



## Sampling at its Best

Last year's EURACHEM scientific top event, the Joint EURACHEM/EUROLAB Workshop on Sampling evolved November 5 - 6, 2001 in Lisbon/Portugal at the grounds of the National Institute for Engineering and Technology (INETI) and was hosted by RELACRE, the Portuguese Association of Accredited Laboratories. The workshop was part of a series of events intended to promote implementation of ISO/IEC 17025. It aimed at a detailed discussion and coverage of all issues related to sampling, from basic concepts to specific problems in the most diversified areas of analytical activity.



*Workshop participants gathered in the main lobby of the conference building around a classical sampling device, a traditional Portuguese scoop chain on an animal- or hand-operated iron wheel.*

The workshop programme addressed four major topics - sampling goals and procedures, statistical tools, sampling in a production environment, and sampling for third party laboratories. Plenary lectures, oral contributions and poster presentations were given by 27 speakers/presenters from Finland, the Netherlands, the U.K., Austria, France, Poland, Italy and Portugal. The auditory comprised an overall of 90 participants from 13 European countries and from overseas. *For more information on the workshop, turn to page 6.*

## EURACHEM Secretariat on the Move

For the Secretariat team at BAM the time has come to say farewell to the EURACHEM Secretariat. By the turn of the year the Secretariat has been taken over by EURACHEM-Portugal and will be hosted by the Portuguese Institute for Quality (IPQ), Lisbon.

Provision of the Secretariat has been an equally challenging and rewarding task. For Wolfram Bremser, who had nursed the newsletter as his baby, the response from readers all over the world, many of them requesting to be included in the mailing list, was very supportive. Likewise, Johannes van de Kreeke enjoyed a lot of positive feedback on the renovation of the EURACHEM website. For myself, the greatest benefit has been through making new contacts and fostering existing contacts with so many colleagues from all over Europe and beyond. As an example, I would like to mention the contacts with colleagues from Albania, Romania and Ukraine which catalysed the development of national EURACHEM networks in these countries and finally resulted in successful applications for membership of EURACHEM.

On behalf of the Secretariat team at BAM, I would like to express our thanks to the EURACHEM community for their continuous encouragement, support and co-operation, and I would like to express the very same thanks to all of my colleagues in the team.

Werner Haesselbarth, Past EURACHEM Secretary

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## Revision of EURACHEM-EA Microbiology Guide

A joint EURACHEM-EA working group is revising the guide "Accreditation for laboratories performing microbiological testing".

The first edition of this document was developed by another joint working group back in 1996. At that time, applicable standards were EN 45001 and ISO Guide 25. Due to the approval of the new standard ISO/IEC 17025 in 1999, both organisations realised that it was necessary to revise the guide in light of the new standard.

Microbiological tests belong to the testing fields that require the establishment of an "Application Document" as set out in the Annex B of ISO/IEC 17025. The International Standard specifies the technical requirements in general terms, however the "Application Document" shall provide specific guidance for microbiological testing.

The new guide is being elaborated following the guidelines contained in Annex B of ISO/IEC 17025, therefore only the second part of the standard, that is, "Technical requirements" needs supplementary information.

For the revision of the guide, the group took into account the experience obtained by laboratories and accreditation bodies using the first guide. This guide has been used for more than 5 years and it has been a useful tool for both assessors and laboratories preparing for accreditation.

Drafting the new guide, some clauses were agreed by the working group after extensive discussions, for instance, "Estimation of uncertainty of measurement" and "Sampling". These issues are new in the ISO/IEC 17025.

However, other clauses of the new standard were already stated in the microbiological guide, although not so much detailed in the old standard EN 45001, this is the case, for example, of "Validation of methods". These issues do not change so much, and take short comments from members of the working group.

The group had a finalised draft version of the guide in last December. The objective of the joint working group is to obtain the approval of the document in the next General Assemblies of EURACHEM and EA, which will take place in May and June. Both organisations should follow proceedings already established for the publication of documents.

It is expected that the new guide will help the microbiological laboratories and will promote a consistent approach to laboratory accreditation amongst EA member bodies.

Elisa Gredilla  
ENAC Spain

## New EURACHEM/CITAC Document: A Guide To Quality in Analytical Chemistry

During 2001 work has been undertaken by a Joint CITAC/EURACHEM Task Group (Bernard King/Alan Squirrell for CITAC; Maire Walsh/David Holcombe for EURACHEM) to revise CITAC Guide 1 (1995), which itself was based on the old EURACHEM/WELAC Guide.

The main purpose of this revision is to bring the material into line with the new ISO/IEC 17025:1999. In addition to including the new requirements in ISO/IEC 17025, extensive references are also made to the new ISO 9001:2000 and the most recent OECD GLP Protocol (1998). The new Guide will contain tables comparing the relevant clauses of these three major "quality standards" and it is hoped that these will be particularly useful for laboratory practitioners and other interested parties.

During the revision process, various drafts have been extensively circulated and some valuable input has been received from CITAC and EURACHEM members as well as Accreditation Bodies (through the Regional & International Co-operations EA, APLAC and ILAC), where the respective Laboratory Committees have coordinated input from stakeholders. Other bodies like CCQM, AOAC and National Chemical Societies have also contributed. This input has been much appreciated and reflects the high level of interest in the Guide.

The Guide focuses on the technical issues of Quality Assurance (QA) with emphasis on those areas where there is a particular interpretation required for chemical testing. The sections on metrological issues, including method validation, traceability and measurement uncertainty have been updated and expanded together with appropriate references to ISO/IEC 17025 and other CITAC/EURACHEM Guides. Other related areas, including calibration, sampling and reference materials have also been upgraded.

There is less "general" QA material when compared with the previous Guide, but none the less the new Guide aims to be a stand-alone document, in addition to supporting ISO/IEC 17025 – thus it is a guide to good (best) practice and hopefully it will serve as a useful application document for laboratory practitioners, accreditation body personnel and other interested parties.

The revision is now nearing completion. The latest draft will be circulated in late January 2002 for a "final" review. It is anticipated that the new Guide will be published by mid 2002. It will also be freely downloadable from both the CITAC & EURACHEM websites so that it is available to as wide an audience as possible. Please keep an eye on our websites – there is much more to discover!

