METCHEM

Metrology in Chemistry Technical Committee

- Plenary Meeting -

03 – 04 February 2011

Helsinki (Finland)

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1. Welcome Address

Timo Hirvi, General Director of MIKES welcomes the participants of the Euramet TC MCHEM meeting and introduces the Finnish metrological infrastructure icluding MIKES and designated institutes.

2. Introduction and approval of agenda

Bernd Güttler, the TC-MC Chaiman welcomes all participants and thanks MIKES/FMI, in particular T. Hirvi, M. Kaukonen, and J. Walden for organizing the meeting.

The agenda of the 2011 TC-MC meeting is approved

Bernd Güttler gives a tribute to *Philipe Charlet* (LNE) who passed away in December 2010.

3. Tour de table

The chairman asks the delegates of the plenary session to introduce themselves.

4. TC Chair's report on EURAMET TC Chair's meeting and EURAMET GA

Bernd Güttler summarizes the EURAMET activities and developments of the last year.
Currently, more than 100 organisations (NMIs, DIs) are member of EURAMET with the latest members being Albania and Macedonia who received membership in 2010. Jörn Stenger (EMRP) and Jank Drnovsek (GA) were elected as new vice chaipersons in the EURAMET governance board.

Bernd Güttler emphasizes the need for collaboration among NMIs which is driven by the limited NMI budgets but also by the growing demand for metrology in both traditional industrial areas and new areas of technology (nano-/biotechnology) in which use of metrology is increasingly recognized.

A memorandum of understanding has been signed between EURAMET and WELMEC (European Cooperation in Legal Metrology) on May 6th 2010 in Bled (Slo).

A cooperation agreement has been signed between EURAMET and CEN-CENELEC (European Committee for Standardization, European Committee for Electrotechnical Standardization) on June 29th 2010 in Brussels. Strategic goals and projects of common interest are in fields of metrology and standardization, in support of scientific advancement and technological innovation and to meet societal challenges with a significant impact on the economy and the quality of lives within Europe.

According to the EMRP outline 2008, the main R&D activities within EURAMET cover the "Grand Challenges" Health, Energy, Environment and New technologies for nanosciences and security.

The 5th EURAMET General Assembly & EURAMET Symposium will be held in Bosnia-Herzegovina, June 6 – 10 2011.

H. Parks: I would like to point to the increased recognition on food safetey, but any aspect of food is excluded from Euramet activities including EMRP although it is a grand challenge.

B. Güttler: I refer to the EMRP workshop agenada; from our point of view there is a little bit in it and we will come back to this during the workshop.

R. Kaarls: In the rest of the world, food safety is a number one topic.

TC Chair's report on status of EURAMET QM CMCs

The submission of the new EURAMET cycle XII CMCs will be by 1 March by agreement with KCWG.

In cycle XI, 165 new CCQM CMC claims have been submitted, 48 (29 %) were from EURAMET while the majority (56%) was submitted by APMP (SIM: 10%, COOMET 5 %). In addition, 247 claims were submitted for re-review (cat. 4 gases: 140, cat. 6/7 electrochemistry: 107). The non fast track claims (new: 51, re-review: 127) are still pending.

In terms of working group activities, the distribution of CMCs within EURAMET (GAWG 52%, IAWG 38%, OAWG 6%, EAWG 5%) differs slightly from the overall international distribution (GAWG 39%, IAWG: 35%, OAWG 21%, EAWG 5%).

Current problems are mainly due to the large number of claims in the re-review process, the large number of claims in the non fast-track process and the late submission of EURAMET CMC claims. A possible solution might be the change of the TC-MC meeting time.

5. **Convenors report on subcommittees activities**

SC Electrochemistry (*P. Spitzer*)

12 participants from 11 countries attended the meeting.
There are no new CMCs in cycle XII because of the full re-review during cycle XI last year.

A new IUPAC subcommittee on pH was established in 2010 that is chaired by *Maria Filomena Camões*.

