



# Eurachem

*A Focus for Analytical Chemistry in Europe*

# News

Issue 30 Spring 2013

## Words from the chair

*Dear Eurachem members,*

For me, my time with Eurachem has been like an education in quality of measurement. My background is industrial analytical chemistry (AKZO Nobel), and when I joined SP Technical Research Institute of Sweden in 2002 I also took over as one of the Eurachem national delegates for Sweden. The education for me is due to all the discussions we have had together, and the patience that Eurachem delegates have shown in explaining the new world of metrology for a newcomer. Our club of analytical chemists provides a unique forum for discussing issues relating to the quality of analytical measurements. During the General Assembly we will take advantage of all you competent chemists and have a discussion forum. You, as a member, can propose issues to discuss next time we meet in Finland on 20-24 May 2013.

And the forum is growing. I am happy to welcome Norway back this year and new members from Latvia, Estonia and Serbia. In order for us to be able to spread further the knowledge about Eurachem, we have produced a PowerPoint presentation that can be found in the member area on our website [www.eurachem.org](http://www.eurachem.org) under heading Committee Meetings. Login details can be obtained from our secretary. We have also produced Eurachem pins



*The secretariat has ordered Eurachem pins for the members. They will be distributed at the next GA but could also be ordered from the secretariat – normally 2 per country.*

that you as national delegates will receive at the next GA.

So this is a great honour for me to chair this forum for two years. In this newsletter we have added some new sections. Eurachem is led by an Executive Committee and we have chosen to present for you the members of this group. We have also added a section with news that may be of interest to members, and a review section where Eurachem members can present new books, software and guides.

One personal reflection about measurement quality. The client has an issue and in this case a measurement is needed to solve the issue. The issue could be, e.g. does the product fulfil the specification or from where does this material found originate. When the client can take a clear and correct decision of the product quality, or can correctly understand the composition of the material found and hopefully

deduce its origin, then we have measurement quality. In order to have this quality we need to formulate a clear demand on measurement, define the measurand, have a fully validated method including measurement uncertainty and metrological traceability, as well as proficiency testing – issues that Eurachem has always addressed. However we also need ongoing internal quality control and we can be proud that Eurachem launched its first international workshop on Internal Quality Control in October in Berlin. A summary of the workshop is included in this newsletter. All the work of the national organisations and our working groups will of course also be presented.

Read and enjoy!

**Bertil Magnusson**

*In this issue:*

- Words from the chair* 1
- Report from the GA* 2
- New secretariat* 2
- Meet the Executive Committee* 2
- About Bob Kaarls and Máire Walsh* 5
- Eurachem website* 5
- Workshops 2012* 6
- Working group reports* 7
- National reports* 8
- News* 10
- Reviews* 11
- Upcoming meetings* 12
- Contact points* 12
- Eurachem member countries* 12

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## New Secretariat

Joakim Engman is the new secretary and treasurer of Eurachem since the GA in Berlin May 2012. He states: It was very helpful to take over the good structure of documents from the previous secretary Ivan Koruna. Many questions have also been forwarded to the Executive Committee which has been very helpful.

### Meet the the Executive Committee (EC)

The Executive Committee of Eurachem consists of chair, vice chair, past chair, treasurer, working group leaders and six elected members.

## Report from the General Assembly

NOTE! All material, minutes, presentations etc. from the General Assembly can be found in the members' area at [www.eurachem.org](http://www.eurachem.org) under heading Events.

The GA 2012 was held in Berlin and hosted by EUROLAB/Eurachem Germany at BAM with 27 participants from 17 countries. The chair, Miloslav Suchanek, handed over the chairmanship to the vice chair Bertil Magnusson and a new vice chair, Wolfhard Wegscheider, was elected. The secretary Ivan Koruna handed over the secretariat to Sweden to our new secretary Joakim Engman. Also three new members of the Executive Committee, Ewa Bulska, Ricardo Bettencourt da Silva and Anna-Liisa Pikkarainen, were elected. With mixed feelings we said goodbye to grand old members that have been part of Eurachem right from the beginning, Robert Kaarls and Máire Walsh – see separate article about their involvement in Eurachem.

During this GA the discussion forum focused on qualitative analysis and how to estimate limit of detection (LOD). The presentations can be found in the members' area of our website. As usual we had presentations on the on-going work within Eurachem, the Working Group reports and reports from the national delegates. Eurachem is represented in many stakeholder organisations and this year we had detailed information on the developments within the EA-EUROLAB- Eurachem proficiency testing group (EEE-PT), EUROLAB, EURAMET Technical Committee for Metrology in Chemistry (TC MC), Inter-Agency meeting (IAM) and CODEX (food sector) Committee for methods of analysis and sampling (CCMAS). Mike Sargent from the Consultative Committee for the amount of substance - metrology in chemistry (CCQM) supporting the International Committee of Weights and Measures gave a detailed presentation about the scope and development of this committee.

The next GA is to be held in Finland on 23-24 of May 2013.

*Bertil Magnusson*



**Bertil Magnusson**

Chair Bertil Magnusson (2012–2014), SP Technical Research Institute of Sweden, joined Eurachem 2002. Member of the Measurement uncertainty WG. Main work is with atomic spectroscopy (ICP, XRF), giving courses in measurement quality (QC, validation, MU) and representing Sweden in metrology in chemistry (CCQM, EURAMET) within the work of the SI system.



**Wolfhard Wegscheider**

Vice chair Prof. Wolfhard Wegscheider Member of Eurachem since 1990 representing the Austrian Society for Analytical Chemistry (ASAC), member of Working Group on Measurement Uncertainty and Traceability, member of Working Group on Education and Training, professor of General and Analytical Chemistry at Montanuniversitaet Leoben



**Joakim Engman**

Secretary and Treasurer, Joakim Engman (2012-2014). Joined Eurachem in 2011 as national delegate. Member of Education and Training and Validation working group. Responsible for analysis of trace elements and heavy metals by ICP-MS at the Swedish National Food Agency.



**Miloslav Suchanek**

Past chair Miloslav Suchanek, Professor of Analytical Chemistry, ICT Prague and Eurachem-CZ. Member of Education and Training WG, National ambassador of TrainMiC® Representative of Eurachem to ISO/REMCO. Teaching Chemometrics, Quality management, Analytical Chemistry. Main scientific interest is ICP/MS, HPLC/MS, forensic analysis of explosives and drugs.