Finally, the Task Group would again like to thank all those people who have contributed to this important revision.

Alan Squirrell, CITAC  
Maire Walsh, EURACHEM Ireland



## Editorial

Hip! Hip! Euro! It is here and it is real: The common currency of 12 member states of the European Union became the only official means of payment as of January 1, 2002 (comp. our price list for additional copies on the front page). It was like Christmas: During the night of St. Sylvester, Central Bank sleighs were riding through the skies, and look: In the morning, the Euro was in our stockings... pardon, purses.

My first Euros were French, and it was amazing to see them equally being accepted in Luxembourg, Austria or Germany.

We analysts are used to pay with a commonly accepted currency: reliable, comparable and traceable analytical results, assured by validated methods and QA systems implemented in the labs. It is one of EURACHEM's merits to having substantially contributed to the creation of, and the trust in this common currency.

There is still a lot to do (e.g. see pp. 6 and 10-11 of this issue), and EURACHEM will undoubtedly continue to contribute. Within our "common currency" philosophy, the current move of the Secretariat will rather improve the performance and bring in fresh ideas. Good luck for our Portuguese crew, and... have a nice EURO!

The Editor

## EURACHEM's New Secretariat Crew

EURACHEM is entering the year 2002 facing new challenges, me as an incoming Chair, a new Secretariat, the transfer of the EURACHEM Webpage from BAM, as well as a new editor of the EURACHEM Newsletter! Too much at once? The future will tell, but we are pretty confident that changes will be smooth and they will work. The retiring Secretary has put very high standards on its performance and it will remain as a reference point in everybody's memory. EURACHEM members have appreciated the efficiency of Werner Haesselbarth, Johannes van de Kreeke and Wolfram Bremser, always conducted in a pleasant atmosphere. The new team is particularly grateful for their support in this transition phase.

We trust that EURACHEM, by the merit of all its members, will continue working in the usual competent and pioneering way, strengthening the confidence of the Analytical Community. In our modest way we will attempt to do our best to deserve it.

Next time we meet, or when you next address EURACHEM with a request or with a suggestion, you may already be facing the new Secretariat composed by Maria do Céu Ferreira and Maria Leonor Rodrigues.

Maria Leonor will lend us the skills she developed along the years in collaborating with our research group, writing scientific papers and letters of all kinds, and organising small meetings as well as large national and international conferences.

By now you certainly noticed that their first names are both "Maria" as well as mine! So you see that to make things easier you just have to move on to our second given names, Céu, Leonor and Filomena, or the two together, Maria do Céu, Maria Leonor and Maria Filomena!

This is a particularity of a certain Portuguese generation, whose meaning we will explain in detail at some social gathering in the near future when we meet, if you ask.

An all-female crew? No! This is not all and, although by coincidence, the gender issue has been contemplated. For those

who don't know them yet from the uncertainty or the proficiency testing arena, next time we will introduce Ricardo Bettencourt da Silva and Leopoldo Cortez and let you know of their roles as staff members of the new EURACHEM team.

Maria Filomena G.F.C. Camões  
EURACHEM Vice Chair



Maria Leonor Rodrigues and...



... Maria do Céu Ferreira

**Maria do Céu Ferreira** has a degree in Chemical Engineering from the Technical University of Lisbon (IST) and a BSc in Radiology. She is a member of the technical staff at the Portuguese Institute for Quality (IPQ), Central Laboratory of Metrology.

Since 1995 she has been involved in the Amount of Substance Laboratory with responsibility in the Viscosity and Density Laboratories where she coordinates multi-disciplinary teams dealing with standards and measurements. In addition she is actively involved in Legal Metrology (type approval).

Emphasis is on chemical and physical measurements on Reference Materials, validation of mathematical models, QA/AC and harmonisation of measurement techniques.

She is the Coordinator of the EURACHEM/PT Reference Materials Working Group and National Delegate of ISO/REMCO.



# International Comparability of Measurements

The Mutual Recognition Arrangement (MRA) and the BIPM key comparison database (KCDB)

The MRA is providing an infrastructure that enables the international comparability of standards and calibration and measurement services to be demonstrated. With over 350 designated key comparisons and some twelve thousand individual calibration and measurement capabilities of NMIs, the data contained with the BIPM key comparison database will facilitate the acceptance of calibration or measurement certificates worldwide, thus fulfilling the objectives of the MRA.

In October 1999 the directors of the national metrology institutes of the industrialised states of the world signed a Mutual Recognition Arrangement (MRA) for national measurement standards and for calibration and measurement certificates issued by their institutes. This arrangement was drawn up by the International Committee of Weights and Measures (CIPM), under the authority given to it in the Metre Convention.

The objectives of the MRA are to: establish the degree of equivalence of measurement standards maintained by NMIs; to provide for the mutual recognition of calibration and measurement certificates issued by NMIs; thereby to provide governments and other parties with a secure technical foundation for wider agreements related to international trade, commerce and regulatory affairs. It is founded on the efforts of each individual national metrology institute to base its measurements and measurement uncertainties on SI units.

The principal output of this MRA is a key comparison database (KCDB) at the Bureau International des Poids et Mesures, BIPM, ([www.bipm.org/kcdb](http://www.bipm.org/kcdb)) containing the results of international comparisons of national

## Gases, environmental

The Netherlands, NMI-VSL (Nederlands Meetinstituut - Van Swinden Laboratorium)  
Complete CMCs in Amount of Substance for Gases for The Netherlands (.pdf file)

Matrix or material	Analyte or component	Dissemination range of measurement capability		Range of certified values in reference materials	
		Amount-of-substance fraction in nmol/mol	Relative expanded uncertainty in %	Amount-of-substance fraction in nmol/mol	Relative expanded uncertainty in %
nitrogen	benzene	2 to 100	5 to 2	2 to 100	2

Mechanism(s) for measurement service delivery: PRM BTEX + calibration  
Uncertainty convention 2. PRM BTEX are multicomponent systems  
Internal NMI service identifier: NMI-VSL312072

## Gases, environmental

United States, NIST (National Institute of Standards and Technology)  
Complete CMCs in Amount of Substance for Gases for United States (.pdf file)

Matrix or material	Analyte or component	Dissemination range of measurement capability		Range of certified values in reference materials	
		Amount-of-substance fraction in nmol/mol	Relative expanded uncertainty in %	Amount-of-substance fraction in nmol/mol	Relative expanded uncertainty in %
nitrogen	benzene	1 to 1E+06	1 to 5	5 to 1.00E+04	1 to 5

Mechanism(s) for measurement service delivery: NIST RM for State of California, SRD 79, SRM 1800, SRM 1804  
Uncertainty convention 1  
Internal NMI service identifier: NIST78393027

CMC search results: An example from Chemistry (gas analysis).

measurement standards, known as key comparisons, which underpin extensive lists of the calibration and measurement capabilities of national metrology institutes (NMIs).

