



METCHEM

Metrology in Chemistry Technical Committee Plenary Session

17-18 February 2005

CEM, Madrid, Spain

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1 - Welcome address

Mr. Ferrer, Director of CEM, welcomes the participants of Metchem plenary meeting. Mr. Ferrer thanks in particular the representative of Latvia, Lithuania and Serbia and Montenegro for attending this meeting. He also presents his thanks to Alejandro Herrero from IRMM, Robert Kaarls from CIPM, Helge Kildal from Norway and Timo Hirvi from Finland.

Mrs Carmen Matilla Vicente, Scientific Deputy Director of CEM, describes the structure of metrology in Spain and presents the main metrology activities of CEM.

CEM is the National Metrology Institute in charge of scientific, applied and industrial metrology for physical quantities and chemistry, and legal metrology. CEM has the legal task to organise the official calibration chain in Spain (including inter-laboratory comparisons).

CEM has mainly metrological activities in the fields of mass and related quantities, length and dimensional metrology, temperature, electricity and chemistry. For some quantities not developed at CEM, there are designated laboratories or associate laboratories to CEM: CIEMAT / ionising radiation, INTA / radiofrequency and humidity, TAPYCEA / RF attenuation, LCOE / electricity high voltage, ROA / time and frequency, IFA / luminous intensity, IS Carlos III / ozone.

Mrs. Matilla Vincente concludes in wishing to the Metchem contact persons a fruitful meeting.

Philippe Charlet, chair of the meeting, thanks CEM to welcome Metchem representatives, and in particular Maité Lopez and Belen Martin for organising the meeting. Philippe Charlet thanks also Vera Ponçano from Brazil, and Murthy Chavali from Taiwan for attending this meeting.

The minutes of the last meeting are approved with the modifications included. Minutes will be loaded on the website.

2 - Approval of agenda

The agenda is approved.

3 - Tour de table

The chairman asks delegates to introduce themselves.

4 - TC Chair's report on Euromet TC Chair's report on status of Euromet QM CMCs

4.1 - Report on Euromet meetings

One of the main subject discussed during the TC Chair's meeting and Euromet GA was i-MERA project. Philippe Charlet presents this project that consists in developing a strategy to increase research co-operation in metrology, and in implementing a more structured collaboration for R&D within Euromet 1. 20 partners from 14 countries and IRMM will participate in i-MERA project. It is consisting in 6 work packages and 37 tasks. The planned duration is three years with an expecting starting date, the 1st of April 2005.

This project is important and sustainable for future researches in European countries. The project is not only focussed on nanotechnology, biotechnology, chemistry and emerging domains, given as possible examples of collaborative researches within Euromet. All the metrology fields are concerned by i-MERA and the given examples do not represent an exhaustive list of possible project areas.

4.2 - Euromet QM CMCs

Philippe Charlet reports on Cycles III, IV and V Euromet QM CMCs 1. Philippe Charlet reminds to the participants the CMC's main agenda points in 2004:

- April 2004 : agreement on agenda for CMCs with other RMOs, during the KCWG at CCQM.
- 1st of October 2004 : deadline for comments.
- November 2004: RMOs should submit their final CMC files.

Euromet-Metchem and SADCMET submitted their final claims on time, at the beginning of November 2004.

During the review process, the Euromet Metchem group had to face major different problems:

- Final files were submitted by some other RMOs very lately (SIM / December 20, 2004; APMP / January 10, 2005; for example);
- Review of Euromet CMCs were not totally approved by the other RMOs in the planned deadline;
- Inappropriate comments were received from some RMOs;
- Lack of experts within Euromet-Metchem to review claims for other RMOs.

Robert Kaarls adds two comments. The first point concerns the CMC review: for the CIPM, RMOs which had not review the Euromet CMCs timely loose they right to complain. The second comment focuses on the tendency to be more and more strict on submission of CMCs; experts should keep in mind that CMCs can not be supported only by comparisons, otherwise a majority of CMCs will be rejected; the evidence of competence have to be taking into account.

Christophe Quétel corrects this perception, because Euromet did not review the CMCs only on the basis of comparisons. The essential points were peer review papers, scientific documents and comparisons on similar measurands and similar sample matrices.

Following a question from Christophe Quétel, Robert Kaarls confirms that CMCs claims related to posimetry measurements (from BAM) have to be forwarded to JCRB as part of Cycle VI.