## Elected Members



**Marina Patriarca**

Elected member Dr. Marina Patriarca, (2009-2011, 2012-2015). Sr. Scientist at the Italian Institute for Public Health (Istituto Superiore di Sanità). Italian representative in Eurachem since 2005 and a member of the Proficiency Testing WG, the Education & Training WG and the Method Validation WG. Research activity focused on trace elements in both clinical biochemistry and food safety. She organises proficiency testings and teaches metrology for the analytical sciences, also being involved at national and board level with the EC TrainMiC® program.



**Ricardo Bettencourt da Silva**

Elected member Ricardo Bettencourt da Silva (2012-2015), University of Lisbon, joined Eurachem, as national delegate, in 2010. Member of the Measurement Uncertainty and Traceability WG. Technical assessor of the Portuguese Accreditation Body. Main work is research and teaching in Metrology in Chemistry in food, environmental and forensic sectors.



**Ewa Bulska**

Elected member Prof. Ewa Bulska (2012-2015); member of the Proficiency Testing WG and the Education & Training WG. She works at the Faculty of Chemistry at the University of Warsaw. Topics of interest: analytical chemistry; inorganic and bioinorganic trace analysis; environmental, industrial, clinical and food samples; archeometry

She is a member of the Committee of Analytical Chemistry of Polish Academy of Sciences and she act as a Head of the Atomic Spectrometry WG. She is a member of the Editorial Board of TrainMiC® programme and the Team Leader of PL TrainMiC® team.



**David Milde**

Elected member Dr. David Milde, (2008-2011, 2011-2014), is an assistant professor of analytical chemistry at Palacky University in Olomouc (Czech Republic). He has been national delegate to Eurachem since 2006 and is a member of Education & Training WG. He is a chair of Eurachem Czech Republic. His research and teaching activities are focused on atomic spectrometry (AAS, ICP-MS), chemometrics and metrology in chemistry. He is an author of almost 20 scientific papers.



**Eugenia Eftimie Totu**

Elected member Eugenia Eftimie Totu (2010-2013), Professor at University Politehnica of Bucharest, Romania, joined Eurachem Romania in 2006.

Member of Education and Training WG. Main work is with electrochemical advanced methods, new materials - nanoparticles embedded in polymers, chemical sensors, microelectronic structures, giving courses in instrumental analysis (electrochemistry, ac impedance spectroscopy, spectrophotometric analysis, thermal analysis, X-Rays, AA, chromatography), chemometry, measurement quality (QC, validation), products quality control.



**Anna-Liisa Pikkarainen**

Elected member Dr. Anna-Liisa Pikkarainen (2012-2015). She has represented Finland in the Eurachem General Assembly since 1997. She is a member of the Board of Finntesting Association, which is an umbrella organisation for Eurachem Finland and EUROLAB Finland. She has experience in organic and analytical chemistry, forensic chemistry, marine chemistry, environmental research and analysis, quality management as well as risk assessment and risk management concerning pesticides and biocides. She is a Senior Officer in the Feed Section of the Finnish Food Safety Authority Evira.

## Working Group (WG) Chairs



**Alex Williams**

Chair Measurement Uncertainty and Traceability WG, Alex Williams (since 1990). Founder of Eurachem in 1989. "My aim was to set up an organisation to develop metrology in chemistry in Europe. The early history is our website under About Eurachem ([www.eurachem.org](http://www.eurachem.org))"



**S L R Ellison**

Chair Qualitative Analysis WG, S L R Ellison (since 2005). Principal Scientist for Statistics and Reference materials at LGC, the UK Designated Institute for chemical measurements. Eurachem responsibilities: UK National Representative; Secretary, Measurement Uncertainty and Traceability Working Group; Eurachem Webmaster.



**Mike Ramsey**

Chair Eurachem (EUROLAB/CITAC/Nordtest) Sampling Uncertainty WG, Mike Ramsey (since 2004). Chair of Royal Society of Chemistry/ Analytical Methods Committee (RSC/AMC) Sub-committee on Sampling Uncertainty and Quality (since 2004)



**Brian Brookman**

Chair of the Eurachem PT WG, Brian Brookman, (since 2002), LGC Standards, UK. Also Chair of the joint stakeholder EA/EUROLAB/ Eurachem Working Group on Accreditation in PT. He has been involved in the field of analytical quality, particularly concerned with reference materials and proficiency testing (PT) for the past twenty years. He is currently Director of Proficiency Testing at LGC Standards who provide proficiency testing services across a wide number of sectors around the world.



**Vicki Barwick**

Chair Education and Training WG, Vicki Barwick (since 2010). Head of Commercial Training at LGC, UK. Responsible for the development of training courses and resources to support training in metrology and quality assurance for analytical scientists.



**Lorens Sibbesen**

Chair Eurachem Method Validation WG (since 2008) Lorens Sibbesen. Has since 2000 had his own training and consultancy company (LAB Quality International) which offers training and consultancy for laboratories on quality assurance and management related issues, like measurement uncertainty, method validation, proficiency testings, quality control etc. Through the years, experience has been built up within a very wide range of sectors (environmental, pharmaceutical, food, clinical etc.), and since 2005 this experience has also become more and more international through a number of project assignments in Turkey, Latvia, Jordan, Syria, Rwanda etc.

## Two of our Longest Serving Members have Decided to Retire from EC



Dr Robert (Bob) Kaarls

Dr Marie Walsh and Dr Robert (Bob) Kaarls regrettably have decided it is time to retire from the Executive Committee and we should like to take this opportunity to thank them for all that they have done in support of Eurachem. Both are founder members of Eurachem and have played major roles in its development. We are going to miss their contributions at our Executive Committee meetings and we should like to thank them also for the many tasks that they have undertaken on our behalf outside of these meetings.

Dr Kaarls was a very enthusiastic supporter of the idea of Eurachem well before its first official meeting. I recall a lunch I had with him in Delft, back in 1987, during my tour of Europe when I was looking for support for my proposal to set up Eurachem. He left me in no doubt about his enthusiasm for the proposal and he was elected as the first Chairman of Eurachem. We had known each other for some while and had both been on the CIPM Working Group on Measurement Uncertainties in 1980 and Bob as the rapporteur prepared the recommendations which led to the development of GUM. He has therefore been a most effective member of our WG on Measurement Uncertainty and Traceability.