The statements of the calibration and measurement capabilities include a full description of the service in question, and, most importantly, the uncertainty with which it is offered to clients, these uncertainties being recognised by all signatories to the MRA. The statements of measurement capability of each NMI, supported by their performance in the key comparisons, will provide the framework for underpinning the international comparability of measurements. The traceability of results of measurements to these stated references provides the basis for their comparability.

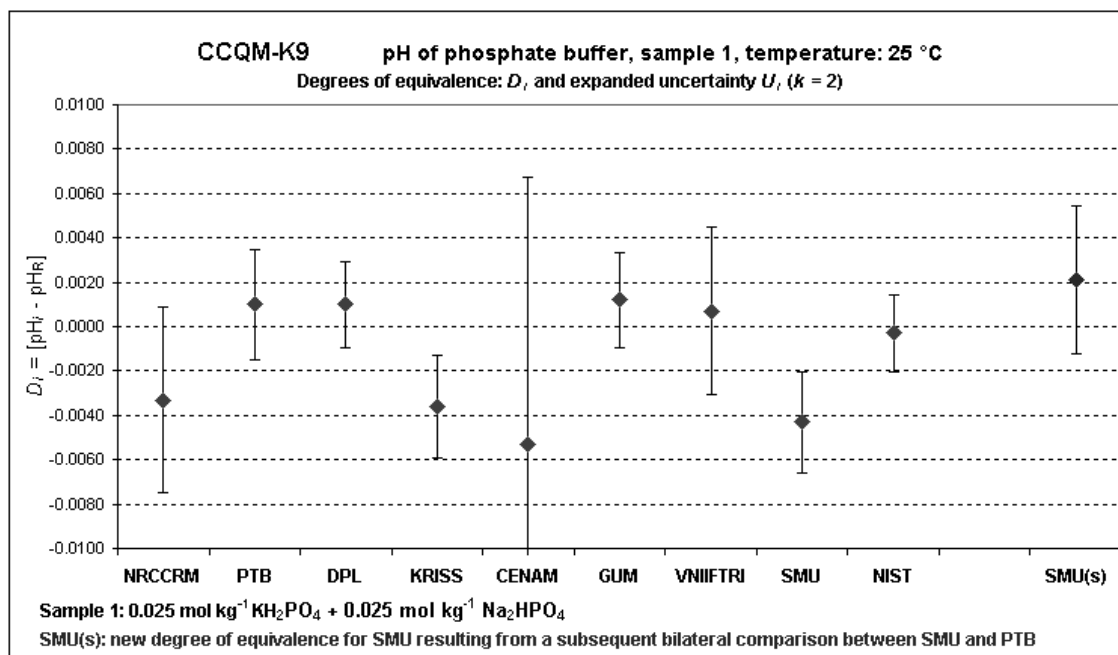
Some twelve thousand individual calibration and measurement capabilities (CMCs) of the participating NMIs are now included in the KCDB. These fields concerned

include electricity and magnetism, ionizing radiation, photometry and radiometry, whereas for chemistry information related to gas mixtures is available, with further areas to follow shortly.

## CMCs, Reference Materials and Calibrations

The calibration and measurement capabilities (CMCs) of NMIs for chemical measurements are included in the key comparison database, and listed under Amount of Substance.

The chemical categories covered are: high-purity chemicals; inorganic solutions; organic solutions; gases; water; metals and metal alloys; advanced materials; biological fluids and materials; food; fuels; sediments; soils; ores and particulates; pH and electrolytic conductivity; and other materials.



Graph of equivalence for a pH comparison (CCQM-K9)

The data for gases have already been entered, whereas the content for the other chemical categories is in the process of review, and it is expected that this data will be entered in early 2002. In the review process, the comparisons, traceability and quality systems which underpin the CMCs are examined by regional and inter-regional review, before the data can be entered into the database.

The regional metrology organisations (RMOs) involved in this process include APMP (for the Asia/Pacific region), EUROMET (for Western Europe), SIM (for the Americas), COOMET (for Central and Eastern Europe), and SADC MET (for Southern Africa). The process is overseen by the Joint Committee of the Regional Metrology Organisations and the BIPM (JCRB). The data which are entered onto this database are recognised by all NMIs that participate in the MRA.

The database of CMCs is searchable. A free text search is available for the analyte or component of interest.

An example of the result of such a search for CMCs related to gas standards (benzene in nitrogen) is given in the figure on page 4. The CMCs of two selected NMIs are shown.

## Key Comparisons for Chemistry

The organisation of international comparisons which underpin CMCs is the responsibility of the Consultative Committees of the CIPM. The Consultative Committee for Amount of Substance; Metrology in Chemistry (CCQM) is responsible for issues related to metrology in chemistry.

Created in 1993 by the International Committee of Weights and Measures (CIPM), the CCQM has five established working groups of organic analysis, inorganic analysis, gas analysis, electrochemical analysis and bioanalysis, and an *ad hoc* working group on surface analysis. The working groups of the CCQM have been active in organizing key comparisons in the field of chemical measurements.

At the last meeting of the CCQM, twenty-five chemical key comparisons had been nominated, with a further 37 other comparisons planned. The key comparisons cover the range of interest of the working groups, and have included:

- measurements of cholesterol, glucose and creatinine in serum

- natural gas and automotive emission gas standards
- PCBs, lead and cadmium in sediment
- pH primary buffers.