Ed de Leer points out the item on implementation of the ISO guide 34 and a possible re-evaluation of CMCs, useful to do but requiring consideration.

Apparently the question of ISO guide 34 has not been discussed in detail at the Euromet QS-Forum (February 2005), but will be a specific topic for the next QS-Forum meeting. The ISO guide 34 will be included in the MRA before April 2006, to be ready for JCRB in spring 2006. The deadline has not been yet communicated.

For re-evaluation of CMCs, nothing has been yet decided, and the CCQM will work on the schedule. Many comments are done on the fact that re-evaluation will take an enormous time and that precautionary measures have to be discussed before.

Until now, a rigorous work has been done because Metchem was confronted to extremely detailed comments on the demonstration of evidence of CMCs. If some flexibility is asked, this flexibility will have to be applied to everybody, not in the sense of low review and with a complete consensus.

Peter Woods points out the fact that Euromet has a good reputation on the CMC review.

Philippe Charlet summarises the status on the different Cycles QM CMCs.

- Cycle III: some last CMCs from BAM (DE) never reached the BIPM database. The problem has now been solved.
- Cycle IV : lot of countries were concerned by claims. A few countries have CMCs postponed or withdrawn.

- Cycle V (2004): the group was not able to provide evidence of some CMCs (RO, ES, PT). For two NMIs, comments were very general statements on "how far does the light shine" which were inappropriate at this phase of the review process. Those CMCs are postponed or withdrawn, as a concession of EUROMET.

4.3 - Metchem ToR

New terms of reference for Metchem have been edited by the Euromet Executive Committee (EEC) in 2004. This ToR have been sent by Seaton Bennett, Euromet Chairman, to Wolfgang Wegscheider, Eurachem Chairman. The ToR have been accepted by Eurachem.

5 - Convenor's reports on working group activities and meetings

The main topics discussed at the different WG concerned the Euromet projects (completed, on-going and proposed projects) and QM CMC reviews.

Peter woods reports on gas analysis WG 1. The meeting had also a specific discussion on the ISO 17025 and ISO guide 34.

Project n° 764 completed and the draft report produced. Preliminary results have been produced on the project n° 589, but it has been decided to close it and to re-open another project later on the same subject.

For the review of CMCs, a key issue was that any CMC not supported by a comparison was rejected. Discussions appear on bilateral and supplementary comparisons. Some RMOs apparently use bilateral comparisons as a "facility". After a comparison is completed, a NMI can propose claims. But it seems that there is no need to include such a comparison in the KCDB. RMO comparisons should be linked to CCQM comparisons, but this is not always possible, for example, for new material or when nominal concentration in gas analysis is not identical in both comparisons. The goal is to optimise the use of Euromet project and avoid duplication with CCQM comparisons.

Christophe Quétel reports on inorganic analysis WG 1. Calculations of KCRV (key comparison reference values): the document issued by NIST is an important progress but there is still no clear methodology on how to handle the results of each comparison in an as much as possible systematic and objective manner. The EU directive on drinking water is perceived as a very important soon to come challenge (numerous technical/scientific + legal stakes), and Euromet should help the different partners involved (inter-comparisons, interaction/collaboration between NMIs and national reference laboratories confronted to this directive). Christophe Quétel gives some comments on CMC tables - Cycle VI:

- BAM, Germany: scientific value of submitted CMCs is granted (although these CMCs are rather unusual and have been the object of a discussion on whether or not submitting them to another group than the IAWG one); CMCs should be sent to other RMOs.
- IMGC, Italy: the series of 2 CMCs submitted are accepted.
- PTB, Germany: the series of 8 new CMCs are accepted if PTB provides additional supportive documents (even in German).
- LGC, UK: 1^{st} series of 10 CMCs is accepted. For the 2^{nd} series of 10 CMCs (associated to on-going certification of candidate CRM) and 3^{rd} series of 1 CMC (associated to on-going CCQM comparison) submitted it has been asked to provide supporting documentation.
- INM, Romania: the series of 1CMC submitted is supported by results from a CCQM comparison, and the CMC- is accepted.

Franz Ulberth reports on organic analysis WG 1. Franz Ulberth comments the results of the questionnaire on Organic Analysis across Europe. He presents also the result of a comparison on PCBs in organic solution.

Concerning some CMC claims from PTB and LGC, there is no comparison to underpin the claims. Documents are requested to support the evidence.