The results of the EURAMET comparison 898 "Electrolytic conductivity at pure water level" (in conjunction with iMERA+ T2J10 WP4) are presented. The comparison was based on using two absolute cells of the PTB loop setup as transfer standard, calibrated at each laboratory (DFM, SP, PTB) in the appropriate conductivity and temperature range. The achieved agreement was about 0,5 - 1 % (1-200 ppt NaCl).

In the EURAMET 1156 (in conjunction with iMERA+ T2J10 WP3) intercomparison it shall be demonstrated that SI-traceable chemical ion activities of the most relevant

ionic species in mixed electrolyte samples of near physiological composition can be measured with acceptable comparability. Two water based, mixed electrolyte samples synthetically prepared from known high purity chloride salts (Na, K, Ca, Mg, Cl) are to be measured. Preliminary results for solution 1 are presented.

B. Güttler: I like the idea to conduct Euramet projects in conjunction with EMRP projects; this should be done meore often also in other fields.

SC Inorganic Analysis (*P. Fisicaro*)

For cycle XII, a total of 199 CMC claims were submitted; 32 are new claims, 167 claims were submitted for re-review, most of them from BAM (cat. 8: 153, cat. 1.3: 11).

Some general issues come up during the discussion concerning (1) the harmonisation of the claim spreadsheet by using “sub-lines” for different analytes in the same matrix (approach introduced by the SCGA), (2) the question how to deal with the use of CRMs certified by round robin tests as dissemination mechanism, (3) better identification of the analytical technique claimed with respect to the evidences of CCQM K comparisons or P studies, (4) when several techniques are used for delivering the same service, they should refer to different concentration ranges and the ranges should not overlap.

A report from a workshop in Torino 2010 on “Metrological Traceability of Reference Values” was given.

In a joint SCIA/SCAE meeting, *Petra Spitzer* presented the objectives of the upcoming EMRP project ENV05 “Metrology for oceanic salinity and acidification.

B. Güttler: Thanks for the work in conjunction with the large number of CMCs; we have to think about some solutions that we have to correspond to the rest of the world, and we have to find a practical way to handle this process. We had some discussions on this topic during the conveners meeting.
R. Wielgosz: How have you dealt with the use of CRMs certified by round robin tests as dissimination mechanism.
P. Fisicaro: ???
B. Güttler: There is a link to a KC in each claim.
R. Kaarls: I’m not convinced that the rules are properly applied now, will come back later to this.

SC Organic Analysis (*G. O’Connor*)

The meeting was attended by 12 participants from 10 different organizations. One issue raised was the Euramet input into the ongoing debate and constituents of “Type A” core competency studies.

A total of 14 new CMCs were submitted for review to cycle XII, 4 were approved, 3 were approved with minor additional input, 7 need further clarification.

A key comparison study on determination of creatinine in serum is planned (participants: PTB, LGC, LNE). Additional participants are invited to attend a parallel pilot study.

In the 2011 EMRP calls, activities are planned in the calls “SI broader scope” (Fundamental research into methods for the direct assessment of organic purity), “Health” and “New technologies” (clinical biomarkers and therapeutics, methods for the detection of counterfeit drugs, food authenticity and source of origin)

B. Güttler: It is a problem in EMRP to specify the impact of a project, because we have to specify the dissemination when we are still at the stage of research; this is often not realistic from the scientific point of view.
G. O’Connor: We should always have in mind the timeline that research requires and that is needed to end up with a KC at the end.

SC Gas Analysis (*R. Wessel*)

Several active projects were discussed.
EURAMET 1113 (Comparison on automotive emission gases) serves to demonstrate the capabilities of the participants in the production of primary gas mixtures of automotive emission in nitrogen. This project is also registered EURAMET supplementary comparison EURAMET.QM-S4. Results are presented for CO, CO_2 and propane.

EURAMET project 937 builds on the results of EUROMET project 867 on purity analysis of nitrogen. The participants (BAM, LNE, NPL, METAS, VSL) will analyse for CO, CO_2, CH_4, O_2 and Ar. Analysis of water vapour will be optional. The methods used and the results are presented. A draft A report is available.

EURAMET 1002 (ultra trace water vapour) adresses the comparability between dynamic standards of water vapour from several NMI’s at amount fractions that are of interest to industrial users of trace water analysers. Participants are NPL, NIST, PTB and NMIJ.