The results of these key comparisons are currently being entered into the database. The data include the measurement results and their uncertainties, and a calculation of the degrees of equivalence between the measurements of the various laboratories.

As an example, the graph of equivalence for a pH comparison ( $0.025 \text{ mol kg}^{-1} \text{KH}_2\text{PO}_4 + 0.025 \text{ mol kg}^{-1} \text{Na}_2\text{HPO}_4$  at  $25 \text{ °C}$ ) is shown in the figure above. The Physikalisch-Technische Bundesanstalt (PTB) piloted the comparison with the assistance of the National Institute of Standards and Technology (NIST) and the Slovak Institute for Metrology (SMU). The final report of the comparison contains full details of the measurements, and this together with statements on how the degrees of equivalence are derived is found on the KCDB, allowing the standards or measurement capabilities to be compared.

R I Wielgosz  
 Bureau International des Poids et Mesures (BIPM)



## EUROLAB/ EURACHEM Work- shop on Sampling

In the aftermath of the September 11 events, the world was living particularly difficult times, and several names were withdrawn from the initial programme. It has to be referred to the commitment of all those who, despite everything, stood by their promise, namely the invited speakers Pentti Minkkinen, Dinis Pestana, Wolfhard Wegscheider and Michael Ramsey. Thanks must also be extended to those who, by attending, showed their eagerness to learn about that highly relevant, but much neglected topic.

Initially planned for the year before in Switzerland, it was only in November 2001 that the workshop could take place in Lisbon. As it be-



*Prof Pentti Minkkinen during his plenary lecture on sampling for chemical analysis*

came obvious, the promoters were right in spotting the topic of Sampling, as one where Analytical Chemistry needs investment in terms of development of awareness of the analytical community to sampling as part of the Analytical Process, implementation of pedagogical action and upgrading of competences.

The programme of the workshop was planned to evolve from an introductory lecture on goals and procedures via statistical tools for all purposes to problems and problem solutions from the production area and third party laboratories. In this respect there was



*The conference venue at the INETI campus in Lisbon*

a balanced representation of the expertise and professional involvement of the participants, from a considerable diversity of scenarios and centres of excellence. The presentations during the workshop provided a broad scope from theoretical approaches to examples from many different fields.

Some objective conclusions can be drawn from the EUROLAB/EURACHEM workshop. Firstly, the implementation of ISO/IEC 17025 draws the attention to sampling because

- sampling is addressed in the standard and laboratories that want to be accredited for sampling have to meet some additional requirements (as pointed out in the lecture of Leopoldo Cortez)
- in general, sampling contributes significantly to uncertainty and thus has to be taken into account when setting up uncertainty budgets (emphasized in the majority of the lectures).

Secondly, we learned that sampling theory should take into account two different aspects, namely i) the sampling technique (i.e. how to take a sample from a lot or batch, and how to introduce it into the analyser), and ii) the statistical distribution relevant for the lot. Concerning these aspects, existing knowledge should be considered to avoid gross sampling errors and optimise the sampling strategy.

From the different examples presented, one could learn that in some areas standardised sampling procedures exist which in some cases are even governed by strict requirements (e.g. GMP for the pharmaceutical industry). In other areas, sampling procedures are just developing and therefore further information is necessary.

Thirdly, there is a pronounced need for prenormative research and the development of sampling standards, that should include uncertainty statements as a guidance for the laboratories.

Furthermore, it was emphasized that interlaboratory comparison on sampling would be helpful to assess the comparability of sampling procedures used by the laboratories. These intercomparisons would need funding.

The joint EUROLAB/EURACHEM workshop on sampling provided a good overview on the existing knowledge in the field. The issue of sampling has to be addressed again in a follow-up workshop. All participants of the workshop felt that they owed RELACRE, and Ms. Ana Maria Duarte in particular, special thanks for having taken upon their shoulders the organisation of the event.

Maria Filomena G.F.C. Camões  
EURACHEM Portugal

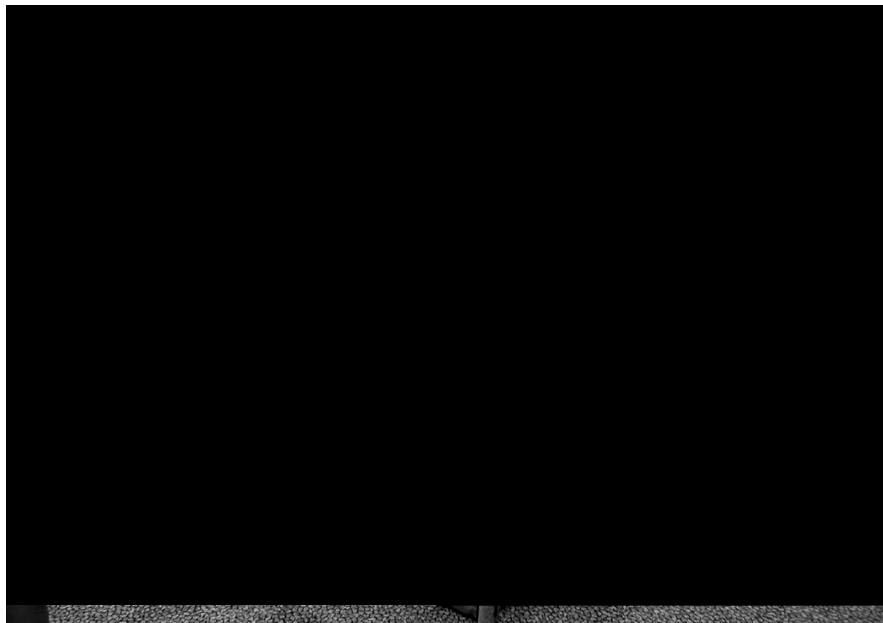
# The Impression of a Metrology Speaker

*Gleanings from the Workshop on the experience with the implementation of ISO/IEC 17025*

This event of 4 October 2001 in Paris was in several respects unique and successful. EUROLAB together with the local organiser LNE and in collaboration with EURACHEM and EA called for a one-day workshop entirely dedicated to exchange experience on the implementation of the new laboratory standard ISO/IEC 17025. Obviously, this topic was attracting the European and the local French laboratory community to a far greater extent than foreseen by the organisers, who managed to seat and host 300 participants, that is 50% more than the limit initially set to 200. This certainly deserves full appreciation from those who were otherwise unable to attend and profit from this day.