A discussion points out on PCB calibration, and relations between NMIs and environmental institutes appointed by governments. It appears that it is necessary to built strong relations and bridges with those institutes. The difficult part is to well define the competent laboratory and for the government to designate the right laboratory.

Michal Mariassy reports on electrochemistry WG 1. A project has been presented by PTB on conductivity measurements in ultra pure water (not covered by CRM), with the development of a primary flow-through cell.

6 - Information from President of CCQM

Robert Kaarls gives an overview of CCQM works 1. There are 35 members and observers, at the present time, and seven working groups. Robert Kaarls reports on CCQM rules and policy, CCQM discussions on materials metrology, JCTLM, new areas and networks for future CCQM activities. A great part of the presentation is dedicated to the 2nd workshop on comparability and traceability in food analysis held at BIPM in September 2004.

Helge Kildal asks if the question of the industrial designated laboratories has been solved? Robert Kaarls answers negatively and points out the fact that care should be taken because of competitors and also because it is difficult to interfere with governmental decision.

Concerning food analysis, and regarding the long list of metrological needs, a question was to determine on which item the CCQM-WG would focus on. This will be one of the purposes of the meeting in April 2005. NMIs and BIPM should be strongly in contact with the Community Reference Laboratories, to avoid discrepancy. It is also recommended by Robert Kaarls that concerned NMIs contact their Community Reference Laboratories

Alejandro Herrero gives the example of IRMM on food additives: as it is a very waste field, they try to organise an establishing network with designated laboratories, one or more per country (each State responsible of the designation) and the task was proving difficult; a coordination is necessary for this type of network. Ed de Leer is in favour to have only one representative per country acting as a NMI. Nevertheless, formal decision is the task of governments that should act rapidly for the designation of reference laboratories.

7 - Reports on CCQM WG meetings

Taking account the number of items to deal within the plenary committee, Philippe Charlet proposes to the representatives of the working group to write a one page synthesis per group of the main items discussed during those meetings.

They will be joined to the minutes.

8 - Information on BIPM programme in organic analytical chemistry

Robert Wielgosz, Head of Chemical Division at BIPM, describes the Organic Analysis programme 1. In April 2004, the CCQM-OAWG accepted BIPM as the coordinator of P20 future comparisons. Robert Wielgosz presents the aim of the current P20 comparisons, the medium and long term BIPM programmes for organic analysis, and the future CCQM - P20 comparisons planned for 2006 and 2007.

9 - Information on activity of the JCTLM

Robert Wielgosz presents the structure and the latest activities of the JCTLM 1. He reports on the Working Group 1 activities on reference materials and reference measuring procedures co-chairs by Willy May from NIST and Heinz Schimmel from IRMM. Then he reports on the Working Group 2 activities on reference laboratory network, and shows the JCTLM database.

Robert Wielgosz presents also the main topics discussed at the Symposium on reference measurement systems for biologicals.

Bertil Magnusson takes the occasion to thank the BIPM on the available database really impressive.

10 - Forum " Strategies of NMIs to ensure adequate supply metrology capabilities to users"

Philip Taylor reminds the main objectives of the forum. Considering the success of the past year forum, it was decided to follow up the forum on the 4 sessions discussed in Sofia (training and education, inter-laboratory comparisons, cooperation in research and distributed metrology system).

After one year, it was interesting to see what was going on and what was the progress on two case studies: distributed metrology system; training and education.

Then Philippe Charlet informs the attendees that Vera Ponçano will present CITAC cooperation with RMOs for dissemination of traceability concepts for chemical measurements.

10.1 - Case study n° 1: Distributed metrology system

Andreja Drolc explains the Slovenian metrology network, relations between the National Institute of Chemistry (NIC) and the MIRS (National Institute of Metrology designated by law), and the common interest of such a network for both institutes 1.

An example is given on water analysis: training is performed by both institutes; the research to develop is funded partly by MIRS and performs by NIC; NIC is responsible of inter-laboratory comparisons at national level. To participate in those comparisons, laboratories have to pay fees.

Traceability is done by using CRM. About 20 different analyses are performed at NIC (metal, inorganic, biological, ...). At the present time, Slovenia did not declared CMCs and did not participated in key comparisons.

10.2 - Case study n° 2: Education and training

Bertil Magnusson presents some ideas on the knowledge transfer in metrology in Sweden, in particular training for metrology in chemistry 1.

