



## Subject Field: METROLOGY IN CHEMISTRY

### Annual report 2002

#### 1 General aspects

The main activity in the last year is connected with the CMC submissions. After the publication of 567 gas analytical entries, in the second round 265 entries of general chemistry have been published on the database submitted by METCHEM TC. All the contributors, authors and reviewers, worked a lot for this result. It is worth mentioning that beyond the known aims of MRA, the review process brings closer the experts around the world and the personal contacts promote the collaboration and mutual understanding.

METCHEM TC has her own special difficulties in fitting to the other TCs family. Metrology in chemistry is distributed among different sectoral institutes belonging to different ministries in the countries. It means that to make them interested and to involve them in the projects is a rather hard work. METCHEM contact persons are responsible to establish the links their national reference laboratories and EUROMET Delegates are asked to help CPs in this activity.

For deepening the contacts with EURACHEM a paper has been published by the TC Chair in *EURACHEM Newsletter* on recent activities, projects and plans of the METCHEM TC. A talk was held on the present and future situation of European metrology in chemistry at Metrology Congress in Saint Louis.

Inter-regional contacts are extremely important to METCHEM as fast developing field world-wide. We appreciate very much the help provided by BIPM and personally by Dr Kaarls organising Inter-RMO meetings regularly. TC Chairs of RMOs are in close contact by e-mail continuously.

#### 2 Meetings

All the four TSC (Gas, Inorganic, Organic, Electrochemistry) of METCHEM held their meetings on 6<sup>th</sup> February 2002 in Prague. Projects and CMCs were discussed in details. It was the general opinion that the discussion would be more valuable if the reference laboratories participating in the comparisons had also attended the meetings.

Plenary METCHEM meeting: 7 – 8 February 2002, Prague, 42 participants

Minutes (Draft) of the meeting are put on METCHEM down-load site (operated by NPL):

[http://www.npl.co.uk/environment/euromet\\_aos.html](http://www.npl.co.uk/environment/euromet_aos.html)

### 3 Projects

Completed in last period:

**414** comparison

**Comparison of ozone standard reference photometers**

Participants: IRECL (B), RIVM (NL), ISC III (E), Ispra (EU), OFMET (CH), LNE (FR), CHMI (CZ), UBA (AT), SMHI (SK), IEP (HU), DMU (DK), NILU (NO), ITM (SE), FMI (FI), UBA (DE), GUM (PL)

A final workshop evaluated the results. Work is continued at BIPM.

**500** co-operation

**Atomic spectroscopy as a potential primary method**

Participants: DFM (DK), NPL (GB)

Project is closed

**528** comparison

**Metals (Cd and Pb) in water**

Participants: IRMM (CEC), LGC (GB), NMi (NL), BAM (DE), ITM (SE), WRI (SK), VUV (CZ), OMH-VITUKI (HU), Force (DK), GUM (PL)

**548** comparison

**Trace elements in sediment (Cd, Pb)**

Participants: IRMM (CEC), IFA (AU), LGC (GB), SMU-GSSR (SK), LNE (FR), OMH-KGI-KVI (HU), Uni Po (PL), Force (DK), Eco (CZ), CRAA (IT). Project went parallel with the CCQM K-13 comparison.

**566** comparison

**Determination of sulfur in fuel**

Participants: IRMM (CEC), BAM (DE), LGC (UK), SP (SE), AMEI (HU), ITC (CZ), CPT (PL). Project went parallel with the CCQM pilot study.

**568** comparison

**Pb content in wine**

Participants: IRMM (CEC), VSCHT (CZ), DVFA (DK), PTB (DE), EMPA (CH), LGC (GB), LNE (FR), INM (RO), Systembolaget (SE), IAFB (PL)

Project went parallel with the CCQM pilot study

**580** **EUROMET.QM.K-4** comparison

**Key comparison of ethanol/air standards**

Participants: NPL (GB), BNM-LNE (FR), IPQ (PT), SKL (SE), GUM (PL), VTT (FI), CSIR (ZA), VNIIM (RU), SMU (SK), BAM (DE).