The permanent liaison group of EUROLAB, EURACHEM and EA established a well-balanced and rich programme. It comprised eleven presentations in total, five laboratory presentations, four from the accreditors, one from the metrology and one from the standardising body's point of view. The speakers originating from various European countries covered aspects ranging from the implementation of the standard in their home laboratory, the views, experiences and strategies at the European level up to the already envisaged revision of the standard to take into account ISO 9000:2000.

It was surprising how this matter – often seen as rather “dry” or formal – not only attracted many participants, but showed so many facets, gave rise to vivid discussions and most importantly, offered new aspects and views for probably everybody including the speakers. To a metrologist, it was highly interesting to recognise metrological concepts and notions like *uncertainty*, *traceability* and *measurement standard* in the testing and analytical chemistry community. This is a clear sign for an upcoming cross-discipline approach with regard to producing and mutually recognising calibration, measurement and testing results. The new normative standard ISO/IEC 17025, introduced by the end of the year 1999 and meanwhile widely accepted and even



*Above: Overwhelming interest in ISO 17025 implementation issues*

*Below: Prof Horst Czichos, EUROLAB Chairman and President of the Federal Institute for Materials Research and Testing (BAM), during his opening address*

implemented at most national metrology institutes, has a high potential of accelerating this process.

The seminar was an excellent opportunity to exchange views in a rather broad sense, to ignite the real (and not formal) spirit of the standard within laboratories. There is no doubt, more needs to be done in the various fields and laboratory communities, like for instance the INITIATION workshop for national metrology institutes “Solving practical problems when implementing a Quality System based upon ISO/IEC

17025” held on 14 December 2001 in Rotterdam.

I am sure we all benefit or will benefit from mutually recognised laboratory capabilities including their management systems resulting in reliable calibration and testing results – if not tomorrow and not directly visible in monetary figures, but in a longer run and indirectly beneficial to our economy, to our society and ultimately to our life.

Wolfgang Schwitz  
EUROMET Chairman



## EURACHEM General Assembly

The Cyprus EURACHEM Committee in cooperation with the Pancyprian Union of Chemists (PUC) has the pleasure of hosting the EURACHEM General Assembly Meeting of the year 2002 to take place in Cyprus on 16 - 17 May.

Other related events i.e. Working Groups and Executive Committee Meetings will be organised during the week. On this occasion the Cyprus EURACHEM Committee, in cooperation with the Pancyprian Union of Chemists, and EURACHEM are organising a two-day regional workshop on Quality Assurance in Testing Laboratories. The objective of this event is to analyse various issues of importance for laboratories and to promote the cooperation between Mediterranean countries.

All events will be hosted in Nicosia, the capital of the island. The General Assembly, the Executive Committee meeting and the WGs meetings will take place at the Holiday Inn. The regional workshop will take place at the Cleopatra Hotel.

### Working Groups

Three EURACHEM Working Groups, namely

- Measurement Uncertainty and Traceability
  - Education and Training
  - Proficiency Testing Mirror Group
- are planning to meet in Cyprus. Their chairmen as well as a representative of a fourth, i.e. "AQA at Universities" have expressed their willingness to contribute to the regional workshop giving lectures in their fields.

### The Workshop

Invited speakers mainly from EURACHEM will present main topics including quality assurance in laboratories, uncertainty of chemical measurements, accreditation (and the new standard), traceability of measurements, validation of test methods, CRMs, proficiency testing etc. while participants will exchange views and experience from their countries during discussion. The workshop is intended for members of the "laboratory community" as well as "end users" of laboratory results (cu-

stomers, accreditors, regulatory officers etc) from Mediterranean countries. Members of all National EURACHEM Organisations are also welcome.

### Why Cyprus?

Cyprus being one of the countries in the first group of accession countries is paying great attention to the upgrading of the infrastructure related to Free Movement of Goods. The Society of Analytical Laboratories plays an important role in these efforts, and the local EURACHEM Committee, operating under the umbrella of PUC is very active. It is acknowledged that the participation in EURACHEM activities has been very fruitful. Furthermore, the organisation of 2002 Meeting of the General Assembly in Cyprus is expected to give much more support to our efforts.

### 10 000 Years of History

A lot of historical, cultural and mythological sites are spread all over Cyprus. All these represent the long passage of history through 10,000 years as well as the interaction of many different peoples and their civilisations. Regardless of the destructive effect of the passage of time and conquerors, great evidence of the long history can be found on the island: ancient theatres and stadiums, places of worship in the ancient times (e.g. the Sanctuary of Aphrodite), churches dating back to the beginning of Christianity with their famous mosaics and icons, and mosques like Hala Soultan Tekesi. There are castles from the Venetian times, and natural sites which carry medieval legends such as the mountain of Pentadactylos and the legend of Dighenis Akritas.

We are sure that the EURACHEM 2002 week will be very successful and interesting, and looking forward to welcoming all of you in Cyprus!

For more information, visit the EURACHEM website or contact the Cyprus Organising Committee at [ktsimillis@hotmail.com](mailto:ktsimillis@hotmail.com).

Kyriacos Tsimillis  
EURACHEM Cyprus,  
for the Organising Committee

## EURACHEM/EQALM/CITAC 4<sup>th</sup> Workshop on Proficiency Testing in Analytical Chemistry, Microbiology and Laboratory Medicine

Many readers of this article will recall fondly, I hope, the 3<sup>rd</sup> EURACHEM/EQALM Workshop on Proficiency Testing in Analytical Chemistry, Microbiology and Laboratory Medicine, which was held in Borås, Sweden in September 2000. I thought it was a very enjoyable event, with excellent presentations and discussions, held in an informal and friendly atmosphere. Immediately after the meeting I was asked whether a follow-up workshop could be arranged in the United Kingdom to build on the work and progress achieved in Borås. I agreed to this with enthusiasm, and eventually the date of the workshop was agreed for February 2003.