Training programmes have been shown. Bertil Magnusson insists on the fact that success depends strongly on the marketing done to support those training programmes, and on the materials given during the training courses (for example a leaflet elaborated with CITAC on traceability and measurement uncertainties, Eurachem guides, ...).

He concludes on the different advantages of dissemination of metrology knowledge: it can bring a quite important amount of money, develops new and fruitful contacts (and potentially new customers), brings new questions, and finally it is fun to do. He adds that the VAM program in UK was a good example for their developments.

Concerning the question on contact with universities, a number of first contacts with universities were possible through Eurachem network.

10.3 - CITAC cooperation with RMOs for dissemination of traceability concepts for chemical measurements

Vera Ponçano, Chair of CITAC (Cooperation on International Traceability in Analytical Chemistry) describes the general infrastructure and organisation of CITAC, and the cooperation with RMOs 1. The main objectives of CITAC are the dissemination of traceability concepts to be applied by analytical laboratories, the promotion of metrological principles through guidelines and various documentations, the promotion and the harmonisation of quality practices in analytical laboratories. Vera Ponçano gives some ideas on the strategy developed to reach these objectives. Then, she presents the Brazilian Programme of Metrology in Chemistry - PBMQ, its projects and its connections with CITAC.

In Brazil, INMETRO (Brazilian NMI) started their activities in chemistry in 2000. If it is not possible to demonstrate traceability via INMETRO, it is done within the RMO (Canada, Mexico, USA). With the PBMQ, Brazil acquired a very good experience of analytical laboratory network with sustained contacts between those laboratories.

10.4 - Towards a more efficient use of Euromet - Metchem comparisons in inorganic analysis

Christophe Quétel presents some ideas on the optimisation of Euromet - Metchem comparisons and role of NMIs in the society and towards the 'measurement infrastructure'.

There is no need for NMIs to participate in such a comparison when identical CCQM comparisons exist + quite logically NMIs cannot claim capabilities about all measurement issues. Euromet comparisons should be offered in priority to national reference laboratories (also possibly to other players such as renown academics, industrial networks etc.) instead. This way, invited laboratories get a chance to evaluate their performance internationally and NMIs play fully their role in term of traceability dissemination (CRMs + interface with international system) and collaboration (support to implementation of legislation, training).

A discussion starts on the interest to have links with European clinical laboratories, for example, and the way to approach them. The same strategy can be adopted regarding laboratories very involved in the environment field, connected, for instance, to the potable water directive. Philippe Charlet is in favour to decide during the meeting the possible strategy to implement, in view to develop and strengthen connections with environmentclinical laboratories. He proposed to form a working group on the subject. Vera Ponçano, Bernd Guttler and Ralf Matschat agree to participate to the group on this topic.

Maria Filomena Camoes adds that it will be important to spread information on NMI capabilities and to clarify on both side, reference laboratories and NMIs, what are their respective rules. Peter Woods indicates that for gas analysis, through quality process, a lot of contacts have been already done with laboratories and lessons can be learned.

Robert Kaarls indicates that the comparison process is different in chemistry than for physical quantities. In chemistry, many samples could be delivered at the same time, this allow to accept many different laboratories for comparisons.

An other idea will be to put on Euromet website information on CCQM comparisons to make available information to everybody.

Philip Taylor proposes to make a project and send to everybody if enough persons are interested in. The project is agreed.

11 - Reports on on-going and completed projects

Philippe Charlet asks contact persons on the status of different Metchem projects.

- # 563: the project is finished but has never been closed until now. The final report has been sent. The project is completed.
- # 763: the project is delayed to the end of March 2005. Lithuania is interested to participate in the project and joins in on the condition that they will report before the end of March 2005.
- #784: the project is cancelled.
- # 785 : project related to the CCQM-K35. The final report has been sent. The project is completed.
- #724: the project is finished and the final report have to be sent. Action: BAM
- # 708 : the project consists in a comparison between NIST and NMi every year to underpin NMi's claims. On going project.
- #764: the project is finished. The final has to be sent. Action: NMi.
- #833 : second step of the project PCBs congeners in organic solutions

Registration for a bilateral comparison between LNE (France) and INM (Romania), in order to establish a link for INM to CCOM-K8, is asked to Mike Sargent, Chairman of the CCOM-IAWG.