Through his membership of many international organisations, particularly as President of CCQM he has kept us up to date about their activities and policies and he has been a very effective ambassador for Eurachem.



Dr Marie Walsh

Dr Marie Walsh, as well as being a founder member, chaired Eurachem from 1995 to 1997 and those who were fortunate to attend will remember the most enjoyable and successful GA she organised for us in Dublin.

She also led the joint working group with EA that produced the guide on Accreditation in Microbiological Laboratories and was our representative on ILAC from when it was set up in 1997 until 2009. As the State Chemist of Ireland she has brought us a detailed knowledge of chemical analysis, particularly in support of regulation and her familiarity with the workings of the EU and its directives have been of great value to us. She is also a member of our WG on Measurement Uncertainty and Traceability, where she has tirelessly reminded us to bear in mind the need of the analysts working in the laboratory.

Another of her attributes that we will miss is her impressive record keeping and the ability to recall our previous discussions when some issue resurfaces; on many occasions she has brought order to our discussions by pointing out what we had agreed previously.

*Alex Williams*

## The Eurachem Website

The Eurachem website at <http://www.eurachem.org/> is one of Eurachem's most important resources. The website provides all of the downloadable guides and technical leaflets, and includes news items about Eurachem and related activities. The site attracts about 20,000 visitors a month, with the most popular pages being the various Eurachem Guides.

The site was upgraded substantially in late 2010. The upgrade added useful features such as a calendar, a contact form to provide contact points for National representatives, easy access to recently updated content and most popular articles, and a news feed for RSS reader access (RSS readers allow users to collate news items quickly and automatically from a range of sites of interest). A more recent addition has been the introduction of a survey tool, allowing the Education and Training WG to launch a survey of needs for education and training resources in chemical metrology, including method validation and related topics.

Eurachem hopes to upgrade the site further in 2013 to allow finer control of access. This will allow working groups to maintain member pages, for example for internal committee drafts still under development. Members will be informed of changes when they become available.

*Steve Ellison*

[www.eurachem.org](http://www.eurachem.org)



# Workshops 2012

## Validation/Traceability/Measurement Uncertainty: Challenges for the 21st Century's Analysts, Berlin, May 21–22

This workshop focused on the important relationship between method validation, traceability and measurement uncertainty in various fields of quantitative analytical measurements – exploring the developments in this crucial point of intersection since the issue of the Eurachem Guide “The Fitness for Purpose of Analytical Methods” in 1998 and aiming at elucidating the state of the art.

Over 60 speakers and participants from 20 countries around the world shared 2 days in the premises of BAM in Berlin, dealing with subjects of common interest like e.g.:

- What does the customer expect and what is “Standard Method Performance Requirements”
- The linkage between method validation, traceability and measurement uncertainty, and ideas on the need for guidance on method validation with focus on the link between the three elements
- Using method validation and performance data for estimating measurement uncertainty
- The new Eurachem Guide for Measurement Uncertainty and new approaches for MU evaluation



- The bias component in analytical results and the traceability of these.

The participants contributed eagerly to the workshop in discussions following the presentations during the morning sessions AND in the afternoon working groups, where a number of related issues were presented for detailed discussion and final conclusion in summaries.

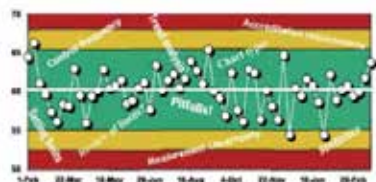
The content of these working group summaries will be taken as an important input to the current work on revising Eurachem's guideline on method validation.

Presentations and workshop summaries (as presented) are available in PDF format at [www.eurachem.org](http://www.eurachem.org) under heading Events, Completed Events.

*Lorens Sibbesen*



## Eurachem Workshop on Internal Quality Control



The Eurachem Education and Training Working Group organised the first Eurachem international workshop on internal quality control in Berlin in October 2012. The event was hosted by the German member of Eurachem, EUROLAB Germany and the scientific committee responsible for the workshop consisted of Vicki Barwick, Bertil Magnusson, Ricardo Bettencourt da Silva, Martina Hedrich, Michael Koch, Nineta Majcen, David Milde, Marina Patriarca, Elvar Theodorsson and Eugenia Eftimie Totu.



The workshop covered quality control in a range of sectors and disciplines including chemical analysis, testing, laboratory medicine and microbiology. The main focus was on internal quality control performed in the laboratory for the continuous monitoring of operations and results of measurements, in order to decide whether results are reliable enough to be released. The workshop included invited lectures, short communications, posters and break-out sessions. The number of participants



was 70 from 28 different countries covering all continents.

The workshop provided the opportunity to discuss challenges and share best practice on a range of topics relating to the successful implementation of IQC. These included selecting suitable control materials, setting appropriate control limits and following up 'out of control' results. Issues facing laboratories making very few or, in contrast, very many measurements were also addressed.



The detailed programme, with presentations and posters, can be found at our website [www.eurachem.org](http://www.eurachem.org) under Events. In 2013 the journal 'Accreditation and Quality Assurance' will publish some of the material presented at the workshop.

A training course on internal quality control was held the day before the workshop with 35 participants.

*Vicki Barwick & Bertil Magnusson*

## Working Group Reports

### Qualitative Analysis WG

Eurachem has a working group considering the topic of qualitative analysis and testing. The present remit of the group is to prepare guidance on the assessment and expression of uncertainty in qualitative analysis and testing. The long term aim is to provide guidance on issues such as:

- the effort required to obtain sufficiently reliable false response rates (the most common basis for assessing the reliability of qualitative tests)
- methods of determining false response rates, including experimental methods, methods based on databases, and prediction of false response rates from the performance of quantitative methods used in the testing process
- practical methods of expressing the performance of methods, including guidance on the wide range of different terminology in use.

The guidance is also intended to consider the extent to which laboratories can be expected to provide uncertainty information relating to the results of qualitative tests, such as presence/absence or molecular identity.

Eurachem issued draft guidance for comment in mid 2012, and has received a range of useful comment in return. The working group is considering the responses and hopes to circulate a voting draft in 2013.

*Steve Ellison*

### Eurachem Education and Training WG

The Eurachem Education and Training Working Group meets formally once a year during the week of the General Assembly. The group had a very successful meeting in Berlin in May which was attended by 14 members. The Working Group is always keen to attract new members and we are pleased to welcome a new representative from Slovakia; Dr L'ubomir Švorc (Inst. of Analytical Chemistry STU).