The success of the Borås workshop was due in no small measure to the excellent organisation of the event by Ulf Örnemark and his colleagues at SP. My colleagues and I at LGC feel we will have a very difficult task on our hands to match this excellence. As the reader will no doubt have noticed, the sponsorship of the 4<sup>th</sup> workshop has now extended to include not only EQALM, who joined with us so well in Borås, but now CITAC too. I welcome their support and willingness to be involved, and see it as a compliment to what we achieved in Borås that they wish to be associated with the next workshop.

Preliminary arrangements have now been made for the 4<sup>th</sup> workshop. It will be held on 16 to 18 February 2003 at the Hilton National Hotel in Bracknell. Bracknell is a small, modern town some 50km west of London, but only 30km from Heathrow Airport. It is also close to Ascot, famous for its racecourse, and Windsor with its magnificent castle. The Hilton National Hotel staff there are experts at hosting major conferences. I thought that it would be easy to arrange the workshop so far in advance, but the dates we have now agreed were the only dates before for the autumn of 2003!

-- continued on page 9 -



The Proficiency Testing Mirror Group, at our meeting immediately after the Borås workshop reviewed the 3<sup>rd</sup> workshop and began planning for the 4<sup>th</sup>. One of the key decisions we agreed upon was that the 4<sup>th</sup> workshop needed to highlight the relationship between the PT providers and the participating laboratory, and the use made of PT scheme results by laboratories in their relationships with their customers, accreditation bodies and regulatory authorities. This, we felt, represented a key aspect of proficiency testing, in practice, and one which we can not afford to ignore.

We have drawn up a list of topics which will be covered in the workshop. These will either be the subject of keynote talks by experts, or subjects for discussions by working groups. These topics include:

- Evaluation of participant performance, including application of measurement uncertainty into PT/EQA
- Application and use of PT/EQA by participants, their customers, accreditation and regulatory bodies
- Selection of appropriate schemes
- Legislative demands for PT/EQA
- Cost benefit analysis of PT/EQA from a laboratory perspective
- Pre and post-analytical schemes (sampling, interpretation)
- The effect of ISO 17025 on laboratories' participation in PT/EQA including frequency of participation
- International harmonisation of PT
- Accreditation of PT providers – an update
- New technical areas and challenges in Proficiency Testing
- Use and abuse of PT/EQA schemes

One of the most positive aspects of the Borås workshop was the lively discussion in which took place in the working groups. This was of such a high standard that we ran out of time before all the points raised could be fully discussed. So, at the 4<sup>th</sup> workshop, we have decided that the keynote talks will be shorter, and the discussion time will be longer. There will still be 4 keynote talks on the morning of each day, but the intention is for the delegates to spend more time participating actively and less time listening!

Anyone wishing to register for the workshop can do so by logging on to the VAM website at [www.vam.org.uk](http://www.vam.org.uk). I look forward to seeing many of you at the workshop in 2003.

Nick Boley, LGC

Proficiency testing schemes are an important tool in the framework of conformity assessment when considering the technical competence of laboratories. But not only laboratories should know about appropriate proficiency tests, also accreditation bodies should establish procedures to take into account the laboratory's participation and performance in proficiency testing. According to document EA-03/04 ([www.European-Accreditation.org](http://www.European-Accreditation.org)) they should collect and provide information about appropriate proficiency testing and other comparison programs to give support to the laboratories. Members of the ILAC multilateral recognition arrangement of accreditation bodies should be able to provide similar information (*see* ILAC-P1).

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## EURACHEM supports organisation of EPTIS

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To facilitate the dissemination of information about proficiency testing schemes to interested parties, e.g. testing laboratories, accreditation bodies and regulatory authorities, to enhance the international co-operation in the field of interlaboratory comparisons and to reduce unnecessary duplication of effort the European Proficiency Testing Information System EPTIS was developed in the framework of the concerted action "Information System and Qualifying Criteria for Proficiency Testing Schemes" (October 1998 - September 2000). The project in which sixteen European countries took part was sponsored by the European Commission and supported by EURACHEM, EUROLAB and the European Cooperation for Accreditation (EA). The Internet Information System ([www.EPTIS.bam.de](http://www.EPTIS.bam.de)) gives information on more than 700 PT schemes in Europe.

After finalisation of the concerted action in 2000 the partners decided to maintain and continue making

available the database for users after the completion of the project. All partners of the consortium agreed to continue their work on EPTIS.

Meanwhile a steering committee was established and the partners adopted a "Protocol for the maintenance and development of the European Proficiency Testing Information System". This protocol sets general rules according to which the various partner institutions involved in EPTIS collaborate and manage EPTIS. The organisation of EPTIS and the subsequent operations are based on the following structure:

The body responsible for guiding the EPTIS work and its development is the EPTIS steering committee. It consists of representatives from

- EPTIS co-ordinating organisations (the original and new partners of the project)
- EPTIS supporting organisations
- the EPTIS central secretariat.

The co-ordinating organisations are supposed to nominate a national or regional EPTIS co-ordinator, who collects the information for EPTIS in a given country or region. Supranational, non-profit organisations interested in proficiency testing which are prepared to give official patronage and active support to EPTIS on an ideational and/or financial way may join this protocol as supporting organisation. They are expected to formally endorse a commitment.

As one of the first interested parties EURACHEM decided to become supporting organisation and at its Executive Committee meeting on November 7th 2001 in Lisbon a commitment was endorsed. This commitment would enable active EURACHEM participation. EURACHEM will be represented in the EPTIS steering committee by Nick Boley.

The next step will be to extend EPTIS as an international database (in co-operation with the International Laboratory Accreditation Cooperation ILAC).

Angelika Recknagel, BAM

# Measurement uncertainty: Surveys about customers' knowledge, reactions and needs

Laboratories' concern about the customers' reactions to new requirements for evaluating and reporting uncertainty led to the development of an information leaflet for distribution together with the test report. Two Swedish surveys show that a majority of the customers need and value uncertainty statements in the test report.