5 new projects will be launched in the near future. Project 1166 (KC for 1 -5 % CO_2 in nitrogen (IPQ)), KC preparative for ethanol in air 120 µmol/mol (NPL), Repeat K26a, NO at 500 nmol/mol level (NPL), Sorption tubes with BTEX (LNE), Bilateral on LPG standards (VSL – NPL).

6 labs submitted new (6) or revised (32) CMC claims for review in cycle XII.

The core competence strategy of GAWG was discussed. It aims to minimize the number of (repeat) comparisons and is based on three groups of analytes (core mixtures, natural gas type mixtures and analytical challenge compounds). A broadening of HFTLS statements is required to include core competence qualifications.

B. Güttler: Concerning the core competencies in the gas area, there is a very clear situation whereas in inorganic and organic analysis the situation is much more

complicated. Mike will give us an overview what is planned in the inorganic sector tomorrow.

6. Information from President of CCQM (*R. Kaarls*)

Robert Kaarls informs the delegates about recent CCQM activities.
Prof. M. Kühne is the new Director of BIPM per 1 January 2011, following Prof. A Wallard who retired by 31 December 2010. Mr. Andy Henson is the new permanent BIPM International Liaison Officer.

Per January 2011 CCQM has 54 member states with the latest members including the recent member Kenya. 42 countries are accepted as associate members.
The establishment of GULFMET as a new RMO is in preparation; Jordan and Syria are new APMP Associates, Montenegro and EU are new EURAMET Associates. Not all RMO members are yet Member States or Associates and vice versa.

The CIPM MRA is now signed by 80 (90) NMIs from 48 Member States and 29(39) Associates and 3 international organisations (IAEA, WMO and EU JRC IRMM). It covers > 96% of the world trade and further growth is expected in the near future.
The MRA is based on results of key-, supplementary- and bilateral comparisons.
Currently 724 KCs and 252 Supplementary Comparisons have been registered.
Some 35% of the reports not yet published; lacking information is hindering CMC approval.

According to the CIPM MRA the ultimate source of traceability of an NMI is by own primary realisation or from another recognized NMI/DI. Traceability can not come from a non-NMI/DI and can not come from CRMs delivered by non-NMIs/Dis.
Furthermore, traceability is not realized by the result in a comparison or PT scheme and can not lead to smaller measurement uncertainty claims than can be achieved with own capabilities.
NMI should be able to establish traceability by applying one or two techniques/methods/procedures and has to demonstrate its competence and capabilities by participation in a limited number of well selected international comparisons.

According to a JCRB resolution RMOs review of quality systems must occur every five years. The periodic review of published CMCs is performed by the RMOs; The CCQM KCWG review of all existing CMCs is still on-going. DIs with no published CMCs after a period of 5 years of preparation and demonstration of capabilities are not acceptable. The CIPM MRA documents are located at http://www.bipm.org/en/cipm-mra/documents/.

There are no changes in the seven permanent CCQM working groups, now two ad-hoc WGs exist on KCRV and redefinition SI.

Rober Kaarls summarizes the current situation in the Avogadro project and the redefinition of the mole per June 2010. Waiting for completion of current scientific work underway, like watt balance and Avogadro work. No decision to be expected by the CGPM during its meeting in October 2011, as scientific work will not be ready at that time.

CCQM majority is in favor of a redefinition of the mole but agreement has to be demonstrated between values for the Avogadro constant derived from independent measurements of the isotope amount ratios of silicon.

The CCQM ad hoc WG on EET has finalized its work and has been closed. CCQM IAWG, OAWG and GAWG are now trying out and implementing a new approach to demonstrating the validity of claimed CMCs by a system based on demonstrations of core capabilities.

Other issues to be considered by the CCQM include workshops and internat. cooperation with IAEA (MoU), WMO (MoU), WHO/NIBSC, IFCC, WADA, Pharmacopoeia, Forensics, IUPAC, VAMAS (material properties), a BIPM – WMO joint program of work is to be developed, moisture measurements (moisture mass fraction in grains), a nano metrology workshop on micro and nano particles, health consideration and personalized medicine issues.
A CCQM Workshop on the role for reliable traceable microbiological measurements to ensure food quality and safety will be held at 6./7. April at BIPM.