A key activity for the WG during 2012 was the organisation of the successful workshop

and training course on internal quality control which was held in Berlin in October (see separate article). I would like to thank everyone involved with the workshop, particularly the members of the scientific and organising committees, for making the event a success.

An ongoing task for the Education and Training WG is to ascertain the state of education and training in metrology within member states. To assist with this a questionnaire has been developed by WG members. The questionnaire is aimed at universities and other institutions providing academic courses (dealing with metrology), and to other companies/organisations offering training for laboratory employees as part of continuing professional development. The web-based questionnaire was launched in October and can still be completed at <http://surveys.eurachem.org/index.php?sid=85498&lang=en>.

The WG is also working to prepare a bibliography of quality assurance training resources. Information is being collated and the bibliography will be made available on the Eurachem website during 2013.

*Vicki Barwick*

### Sampling Uncertainty WG

The group is dormant. The guide Measurement uncertainty arising from sampling: A guide to methods and approaches (2007) has been reviewed during 2012. Since there are only a few new developments, the decision was taken to not revise the guide at present.

*Mike Ramsey*

### Eurachem Proficiency Testing WG

The Eurachem Proficiency Testing Working Group (PTWG) has continued to make progress on a number of work activities during the past year:

- The 7th event of a series of workshops addressing current practice and future directions of proficiency testing (PT) and external quality assessment (EQA) in analytical chemistry, microbiology and labora-

tory medicine, held during October was very successful. A total of 233 delegates from 54 countries attended the event in Istanbul, Turkey. The event consisted of training sessions, key note presentations, short presentations, posters (52 in total) and working group discussions. The presentations and a number of the posters have been published on the Eurachem website. A special issue of ACQUAL with the proceedings of the workshop will be published in the summer.

- The leaflet on pre- and post-analytical proficiency testing has been translated into a number of other European languages and sent to the appropriate GA members for final approval.
- Work is progressing well on the next PT leaflet – "How can proficiency testing help my laboratory?"
- Another new work item is the production of guidance on the evaluation of qualitative results in PT schemes. This work is still at early stage and will start with a survey, conducted in collaboration with EQALM, to current PT/EQA providers to enquire how they currently evaluate performance in qualitative schemes.
- Following the success of the 7th PT Workshop, an 8th PT workshop will be organized in Berlin on the 6th to 9th October 2014.

*Brian Brookman*

### Measurement Uncertainty and Traceability WG

The revised QUAM has just been published. The guide Use of uncertainty information in compliance assessment. (2007) needs updating due to VIM3.

A proposal is to start working on uncertainty of biological analyses. The WG will need help with that.

*Alex Williams*

### Method Validation WG

The WG met on 23 May to discuss the outcomes from the group discussions from the workshop in Berlin 21-22 of May.

It was suggested that the direction of the work with a possible new validation guide could be revising the current guide Fitness for Purpose of Analytical Methods from 1998 and include new parts on specific topics. The work is now divided into two parts.

Phase 1 – Minor revision - Update the text due to changes since 1998 taking into account development and specially that we have a Eurachem Guide on Terminology. New version to be out 10 of August 2013.

Phase 2 – Major revision - The WG to make a proposal of further development for a revision before next scheduled WG meeting to be held 21 of May in Helsinki.

*Lorens Sibbesen & Bertil Magnusson*

# National Reports

The work within the national Eurachem organisations is one of the most important channels to convey our message to the laboratories and our stakeholders. Below you will find reports about activities in our national organisations.

## Belgium

Belab is member of EUROLAB and Eurachem. It has an executive board with 10 members. In 2011, the executive board assembled one time for a meeting and there was also one general assembly. Beginning 2012 there was a change of President from Guy-Jacques (former vice-president EUROLAB) to Isabelle Vercauysse (member of Eurachem General Assembly).

In the middle of February, a TrainMiC® event has been organized by Belab in Brussels covering the following topics: single lab validation and estimation of measurement uncertainty. 50 participants attended the training course, which included lectures and a practical exercise. The presentations were given in Flemish by Florent Van Stapel (KUL) and Johan Aerts (ILVO) and in French by Anne Leriche (ULB&federal justice) and Vivianne Planchon (CRAW), all of them authorized TrainMiC® trainers from the Belgian TrainMiC® team. There was also a presentation given by the President of Belab, Nicole Van Laethem, about accreditation in Belgium and the evolution on European level.

The BELAB executive decided in their last meeting in June to set up an inquiry to send to accredited institutions. This inquiry will cover questions about the new procedure of auditing of Belac and about general problems coming up during audits on ISO 17025. In spring 2013, Belab will organize a training day about ISO 17025. *Isabelle Vercauysse*

## Czech

Czech Eurachem organization continued in disseminating new information in quality assurance and metrology area to our chemical and clinical community during last year. EURACHEM-CZ in cooperation with Czech Accreditation Institute (national accreditation body) held a full-day seminar dealing with PT/EQA in March 2012 that was attended by more than 100 participants. Topic dealing with proficiency testing both from theoretical and practical views is nowadays important for our laboratories and we were able to utilize close cooperation with Czech Accreditation Institute within 4E-CZ (association serving with philosophy similar to that of EEE in the Czech Republic) to organize this seminar and promote there Czech translation of revised version of EURACHEM Guide Selection, Use and Interpretation of Proficiency Testing Schemes published already in 2011.

EURACHEM-CZ issued two new Newsletters during time mentioned in this report (18 pages of text). One edition was devoted to certified reference material and accreditation of its producers. In July 2012 we distributed jubilee 50th edition, which was focused on PT with few participants. In spring 2012 we published Czech translation of EURACHEM information leaflet Use of Uncertainty Information in Compliance Assessment.

This leaflet is as many others published on the web page ([www.eurachem.cz](http://www.eurachem.cz)) with a possibility to download at no cost.

Members of the Executive Committee of EURACHEM-CZ were active in several technical committees and presented many lectures on several local workshops and conferences. We were also able to support regular meetings of 4E-CZ where the discussion about new Czech law about metrology was under way.

*David Milde*

## Denmark

Eurachem in Denmark being nested in the Network for Analytical Chemistry within Euro-lab Denmark have had a little quiet year 2012 in terms of actual meetings. But that doesn't mean that we are not active in influencing the scene of analytical chemistry in Denmark!