The debate on uncertainty initially focused a lot on whether or not it was a good thing to use wording such as "error" and "uncertainty" when communicating measurement quality. There were those who feared that it could reflect badly on the profession, and promoted the use of more positive terms. Some laboratories argued that the customer does not want or understand numbers expressing the reliability of the measurement result.

International standards and local regulations now request that accredited laboratories evaluate and report measurement uncertainty, as defined in international documents. This means that the laboratory will normally state an expanded uncertainty  $U=k \cdot u_c$  ( $k=2$ ) in the test report. To provide this information only when the customer asks for it, or to report the intermediate precision observed from control charts is no longer considered sufficient by some accreditation bodies.

## How Can the Customer Be Informed?

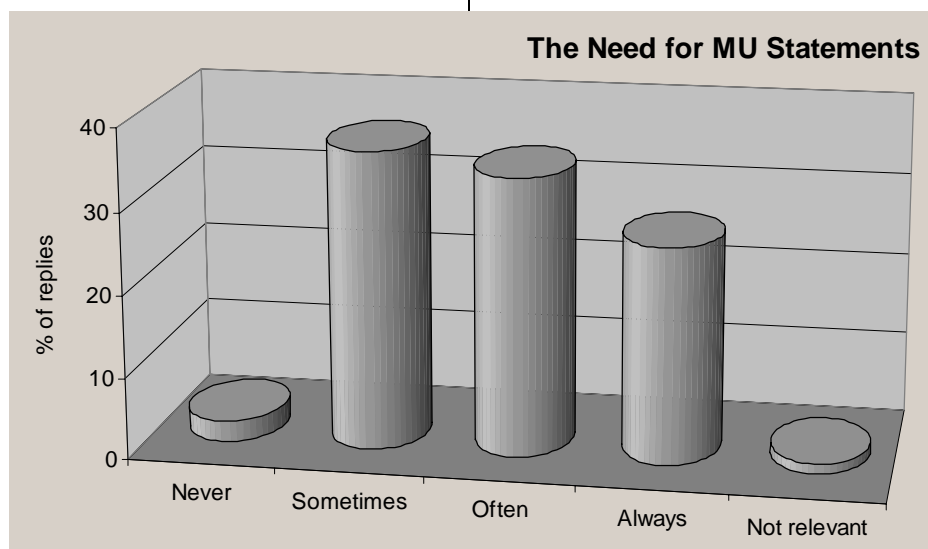
In February 2000 representatives of accredited Swedish chemistry laboratories expressed concern about the customers' reactions when the new regulations are implemented. An educational initiative directed towards the customer/end-user of measurement results was considered necessary. SP Swedish national testing and research institute proposed a leaflet that could be distributed together with the test report. This

idea was supported by the accreditation body, various authorities and interest organisations, and a network was formed to develop the leaflet. An English version of the leaflet was produced later after consulting representatives of the EA Secretariat, the EURACHEM uncertainty working group, the EURACHEM/EURO-LAB/EA permanent liaison group, and EMPA.

## The Swedish Surveys

To gain more insight into the customers' knowledge, reactions and needs, SP conducted two surveys. An

where 1 corresponded to "not important at all" and 6 to "very important". An additional option was "not relevant". In total some one thousand questionnaires were distributed to all customers involved in an SME project (Survey A1), to the ten most important customers of each department (Survey A2), and to those who received a test report during a three months' period (Survey A3). In this report we include answers from four of SP's departments dealing mainly with testing and quantitative chemical analysis (Energy technology, Chemistry & materials technology, Building technology, Mechanics).



additional objective was to inform and create awareness about the limitations in the quality of measurement results.

Survey A is an annual survey to a wide variety of SP's customers. The objective is to get a general opinion about the degree of satisfaction with i) the work carried out at each department for specific assignments, and ii) with the overall performance of the services provided. This time the customers were also to "Rank the importance of the test result being accompanied by an uncertainty statement". The customer could indicate a number between 1 and 6,

*In the figure:* Distribution of responses to the question "How often do you have a need for a statement concerning the measurement uncertainty in the test report?" between the options of the questionnaire which were a) never, b) sometimes, c) often, d) always, and e) not relevant/do not know.

Survey B focused entirely on measurement uncertainty and was limited to customers of the three departments Chemistry and Materials Technology, Mechanics, and Energy Technology. A questionnaire and the information leaflet were included on the occasion of returning a test report.

**Table 1:** Overview of the results in Survey A. Customers were asked to value the inclusion of a statement of the measurement uncertainty in the test report. A score of 1 corresponds to “not important at all” and 6 to “very important”.

Survey	Customer category	Average score	Fraction of replies as “not relevant”
A1	Participants in SME projects	5.1	6 %
A2	Ten most important customers of each department	5.0	15 %
A3	Customers who received a test report between September and November 2001	5.1	8 %

The customers were asked to

- rate their knowledge of measurement uncertainty before they received the information leaflet,
- state their degree of need and reason(s) for asking for uncertainty statements,
- indicate how they value the information in the leaflet,
- state to what extent they contact laboratories to obtain uncertainty information or to which extent they understood the uncertainty information in the test report,
- state who completed the questionnaire, and to indicate their main occupation and size of their organisation.

### Feedback on the Information Leaflets

Comments on the information leaflet have been positive and it has so far been translated into German and Dutch. The English leaflet is available as a pdf file on EURACHEM’s homepage. In Survey B customers

were asked to comment on the extent of the information in the leaflet. The vast majority (87%) found the information appropriate. Those who considered it insufficient were mainly customers to the departments where uncertainty statements have already been provided several years.

### Results of Surveys A and B

Between 30 and 60% of the questionnaires were returned from the customer groups. The answers showed that the vast majority of the customers dealt with manufacturing, service and maintenance, trading, construction, public administration and authoritative work.