The late 2011 CCQM WG meetings will be hosted by
- NIST in Boulder, Colorado (GAWG, 26-28 September 2011)
- CENAM in Queretaro, Mexico (BAWG, 3-6 October 2011)
- NMIA in Sydney, Australia (OAWG, IAWG, EAWG, 1-4 November 2011)
- CIPM in Sèvres, France (13-15 October 2011)
- CGPM in Paris, France (17-21 October 2011)

B. Güttler: The new 5-years rule according to which designated institutes will be excluded from further participation if they do not provide a CMC after 5 years shall be a matter of further discussion.
R. Kaarls: The rule is very new and will certainly be handled with some flexibility.

7. EMRP

7.1 Report on "Recent developments of the TP Health " (*Hans Koch*)

Hans Koch informs that the PRT call for Health II will be due tomorrow (4 Feb 2011). He points to some important issues and buzz words to be covered and mentioned when writing proposals such as a reference to the 7th framework programme, health issues, european indusry, large-scale approaches, i. e. the necessity to work on a european scale in multidisciplinary teams.

A new list of issues to be covered in the periodic progress reports and publishable summaries has been released by the JRP-consortium. Most of the issues are related to the impact of the scientific work with respect to wider working practise either at the NMIs/DIs or in the wider research and calibration community in Europe and beyond and how the JRP intends to ensure that the outputs from the JRP are exploited and the desired impact is realised.
Other issues to be described are how the JRP has engaged with stakeholders and end users and the anticipated outcomes and what and how the outcome from the JRP have already been incorporated into the outside world.

B. Güttler: Are there principle changes in the procedure in comparison to the last call?
H. Koch: No.
B. Güttler: The expectations change. It is not realistic to expect that we work in a field that is totally new and to implement the results in practice within a three-years period.

7.2 **Workshop: Preparation for the Targeted Programmes "Health II, SI Broader Scope, New Technologies"**

Health II

Isotope dilution ICP-MS as the metrological basis for accurate determination of health relevant parameters (*C. Swart, PTB)*

Requirement for novel elemental, isotopic and metallomic developments in the diagnosis and treatment of disease *(M. Sargent, LGC)*

Protein & proteomic metrology (*G. O'Connor, LGC)*

Metrology research needs for the efficient standardisation of protein measurements *(H. Schimmel, IRMM)*

Metrological requirements for cell/ bio-assays to support innovation in diagnosis and treatment of disease (*M. Sassi, INRIM)*

SI Broader Scope

Element reference standards (*H. Kipphardt, BAM)*

Metrology for complex system quality parameters (*P. Spitzer, PTB)*

New Technologies

Metrology research needs for European regulatory aspects of nanotechnologies *(G. Roebben, IRMM)*

General

LNE proposals for metrological research topics (*S. Vaslin-Reimann, LNE)*

Discussions at the bio/biochem perspective workshop in Teddington *(H. Parkes, LGC)*

Speciation of heavy metals in food (*T. Kapp, BVL)*

Food traceability: tracing food through the production and distribution chain to identify and address risks and protect public health (*M. Sega, INRIM)*

Ideas for new research proposals from the Gas Working Group
(*R. Wessel, VSL)*

H. Koch: In recent EMRP calls for PRTs there were again no food related projects mentioned which does not mean that they will not be accepted if there are good reasons given. So if you have convincing ideas related to metrological aspects of food-research, place these PRTs in either of the current TPs.

8. Reports on CCQM WG meetings

EAWG (*M. Mariassy*)

M. Mariassy summarized the terms of reference of the EAWG which are to establish the degree of equivalence of national measurement standards, to support the development of measurement standards, help to improve the measurement methods and to support the RMOs in help with CMC evaluation. He also gives an overview on the methods and techniques currenty applied at different NMIs.

CCQM-K19.1 is a subsequent key comparison carried out in 2010 as a follow-up comparison to CCQM-K19 on borate buffer. Eight laboratories took part, there will be no KCRV DoE linked to CCQM-K19. First results and uncertainty contributions are available.