A total of about 110 individuals from about 70 member institutions/companies have signed up for being affiliated to the Networks for Analytical Chemistry which is actually a slight decrease compared to the year before, mainly due to an on-going reduction of analytical laboratories caused by outsourcing of testing activities from companies to contract laboratories – and some merger of the latter.

We have only had one formal meeting during the year. In March on the subject “Proficiency Testings and Inter-laboratory comparisons in the analytical laboratories”, including a contribution from Bruno Berken from BIPEA.

One of the subjects during the meeting was the constant problem of difficulties in covering the specific needs for comparisons in laboratories who are dealing with very special techniques, sample types or preparations! Euro-lab Denmark tries to assist in finding other laboratories with similar needs and starting up some comparisons, but it seems rather difficult (maybe the Eurachem network could be used as an extra possibility for finding laboratories interested in special comparisons?)

One of the important activities for Euro-lab Denmark is representing the accredited laboratories towards our Danish Accreditation body, DANAK. In general we have a very good relationship to – and cooperation with – DANAK, where we can have an open discussion about any problems in the accreditation system. We assist our members in the interpretation of the accreditation requirements – and especially in relation to the analytical laboratories we benefit very much from using the Eurachem guidelines and practices.

Being a recognized organisation for laboratories in Denmark, we are also on the mailing list of e.g. ministries when drafts of new law regulations are issued (by that some of our members got e.g. the opportunity to comment on a new regulation re. requirements for laboratories working in the environmental field).

Our organisation is also appointing representatives among our members to various working groups within DANAK and for steering committees for our national reference laboratories in the environmental field.

So besides from only one meeting during the

year – analytical laboratories in Denmark relating to Eurachem has not been passive in 2012.

*Lorens P. Sibbesen*

## Finland

Finntesting Association's activities include those of Eurachem Finland and EUROLAB-Finland. The Association has 35 company members and 31 individual members. Finntesting Association has an executive board with 9 members. Annually the board has several meetings where plans of actions are made.

In 2011 Finntesting association arranged a seminar on quality assurance where issues ranged from education to practise: metrology in chemistry, metrology in universities, QC in the network of laboratories, and to achieve certainty of measurements by utilising measurement uncertainty. The seminar was successful and the number of participants was almost up to one hundred persons. Finntesting Association also had a traditional annual meeting during which there was discussion related to national reference laboratories.

Finntesting Association has had nominated members in Eurachem General Assembly and in several Eurachem working groups. A member of Finntesting Association's executive board participated in the annual Eurachem General Assembly meeting in Moscow in 2011. Finntesting Association likes to encourage students by delivering them awards based on student's meritorious thesis where quality assurance aspects have been taken into account. In 2011 two awards were given.

*Anna-Liisa Pikkarainen*

## Italy

Eurachem in Italy is jointly supported by the National Institute for Research in Metrology (INRIM), the National Institute of Health (ISS) and the National Institute for Environmental Research and Protection (ISPRA). Over the last two years, collaboration has continued with the EC JRC IRMM Programme TrainMiC® “Training in Metrology in Chemistry”, to promote the understanding of metrology concepts by analytical scientists. A TrainMiC® training event was organized in Turin (28th - 29th of September 2010) covering the following topics: introduction to metrology in chemistry; metrology requirements of the international standards for the competence of calibrating and testing laboratories; terminology in metrology: the new VIM; traceability of measurement results; metrological confirmation of equipment; basic statistics in analytical chemistry; single laboratory validation of analytical procedures; approaches to the estimates of uncertainty in measurement; internal quality control; proficiency testing. The training course, which included lectures, practical exercises and learning evaluation, was attended by 40 participants. In addition, a one-day TrainMiC® event was held in Florence, 23rd January 2012, for 38 analysts at the Agency for Environmental Protection of Tuscany, and covered the topics of general metrology, traceability, selection and use of reference materials, metrological confirma-

tion of equipment in the analytical laboratory, including examples of basic equipment (pipettes, thermometers and balances) and analytical instruments, such as ionic chromatographers and inductively coupled plasma mass spectrometers. The Italian TrainMiC® team also contributed to the second volume of the series "Practical examples on Traceability, Measurement Uncertainty and Validation in Chemistry" (EUR24688 EN - 2011), now available on-line, with a worked example demonstrating how to establish traceability, set requirements for the validation of a test method, and determine analytical performances and measurement uncertainty for the determination of vitamins A and E in human serum.

The Working Group on "Metrology and Education", chaired by INRIM, with the aim to collate information on the different activities carried out in Italy and to constitute a horizontal platform on this topic, met again on the occasion of the symposium "Metrologia & Qualità" (Turin, 13th-15th April 2011) and organised a session on this topic. Various contributions were presented, including one from the Italian TrainMiC® team, a report of collaborative activities with third world countries, and a presentation from a school teacher, highlighting the need for teacher training in metrology. An event linking metrology to important aspects of everyday life has been organized by INRIM and will take place in Turin, on 11th June 2012. The Seminar "Bio-monitoring of pollutants (heavy metals and dioxins) in body fluids", by the Italian epidemiologist Liliana Cori, will cover pre- and post-analytical aspects of surveys of human exposure to pollutants, monitored by means of analyses of blood and human milk samples.

The new Eurachem Guide "Terminology in Analytical Measurement" was promoted via an announcement, including the link to the Eurachem website for downloading it, distributed via email and also published on relevant websites, e.g. the website of the National Reference Laboratory for Heavy Metals in Food. The translation of the guide in Italian is in progress. Eurachem events, such as Eurachem Workshops, were also promoted through distribution of the available information. EURACHEM Italy contributes to the Eurachem WGs: Education&Training, Proficiency Testing and Validation and to the joint EA-EUROLAB-Eurachem WG Proficiency Testing and Accreditation.

*Marina Patriarca & Enzo Ferrara*

## The Netherlands

The main activity of the Dutch Section of Eurachem is the organization of a yearly symposium. The organization is carried out by the members of the Steering Committee.

In 2011, no symposium was organized due to lack of a subject that would attract a substantial number of participants. The next symposium is envisaged for 2013.