*In the figure: Distribution of responses to the question “If you have a need for a statement concerning measurement uncertainty, what is the reason?” between the options of the questionnaire which where a) own interest (e.g. to be able to make decisions), b) client requirement, c) authorities’ requirement; d) accreditation body requirement; e) other reasons, and f) not relevant/do not know.*

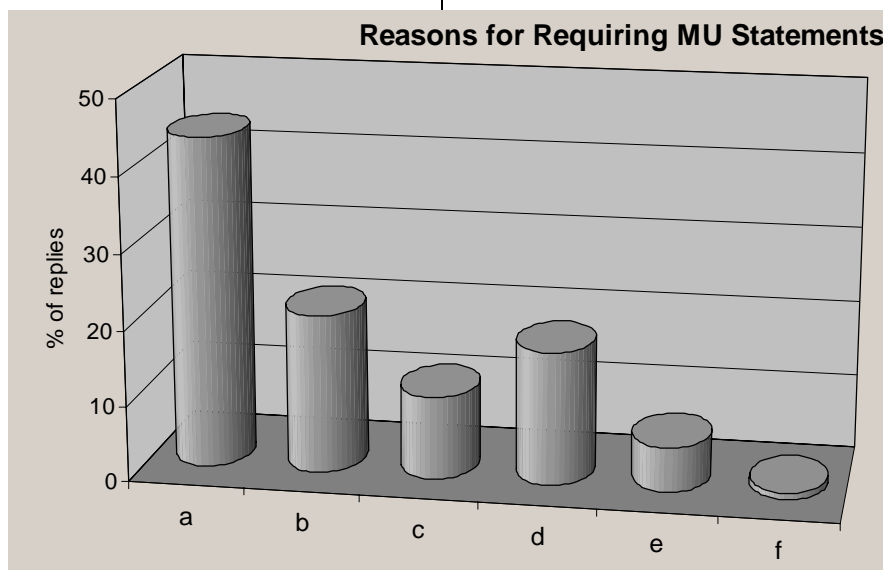
In Survey B, 64% of the customers had some knowledge and 30% thought they knew a lot about uncertainty. 86% of the questionnaires in this survey were completed by the person who would act on basis of the result in the test report. The surveys had accordingly reached the intended end-users (others than those working in the calibration and testing environment).

An overview of the results from Survey A is given in Table 1. The average score is high and indicates that the customers consider uncertainty statements in the test reports important. The detailed evaluation showed no differences between customers from small and large organisations. There were only minor differences between the various testing areas. Additional information from Survey B is summarised in the figures on page 10 and 11, resp. They illustrate the customers’ knowledge, as well as their need and interest in measurement uncertainty.

Copies of the full report are available from SP Swedish National Testing and Research Institute. The price per copy is 15 Euro for orders of 1-5 copies) and 10 Euro for orders from 6 copies onwards.

Orders are placed by payment to SP’s account 6668-275 695 611, Svenska Handelsbanken, Swift address HAND SE SG, and the indication of the State report number (SP Report 2001:07), the number of required copies and the project number SPLe 8501.

Ulf Örnemark,  
SP and EURACHEM Sweden,  
and Magnus Holmgren,  
SP and EUROLAB Sweden



## BERM-9 - A Must for Reference Material Users

The 9<sup>th</sup> International Symposium on Biological and Environmental Reference Materials will be held in Berlin, Germany from June 15-19, 2003. This Symposium continues a successful series of Symposia, alternatively organised in the EU and the USA between 1983 and 2000. The BERM-series are intended as an ongoing forum to address issues related to the role of biological and environmental reference materials in the assurance of quality in analytical measurements. The forum allows providers and users to:

- review needs and trends
- discuss proper selection and use
- promote harmonisation

- explore how to facilitate availability
- promote education and training.

BERM-9 will be organised by the Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin, in close collaboration with The Laboratory of the Government Chemist (LGC), Teddington, UK and the Institute for Reference Materials and Measurements of the European Commission (EC-JRC-IRMM), Geel, Belgium.

The scientific programme of BERM-9 will focus on the role of certified reference materials in the measurement process in fields of global human and political concern, such as food safety and labelling, including novel food and feed,

biotechnology, public health and environmental monitoring.

Contact and further information:

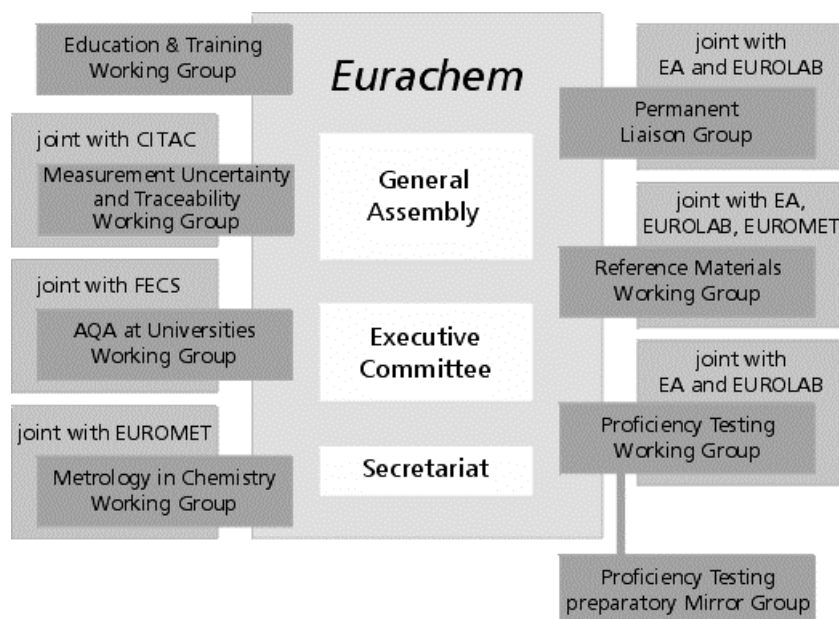
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**Associate member countries:** Albania, Russian Federation, and Ukraine.

EURACHEM has interfaces with AOAC, CCQM, CITAC, EA, EUROLAB, EUROM II, EUROMET, FECS, ILAC, ISO/REMCO, and IUPAC.

A complete list of all contact points for both EURACHEM activities and partner/liason organisations can be found on the EURACHEM website. For the time being, this site is still hosted by BAM at <http://www.eurachem.bam.de>. Later this year, it will be transferred to <http://www.eurachem.ul.pt>. Till the end of 2002, you may alternatively access the EURACHEM website via <http://www.eurachem.org>.