goenaga-Infante, LGC*
- “Metrology for biomarkers important for the diagnosis of widespread diseases”, *Claudia Swart, PTB*
- “Cells and tissues metrology needs for advanced therapies and diagnostics”, *Maria Paola Sassi, INRiM*
- “Contemporary metrology requirements in diagnosis and therapy”, *Alex Knight, NPL*
- “Establishment of SI traceability of electrolytic conductivity at pure water level from 5°C to 50°C”, *BSteffen Seitz, PTB – Francesca Durbiano, INRiM*
- “Pre-normative research requirements for future European air quality and emissions legislation”, *Richard Brown, NPL*

- "Pre-normative research ideas on nanoparticles and critical chemical substances", *Sophie Vaslin-Reimann, LNE*
- "qNMR for advanced purity measurement, & other LGC SI/prenorm PRT ideas", *John Warren, LGC*
- "Measurement of size distribution and associated concentration of nanoparticles in matrix", *Rita Cornelis, SMD*

Next meeting:

TC-MC annual meeting 2016:

- 1st- 5th February 2016 (sub-Committees and TC-MC plenary meeting) in Geel, Belgium, hosted by IRMM.

8. Issues

- CMCs submission: need to further develop the concept of difference between calibration and testing activities for emerging NMIs and DIs
- Re-review process of existing CMCs exceeding new CMCs
- Involvement of emerging NMIs/DIs in comparisons and in the activities of the technical SCs
- TC-MC contribution in the development of EURAMET Strategic Research Agenda
- Representation of the bioanalysis community in the TC-MC Subcommittees.

9. Strategic planning/ 10. Outlook for 2015/2016

- Discussion about participation in future EMPIR projects
- Activities related to CMC submission and revision
- Perspectives on European Metrology Centers
- Relationship with Eurachem: need to establish common topics of interest