*Rob Ritsema*

## Poland

There are 75 member laboratories in the Eurachem-PL, Section of Polish Chemical Laboratories in Club of Polish Testing Laboratories POLLAB. Since 10.12.2009 Eurachem-PL has been led by Andrzej Brzyski (chair), Kinga Makuła (vice-chair), and the section secretariat based in the Military Institute of Armament

Technology in Zielonka, near Warsaw.

The section was established in 1992 as POL-LAB-CHEM, one of sections of the Club of Polish Testing Laboratories POLLAB (recently the full member of EUROLAB). Polish delegates have been participating in Eurachem meetings and GAs, as well as have been working with Eurachem WGs - PT, E&T, MU&T.

Important tasks of the section in general consist of promoting ideas concerning the quality of chemical measurements and materials characteristics as well as distributing any information that member laboratories are interested in. Therefore, several Eurachem guides and other similar documents have been translated into Polish by the section members. The last translations are listed below:

- 1) Internal Quality Control. Handbook for Chemical Laboratories, NORDTEST TR 569, ed. 2006 [Podręcznik wewnętrznej kontroli jakości. Biuletyn Informacyjny nr 1/46/2006], distributed in 2007.
- 2) Measurement Uncertainty Revisited. Alternative Approaches to Uncertainty Evaluation, EUROLAB Technical Report TR 1/2007 [Niepewność pomiaru raz jeszcze: Różne podejścia do szacowania niepewności. Biuletyn Informacyjny nr 1/48/2007].

Members of the section are involved in organization of, and participate in, the symposia organized every year by POLLAB. The subject for 2011 XVII POLLAB Symposium was „Technical requirements – part III Validation” that drew attention of about 430 participants (in 2 rounds). There are also special section meetings, at least one per year, with lectures on selected subjects. In 2011 there were two meetings, where participants discussed about accreditation requirements, practical activities in laboratories and about measurement uncertainty & traceability. Recent action of the POLLAB-CHEM / Eurachem-PL section, i.e. inducing, promoting, and leading the organization of ILC/PT programs, according to the new agreement between POLLAB and the Polish Centre for Accreditation. The part of laboratories participated in two programs, who started and completed in 2011. In 2012 Eurachem-PL intend to continue present policy to support laboratories. Their members will attend in Symposium POLLAB, section meetings and new ILC/PT programs.

*Andrzej Brzyski*

## Portugal

The activities of Eurachem Portugal in 2011 had their highest visibility through the active participation in the Eurachem/CITAC Working Group on "Measurement Uncertainty and Traceability" and the successful organisation of the Eurachem/CITAC Workshop on "Recent Developments in Measurement Uncertainty" held in Lisbon on 6 and 7 June 2011. This event was organized by the Faculty of Sciences of the University of Lisbon and the Portuguese Association of Accredited Laboratories (RELACRE). The 86 participants, from 26 countries, of the workshop presented seven invited lectures, eleven oral communications and 29 posters. The book of abstracts, some communication from participants and the report of breakout sessions are available in the Eurachem and workshop (<http://eurachem2011.fc.ul.pt>) websites. The Journal of Accreditation and Quality Assurance (ACQUAL) published

a topical issue with 12 papers from works presented in the workshop (Volume 17, Number 2, April 2012). In June 2011, Olivier Pellegrino joined the "Eurachem/CITAC Working Group on "Measurement Uncertainty and Traceability". Concurrently to these activities, Eurachem actions and guidance were disseminated in research publications, in presentations at scientific events, in academic courses at national and international levels, in postgraduate training courses at national and international levels and in a workshop on metrology, "4º Encontro Nacional da SPMet", organised by the Portuguese Society of Metrology, held in Oeiras in November 2011.

*Ricardo Bettencourt da Silva*

## Romania

Eurachem Romania Association developed its policy to support various laboratories enlarging its participation to different actions organized either by Eurachem Romania, either by universities (such as University of Bucharest, Politehnica University of Bucharest, Transylvania University of Brasov, Ovidius University of Constanta, University Babes Bolyai Cluj Napoca), from research institutes (INCDSB, ICECHIM, IMT, INMR), or from national and local agencies for public health, water and air quality control and environmental monitoring.

The main activity was the organization of the annual symposium, which became a tradition for Eurachem Romanian Association.

Supported by its active members from the universities teaching staff, specialists, researchers and practitioners from specialized and accredited laboratories, Eurachem Romania Association fulfilled in 2011 the followings:

- National Workshop – "Quality Assurance Measurements"
- The 10th Annual Forum – "Quality Assurance Measurements", May 2011
- The National General Assembly of Eurachem Romania
- Issue of the national publication of Eurachem Informative Bulletin no.15, April 2011, ISSN 1582-9057 (28 pages) with papers related to the practical use of the reference materials in the analytical laboratory the general and statistical principles of certification.
- Updating the web site [www.eurachem.ro](http://www.eurachem.ro) in order to assure a constant and dynamic information of our collaborators.

In 2011, the subject of the National Annual Forum was related to the procedures to be applied to establish the quality and performance characteristics of measurement methods in the analytical laboratory. It was organized on 27th – 28th May 2011 at the University Babes-Bolyai, Cluj Napoca. The Forum was attended by 83 participants from universities, research institutes, laboratories and various economical units. Four lectures were presented focusing on the EA 4/10 Guide, Use of the reference materials – advantages and disadvantages, uncertainty estimation, automated titration systems to be used for environment and food determinations. Also, there were presented other 7 short communications focusing on performance characteristics of measurement methods, measurements quality, data security management, which were followed by discussions and significant comments from the participants.

On the occasion of the X-th National Forum

it was also organized the General Assembly of Eurachem Romania Association. It was presented the activity of the national association for the previous year. Also, networking activities took place and the presentation of two important research projects funded by EU was done.

*Eugenia Eftimie Totu*

## Russia

Last year 2011 has been proclaimed as the International Year of Chemistry (IYC) by the 63rd General Assembly of the United Nations (UN), under the motto «Chemistry — our life, our future». As part of the IYC, a number of activities on international and national scale were performed. Events commemorating the award of the Nobel Prize in chemistry to Maria Skłodowska Curie 100 years ago and highlighting the role of women in science were organized. 2011 also marks the 100th anniversary of the founding of the International Association of Chemical Societies. This year was particularly significant for Russia, since was noted the 300- anniversary of eminent Russian scientist Michael V. Lomonosov. The main event of anniversary year became XIX Mendeleev Congress on General and Applied Chemistry which were held on 25–30 September, 2011 in Volgograd. Traditionally the topics of the scientific program of the Mendeleev Congresses covered the main directions of chemical science, technology, industry and chemical education. These issues were discussed at the Congress as well through plenary and oral sessions, satellite symposia and round table discussions. The program of the Congress included exhibitions of chemical facilities, equipment, technological developments and chemistry literature. Conference proceedings are represented on the <http://www.mendeleev2011.vstu.ru/>.