Results are presented for CCQM-K73 (Assay of H+ in HCl) coordinated by NIST.

New KCs are CCQM-K92 (Electrolytic conductivity of 0.05 S/m and 20 S/m solutions) coordinated by SMU and CCQM-K91 (pH of phthalate buffer) coordinated by PTB. This KC is a repitition of CCQM-K17.

An overview on current studies/comparisons is presented including CCQM, APMP, COOMET and EURAMET projects. The state of the art in terms of electrolytic conductivity and pH based on the comparison results is summarized.

A test on Influence of thermostatting liquid on conductivity measurements was initiated by the results of CCQM-P83.

A new EAWG draft CMC document distributed for discussion. Issues addressed are the format, compliance with comparison results, comparisons necessary to support specific claims, HFTLS and the future comparison strategy.

M. Milton: Concerning the numbering rules for KCs, how is the link between old and new comparison established, by adding a ".x" to the old one or by defining a new KC number

M. Mariassy: If the KC is repeated, then a new number is associated to the KC, if an addition is made to the first KC (i. e. when additional labs participate) then the old number is extended by ".x".

GAWG (*M. Milton*)

In 2010 the WMO designated three institutes under the MRA. One is the NOAA Earth System Research Laboratory for CO2, CH4, N2O, SF6 and CO.
The 26th GAWG meeting will be held in Boulder (27/28/29 Sept 2011)
Report of GAW Workshop on NO_{xy} is now published as WMO Report #195

An overview on the CCQM GAWG comparisons is given, the results of K74 (Nitrogen dioxide/nitrogen, 10 µmol/mol) and K76 (Sulpur dioxide/nitrogen, 100 µmol/mol) are presented.

The GAWG has been working on the idea of "core species and concentrations" for gas analysis in order to streamline the process used for the approval and review of gas CMCs.
Implementing the "core" approach allow "the light to shine" over all of the core for those NMIs that meet the criteria and continue with statements of HFTLS based on existing principles for all other NMIs.

Core compounds and concentrations that have been identified are CO, CO2, O2, methane and propane (>10µmol/mol) as binary components in N2 and air and NO SO2 (>100 µmol/mol) as binary components in N2 and air. The upper limit will be 50% (500 mmol/mol) in each case.

The criteria for an NMI to use a broad HFTLS for core compounds/concentrations are defined. If an NMI ceases to meet the criteria for submitting core CMCs, it must re-submit all core CMCs within established HFTLS statements.

The KCs currently applicable to core mixtures are summarized.

B. Güttler: Does this mean that K1 will be greyed out in the future.

M. Milton: CMCs shall be judged by the most recent KCs, i. e. K1 will no longer be used if newer/better results are available to underpin the CMCs of an NMI. This does not mean that K1 will be greyed out in the near future or that it cannot be used any longer.

OAWG (G*. O'Connor*)

G. O'Connor starts with a summary of the CCQM- OAWG Terms of Reference. Accordingly, The primary focus of OAWG activities is the critical evaluation and benchmarking of NMI capabilities for the execution of "higher order" measurement procedures for well-defined organic molecular entities for which the SI-traceable amount of substance is to be determined.

The 2010 OAWG meetings were held in Paris (April 13th-14th) with 43 delegates from 27 Institutes and 20 Countries + 3 organisations (BIPM, EU, IUPAC) and in Singapore (November 4th – 5th) with 45 delegates from 24 Institutes and 18 Countries + 3 organisations (BIPM, CCQM, EU).

The OAWG Studies reported in 2010 were CCQM-K81 (P122, Chloramphenicol in pig muscle), CCQM-K79 (P123, Value assignment of CRMs and PT materials for Ethanol in aqueous materials), CCQM-K80 (Value assignment of CRMs and PT

materials for creatinine in serum, CCQM-K55b (p117b, Purity assessment of high purity organic materials: Aldrin) and CCQM-P129 (Ethanol and Water in Bio-ethanol derived from sugar cane).
Other studies are in progress (CCQM-K85), being Planned (agreed to be undertaken) or under discussion (CCQM-K55c next purity assessment: tetracycline)

The „core“ approach to be implemented in the OAWG is presented. It includes key comparisons that test core competencies for the delivery of measurement services to customers, key comparisons that assess the equivalence of measurement services actually provided to customers, key comparison studies in emerging areas of global interest and importance with accompanying pilot study, and capability assessment studies to allow assessment of measurement capabilities being established in a new area for an NMI/DI

BAWG (*H. Parkes*)

The is still increasin interest and participation in BAWG (now: 50 participants representing 25 organizations), major input comes from NIST, UK and APMP but EURAMET participation is growing.