**632** co-operation

**Study on electrolytic conductivity measurement**

Participants: DFM (DK), IEN (IT), NCM (BG), NPL (GB), PTB (DE), SMU (SK), SP (SE), NIST (USA), CENAM (MX)

A workshop was held focussing on the technical problems.

Agreed ongoing projects:

- 527** consultation  
**Revision of terms for the revision of VIM**  
Participants: EUROMET members
- 563** comparison  
**Calcium, glucose and creatinine in human serum**  
Participants: IRMM (CEC), EMPA (CH), LGC (GB), NMI (NL), PTB (DE), Univ.Gent (B), Ecochem (CZ), UKB (CZ), Univ.Poznan (PL), DEKS (DK), UMC (SI), Fürst Med.Lab. (NO), Rikshospitalet (NO)
- 565** comparison  
**Cadmium content in rice**  
Participants: IRMM (CEC), VSCHT (CZ), DVFA (DK), LNE (FR), PTB (DE), BAM (DE), Bálint Anal (HU), IAFB (PL), NFA (SE), EMPA (CH), NMI (NL), LGC (GB) Project is going parallel with the CCQM key comparison
- 589** consultation  
**Standards and calibration facilities for reactive gases**  
Participants: NMI (NL), NPL (GB), METAS (CH), CMI (CZ)
- 638** **EUROMET.QM.K-1.c** comparison  
**Comparison of standards and calibration facilities for NO measurement**  
Participants: NMI (NL), IPQ (PT), VTT-FMI (FI), LNE (FR), NPL (GB), VNIIM (RU), BAM (DE), METAS (CH), CMI (CZ), GUM (PL)

Planned projects:

- **Project to study and explain the BCR value assignment process**  
Participants: IRMM (CEC), LGC (GB), BAM (DE)
- **EUROMET supplementary comparison of NO and SO<sub>2</sub> in air at ambient levels** (linked to EU Dir., led by NPL)
- **Project to study of PolyAromaticHydrocarbon measurements in soil**

EU project (METCHEM related)

**“CERMATAIR”** is ongoing co-ordinated by NMI and involving several METCHEM participants. The project is concerned with supporting EU directives in ambient air.

#### **4 Mutual Recognition Arrangement**

- CIPM CCQM Key Comparisons: Fourteen comparisons have been approved, seven are running and ten are planned in the next future. Many of EUROMET members are participating.

Generally applied rule in CCQM to start with a study before conducting a key comparison. Sometimes EUROMET members would be able to conduct immediately a key comparison before the CCQM KC but it is not allowed.

- EUROMET Key Comparisons: see in details at “**3 Projects**” point
  - two KC completed, will be approved by CCQM in April
  - one KC is in progress
- Supplementary comparisons:
  - a comparison is planned supporting the ambient air EU Directives
- Calibration and measurement capabilities
  - EUROMET internal reviews: Nine countries and IRMM submitted in the second round 350 entries last year. Two reviewers from different countries were appointed to each worksheet to check the content. Experiences of the review were discussed on WG meetings and by mail. Authors corrected, deleted or explained their submission. BIPM, JCRB and EUROMET documents provided the guidance to review.
  - Reviews of EUROMET CMCs by other RMOs: our CMCs were sent to SIM, COOMET and APMP. SIM and APMP reviewed the files line by line. Comments were discussed at Inter-RMO meeting. Unfortunately the time was limited to overview all EUROMET entries. After intensive letter changing we accepted all the remarks of RMOs and withdrew the objected entries. EUROMET CMCs were approved by JCRB electronically in January this year.
  - Reviews of the CMCs of other RMOs by EUROMET: 20% of the CMCs of SIM, COOMET and APMP have been reviewed, especially the submissions where the uncertainties seemed to be too low. Comments were sent to RMOs before the Inter-RMO meeting. After discussion most of our comments were accepted so we could approve the final versions of the mentioned RMOs.

The approved chemical measurement capabilities appeared on the BIPM database in March this year.