In September 2011 the special release of the journal «Measurement Technique» was dedicated to the IYC and to the measurements. The journal Measurement Technique is a translation of the peer reviewed Russian journals: *Izmeritel'naya Tekhnika* and selected articles from *Metrologiya*. ([www.springer.com/11018](http://www.springer.com/11018)). Topics of the digest articles were the calibration and measuring possibilities in Russia, the solution of the complex measuring problems, which accompany the analytical control of nano objects and explosives, the metrological assurance of advanced materials analysis, etc.

Period 2011-2012 became revolutionary in Russia in the context of cardinal reforming of accreditation system. In development of the Russian President Decree the Joint accreditation body—Federal Accreditation Service (Rosaccreditazia) was created. One of main principles of this system is «creation of conditions for a mutual recognition of results of conformity estimation by member states the Customs Union within the limits of the Eurasian economic community, and also by the states – the basic trading partners of the Russian Federation». All previous accreditation systems, including accreditation system of analytical laboratories, are integrated into united national system of accreditation. It is necessary to notice, that only in Russian accreditation system of analytical laboratories more than 8 000 laboratories are accredited. At new system requirements of standard ISO/IEC 17011:2004 and other standards of group 17000 are considered. Especially careful attention is given to formation of accreditation system in the field of traceability

of measurements results. Work on an adoption of law of the Russian Federation «About accreditation» also comes to the end. It will be final step of working out of national accreditation system in Russia. Accreditation system adjusts and harmonization with the international normative is the important clause for development of a referential laboratories network of Russia. It is supposed to put in a network basis so-called «the superiority centres» or «the centre of collective using the scientific equipment». Such centres in Russia are more than 100. Their big part is equipped by the first-rate analytical equipment, professional staff, has wide experience of work, the international and national accreditation, and is recognized at Federal level.

In development of the agreement reached on General Assembly 2011 in Moscow, in the spring of 2012 translation of the Guide «Terminology in Analytical Chemistry» to international dictionary VIM 3 was issued. The translation is executed by joint efforts of experts in analytical and clinical diagnostics. The presentation has taken place within the traditional annual exhibition of Analytica Expo-2012.

*Vasilisa Baranovskaya*

## Slovenia

Eurachem Slovenia is one of the sections of Slovenian Chemical Society (<http://chem-soc.si/en/skd/sekcija-eurachem-slovenija/>).

In 2011, members of Eurachem Slovenia prepared translation of part of harmonised TrainMiC® material ([www.trainmic.org](http://www.trainmic.org)), namely:

- Interlaboratory comparisons
- Selection and use of reference materials
- Sampling as a part of measurement procedure

The translation was published by the European Commission and is freely available at <http://bookshop.europa.eu/en/trainmic-presentations-translated-in-slovenian-pbLANA24867/>. Apart from the above translation, we have been also active within two Eurachem working groups i.e. »Training and Education« and »Proficiency testing« and attended the General assembly. There is a tradition to publish annual reports of all sections of the Slovenian Chemical Society in *Acta Chimica Slovenica* (<http://acta.chem-soc.si/>).

*Nineta Majcen*

## Ukraine

The book «Metrology in Physico-Chemical Measurements» was published in 2011 in St. Petersburg, Russia, ed. by L. Konopelko (D.I. Mendeleev Institute for Metrology (VNIIM), Russia), and M. Rozhnov (Ukrmetrteststandart, Ukraine). The monograph was prepared by Ukrainian and Russian metrologists and covers the topics of traceability, measurement standards, reference materials, quality assurance, proficiency testing, standard reference data, international cooperation etc. The book is published in Russian language, 580 pages, ISBN 978-5-9902987-1-2.

In 2011-2012 our representatives took part in series of workshops, mostly devoted to natural gas issues, and presented reports concerning problems of traceability, calibration, proper use of reference materials, and proficiency testing in the area of natural gas analysis.

*Mykhaylo Rozhnov*

## United Kingdom

AMC Technical Briefs is a series of short notes published in the journal Analytical Methods by the Analytical Division of the UK Royal Society of Chemistry. They focus on important issues in analytical science that seem to be neglected or misunderstood and are excellent material for continuing professional development. Recent issues have covered 'Quality in contracted-out analysis', 'Dark uncertainty', 'Bayesian statistics in action', 'Quality control of sampling', 'Robust regression' and 'Sporadic blunders'. More details and free downloads from [www.rsc.org/amc](http://www.rsc.org/amc).

*Steve Ellison*

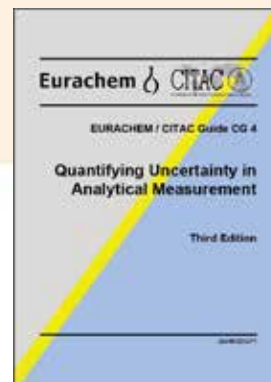
## News

### New Edition of the Eurachem/CITAC Uncertainty Guide

The Eurachem Measurement Uncertainty and Traceability Working Group is pleased to announce the publication of the Third Edition of the Eurachem/CITAC Guide "Quantifying Uncertainty in Analytical Measurement".

The Second edition provided for the use of validation and related data in the construction of uncertainty estimates in full compliance with the formal ISO Guide principles set out in the ISO Guide to the Expression of Uncertainty in measurement. The approach is also consistent with the requirements of ISO/IEC 17025:2005. The new version is closely consistent with the Second edition, but adds new material on

- Expression of uncertainty near zero
- Monte Carlo methods for uncertainty evaluation
- Use of proficiency testing data



### Revised Eurachem Guide on 'Accreditation for Microbiological Laboratories' EA-4/10

Regarding the joint EA and Eurachem guide on Accreditation for Microbiological Laboratories (also EA-4/10) the EA Laboratory Commit-

tee (LC) proposed 2.5 years ago 1) a revision of the guide 2) that Eurachem shall have the ownership of the guide. This proposal was accepted by Eurachem.