12 - Discussion on project proposals

- Inorganic analysis : BAM proposes a project on copper alloy composition and reconstitution methods. Laboratories are free to use any methods.
- Organic analysis: a project has been proposed by IRMM on PCB congeners in organic solutions.
- Electrochemistry : a project is proposed on pH transfer standard with the participation of SE, DE and FR.
- Gas analysis: many projects are proposed
 - preliminary study on purity participants : NPL, NMi and LNE
 - vehicle emission comparison participants : CEM, IMGC, NMi, IPQ
 - vehicle emission bilateral comparison participants : NPL, CEM
 - HCl bilateral comparison participants : NPL, NMi
 - workshop on dynamic gas dilution planned in 2006 (host not yet defined)

13 - Forum discussion on "Do we need to include bio-analysis measurements in Metchem activities"?

Helen Parkes presents the measurements needs at the present time in the bio-analysis field and the activity of LGC in this domain (*presentation not yet available*).

The presentation is followed by a discussion on possible mechanism to put in place in view to reach expert laboratories in bio-analysis, and on the role that can be played by Metchem. The main question is to inform those laboratories of their metrology needs and to convince them that metrological approach in an added value. Culture and background are really different between bio-analysis community and NMIs, NMIs seen as "SI specialists" only. Concerning the creation of a specific and formal working group on bio-analysis in Metchem, Helen Parkes is not in favour of setting up such a sub-committee. No contrary reaction was noted. It was then decided that Metchem won't go further on this point apart from working the communication up on this matter

14 - Update information of developments of "European Reference Materials"

Franz Ulberth summarises the latest information on the ERM® initiative 1. ERM's portfolio includes more than 150 ERMs with a certification based on ISO guide 34 and 35 principles. Alejandro Herrero

adds that IRMM does not only produce CRMs but promote also CRM developments in Europe. To answer on the commutability, Franz Ulberth explains that the commutability of clinical CRMs is checked by using different methods in use in clinical laboratories. IRMM does not provide radio-nuclide CRMs.

15 - Information on IAGRM

Ed de Leer informs the attendees on the IAGRM activities and on assessment of RM producers 1.

APMP agrees on accreditation of laboratories which produce RM. In Europe, there is a strong opposition from Eurolab on this point because of the cost. Another question is the different accreditation policies put in place in around the world: depending on the RMs, laboratories can be accredited against the ISO 17025 standard or ISO guide 34, or a combination of both. No unanimity has been found on the standard to follow for accreditation of RM producers.

At the present time, there are databases available on RMs: elaborate by the VIRM (Virtual Institute for Reference Materials), COMAR, etc.

16 - Report on Eurachem activity

Filomena Camoes informs the committee that Pr Dr Wegscheider, from the University of Leoben in Austria, is the new Chair of Eurachem

Filomena Camoes described the role of Eurachem and its goals, and describes the different working group which play an essential role on Eurachem activity, including mainly workshops, production of quality assurance guides and studies. There are now 32 member countries (Croatia new member). workshops and guides. The last workshop was on May 24-25 in Prague, Teaching Quality and Metrology in Chemistry, and during the plenary meeting a forum discussion was held about Eurachem strategy regarding Measurement challenges in Bioanalysis. It was decided that each delegate will has to find a biochemist on his or her country to participate on a working group on Biomeasurements.

The next EURACHEM workshop will be held in Malta, on May 9 to 11, 2005 on "Chemical metrology: Laboratory measurements and Mediterranean trade". A specific Proficiency testing WG will be organized in September in Slovenia.

Filomena Camoes emphasises her last slide: "At Eurachem when we feel there is a gap: we try to fill it by writing a guide and we support workshops".

17 - Any other business

Alejandro Herrero gives an overview of the EU 7th Framework Programme (2007-2013). The Commission proposes to focus EU research activities on six major objectives:

- Creating European centres of excellence through collaboration between laboratories
- Launching European technological initiatives
- Stimulating the creativity of basic research through competition between teams at European level
- Making Europe more attractive to the best researchers
- Developing research infrastructure of European interest
- Improving the coordination of national research programmes

Nanosciences, energy and space have been identified as priority areas.

18 - Next meeting

The next Metchem meeting will be held at PFI, Lithuania, 14 to 17 of February 2006 (to be confirmed).

19. Conclusion

Philippe Charlet thanks delegates for their contribution and CEM for their hospitality.