Thre workshops were or will be held on “Metrology for forensic science– Requirements for Standards and Traceability/Comparability in Chemical and Biochemical Analysis’ (BIPM, Paris), on “Metrology in Chemistry- Essential for Pollution Control & Climate Change Monitoring”, and a “CCQM Workshop on the Role for Reliable Traceable Microbiological Measurements to Ensure Food Quality and Safety” (BIPM, Paris)

An overview on the finalized and running BAWG studies is given.

Strategic planning of BAWG involves ongoing refinement & development of BAWG strategy for study design & prioritisation and a focus on biomeasurement “building blocks” (competences). The key activities cover nucleic acids, proteins, cells, epigenetics and nanobiotechnology
Fundamental measurements will be the devoted to the conformation analysis of a single, purified protein, to absolute/relative quantification of protein(s) in a complex mixture and to evaluate binding characteristics of protein:protein complexes. Building block studies underpinning these fundamental measurements have been identified.

For the review of Bio CMCs, a clear guidance shall be developed with agreement of all RMOs on the criteria. Due to the limited RMO expertise to review Bio CMCs, KCWG referrals to BAWG to set up bio CMC review activity at October/November meeting with fully representative RMO participation.

RMO’s are to submit Bio-claims for review to KCWG per August 2011.

IAWG (*M. Sargent*)

Objectives of the CCQM IAWG are to evaluate and publicly demonstrate the equivalence of inorganic chemical measurements made at different NMIs, to organise a programme of laboratory comparisons, to collaborate on new measurement

capabilities required for inorganic chemical metrology and to encourage and assist new NMIs and designated institutes to develop their inorganic chemical metrology capability.

IAWG work programme includes organising laboratory comparisons, development and improvement of procedures and measurement methods and regular meetings

Two IAWG meetings were held in Paris (12 - 13 April 2010) and hosted by SP, Boras, Sweden 29 September - 1 October 20109). Both included joint meetings with CCQM EAWG
The development of IAWG strategy is still ongoing, the fourth benchmarking study was started and the core capabilities approach tested in a key comparison.

A summary of 2010 Calibration/purity studies, Matrix sample studies and Inorganic RMO studies is presented together with an IAWG comparison status.

8.1 New "core capability" approach to underpinning CMCs (*M. Sargent*)

The overall aim of the core capability strategy is to establish a more efficient and effective way of testing CMCs based on the minimum number of key comparisons and pilot studies.
Key aspects of the IAWG strategy include a *Core capabilities* approach for complex matrix samples and a *Report card* system for NMIs to summarize the overall KC performance and rolling a *five-year plan* for key comparisons. It will be implemented by demonstrating the feasibility of using a small number of KCs to underpin a wide variety of CMCs.
Three IAWG benchmarking studies have been carried out so far, based on 'real' analyses proposed for an important KC and/or pilot.
The IAWG core capabilities matrix uses systematic summaries of the scope of each KC *and* the capabilities required to deliver each CMC.
A "five-year-plan" of the IAWG covers the ten most relevant inorganic CMC categories, the most important IAWG analytes (50-60 elements, 10 anions, isotope ratios, organo-metallics) and the main IAWG measurement techniques.

The IAWG strategy combines traditional key comparisons (calibrants and purity), a "core capability" approach (matrix samples) and benchmarking exercises (1:1 demonstration of uncertainty claims). The aim is to use information from a range of CCQM studies in assessing each claim (The "report card" approach). Feasibility studies have been completed for benchmarking and incorporation of core capabilities into KC reports. The preparation of five KC reports in progress or completed. In the next step RMOs and CCQM KCWG will begin to implement the new approach in the CMC review process.

In the OAWG similar problems to the IAWG were identified. The aim is to devise a strategic planning framework for key comparisons. A taskforce has been established to address the problem. Their goal is to come up with 10 comparisons to demonstrate organic analysis capabilities.

B. Güttler: We need a roadmap that shows how an institute can achieve a CMC within a five-years period.

9. Information from BIPM: Measurement Service and Comparison Needs for the Biosciences- BIPM study and JCTLM activities (*R. Wielgosz*)

R. Wielgosz informs about the results of a "Study of Measurement Service and Comparison Needs for an International Measurement Infrastructure for the Biosciences and Biotechnology. The study aims to provide input on the future requirements for BIPM's laboratory activities, to be a useful reference for NMIs developing programmes in bio-measurement and to focus on protein and nucleic acid measurements for healthcare.
A revised draft report has been published by 31. January 2011 and is available from http://www.bipm.org/en/scientific/chem/biostudy_report.html.

Key elements of the study that have been addressed were a review of the published roadmaps and strategies developed by organisations for bio-measurement, a summary of the CCQM BAWG activities and plans and visits and interviews with selected NMIs and with representatives of key sectors of the bio-industry.

The main outcomes of the study are presented, covering (1) a review of roadmaps & strategies (Examples: Key Publications, North America and Priority Bio-measurement Areas), (2) a review of BAWG strategy & plans (strategy sub-groups: proteins, nucleic acid measurements - BAWG interests), (3) interviews with measurement institutes (measurements & applications), (4) industrial organisations (type of measurement), and (5) diagnostics and bio-pharmaceutical industry (measurement needs).

Finally, *R. Wielgosz* summarizes the review of the EC IVD Directive 98/79/EC on *in vitro* diagnostic medical devices.

10. Report on EURACHEM activity (*B. Magnusson*)

B. Magnusson presents an overview about the main goals and recent activities of Eurachem.

The membership within EURACHEM is limited to EU, EFTA and EU accession countries. Active working groups exist on (1) education & training, (2) proficiency testing, (3) EEE/PT, (4) measurement uncertainty and traceability and (5) validation. The latest guidelines that have been published are „Terminology in analysis – introduction to VIM 3" and "Selection, Use and Interpretation of Proficiency Testing Schemes by Laboratories". Several leaflets have been prepared to introduce the guides. The development of guidances is still on-going

The EURACHEM newsletter (now issue 28, autumn 2010) addresses developments within EURACHEM, and associated international issues and is avaiable from the EURACHEM Secretariat.
The latest EURACHEM General Assembly was held in Copenhagen (May 2010); the next General Assembly will be held in Moscow (May 26-27 2011).
Future International workshops will be on (1) proficiency testing (Istanbul, October 2011) and (2) uncertainty (Lisbon, June 2011).

Finally EURACHEM welcomes EURAMET TC-MC as liaison body to nominate expert to participate in the Eurachem Uncertainty WG.

B. Güttler suggests *B. Magnusson* as an official representative of EURAMET within EURACHEM. There were no objections.

11. Upcoming meetings

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12 Mandate of Convenors (*B. Güttler*)

Bernd Güttler introduces *Francesca Durbiano* (INRIM) as the new SCEA convenor, following *Petra Spitzer* (PTB). There were no objections.

The chairman thanks Petra for her excellent work during the last 4 years and for her contributions to the TC-MC chairs work..

13. Mandate of Chairperson

Michela Sega (INRIM) was suggested as the TC-MC successor of *Bernd Güttler*. There were no objections. *Michela Sega* takes over the TC-MC office at the Euramet GA in June 2011. *Bernd Güttler* wishes her all the best for the future work.

Rob Wessel takes the opportunity to thank *Bernd Güttler* for his work as TC MC chairperson.

14 Any other business

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15 Next meeting 2012 and Closure

Sophie Vaslin-Reimann welcomes all delegates to the next annual meeting of the TC-MC, to be held in Biarritz (FR), from 30 January to 3 February 2012.

Bernd Güttler thanks the delegates for their contribution and MIKES for their excellent organization and hospitality.

List of Attendees

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