As a first step, accreditation bodies (ABs), provided feedback as to what should be changed in the guide and on behalf of Eurachem, a small group undertook to prepare a first revised draft which was distributed to Eurachem members for further consideration.

It was agreed that the existing document was, in principle, structurally very efficient and fit for the purpose, provided that a number of adjustments and improvements were made mainly to reflect developments since 2002, the year that the guide was first published. The approach taken was not to duplicate whatever is written in supplementing documents (mainly standards) but mostly to provide microbiological laboratories with all relevant updated information through appropriate links to such documents as ISO 7218 (general rules), ISO 19036 (uncertainty) and ISO/FDIS (uncertainty based on validation and QC data). At present, the working group is in the process of incorporating additional comments and considerations submitted by ABs and is expected to submit a final draft that will be sent out for voting at the beginning of 2013.

**Mary Eleftheriadou**

Coordinator of the ad hoc Working Group

Email: M.Eleftheriadou@euc.ac.cy

## Eurachem Supported Surveys on the Users' Opinion on VIM and GUM

VIM, the "International vocabulary of metrology—Basic and general concepts and associated terms", and GUM, the "Guide to the expression of uncertainty in measurement," are important documents for all those involved in measurements. The widespread application of these documents in various different disciplines makes the direct involvement of the users desirable in order to learn from their experience and about their needs. To this end, the Joint Committees for Guides in Metrology, JCGM, in which the eight signatory institutions BIPM, IEC, IFCC, ILAC, ISO, IUPAC, IUPAP, and OIML are represented, initiated surveys of these documents. Eurachem has invited its members to submit their opinions and make their voices heard. A collated summary of responses was sent to all those who

replied to the questionnaires. Some highlights of the outcome of the VIM survey are presented here.

About 255 people answered the survey on VIM, of which 38% were metrologists and 25% scientists. The three main fields of expertise for the respondents were physics (28%), technology (25%) and chemistry (24%). Most of the respondents stated they know the VIM well (39%) or well enough for their needs (29%), whereas others declared scarce (13%) or no (9%) knowledge of the document. The large majority (72-75%) of the about 200 respondents to these questions felt that the VIM's scope is appropriate and that the document is written at an appropriate level. About 30% of the participants expressed the view that concepts related to technical aspects of measuring instruments should be expanded. About 50% of the respondents expressed a positive opinion on the substantial changes of the definitions of measurement, measurand, measurement result, measurement uncertainty and calibration, but about 30% of them stated they did not know enough to have an opinion. Substantial percentage of the participants approved the introduction of new concepts, such as measurement trueness (44%), measurement precision (53%) and definitional uncertainty (42%) in the VIM, whereas about 25% did not have an opinion. The results of the survey seem to support the EURACHEM views that the VIM is useful and necessary for analysts, but still poorly known and understood. The EURACHEM Guide "Terminology in Analytical Measurement" can help analytical scientists, practitioners and teachers to make the most of the VIM.

**Marina Patriarca**

## ISO Standard for Evaluation of Measurement Uncertainty based on Quality Control and Validation data

The standard ISO 11352 Water quality — Estimation of measurement uncertainty based on validation and quality control data (2012) specifies a set of procedures to enable laboratories to estimate the measurement uncertainty of their results, using an approach based on quality control results and validation data. The Nordtest guide TR 537 [www.nordtest.info] and the Dutch NEN 7779 have been used as the main basis for developing this International Standard. The procedure combines a precision estimate and the uncertainty associated with the bias into one uncertainty measure. The sources of data for this approach are method validation and quality control. The approach specified in this International Standard enables an appropriate coverage of most of the sources of variation observed during routine use of an analytical method. The scope is water analysis but the approach is general and can be adapted to other analysis.

**Bertil Magnusson**

## World Metrology Day 20 May

World Metrology Day celebrates the signature by representatives of seventeen nations of the Metre Convention on 20 May 1875. The Convention set the framework for global collaboration in the science of measurement and in its industrial, commercial and societal application. The original aim of the Metre Convention - the worldwide uniformity of measurement - remains as important today as it was in 1875.

## Reviews

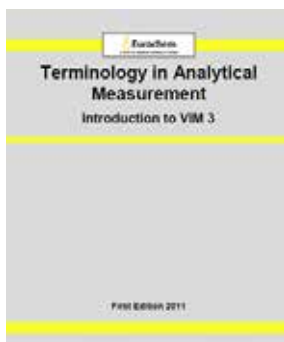
Here Eurachem members can present important issues within Eurachem's field of interest. The views presented here are those of the authors and do not reflect Eurachem policy.

## MUkit – Measurement Uncertainty Estimation Software based on the Nordtest Approach

SYKE, the Finnish Environment Institute has recently published a new easy-to-use software tool called MUkit (Measurement Uncertainty kit) for measurement uncertainty calculation. Software is based on the guidance presented in NORDTEST Technical Report 537, where the combined measurement uncertainty is broken down into two main components—the within-laboratory reproducibility (intermediate precision) s<sub>Rw</sub> and the uncertainty due to possible laboratory bias u(bias). Both of these can be conveniently estimated from validation and quality control data.

Almost 10 years after the initial publication of this popular guide, the first software package is finally available for supporting routine laboratories in measurement uncertainty evaluation. The reports from the software give a detailed description of the calculations with all input data and all the calculations including formulas. The software has been published as freeware with the source code included. The software can be downloaded from the SYKE ENVICAL website. Software features are described also in a recently published article Näykki T, Virtanen A, Leito I, Software support for the Nordtest method of measurement uncertainty evaluation. *Accred Qual Assur* (2012) 17:603-612

**Teemu Näykki**



## New book on Statistics for Analytical Chemists



A new book, *Notes On Statistics And Data Quality For Analytical Chemists*, aims to help analytical chemists feel comfortable with the more commonly-used statistical operations and help them make effective use of the results. The emphasis is put upon computer-based methods that are applied in relation to measurement and the quality of the resulting data. The starting point is the analytical results and the interpretation and the text cover the most important aspects of statistics in validation and assessing measurement quality. More information on <http://www.worldscientific.com/worldscibooks/10.1142/p739#t=aboutBook>.

*Bertil Magnusson*

## Upcoming Meetings

### Eurachem Annual Meeting in Finland 20–24 May 2013

The next Eurachem Annual Meeting is to be held in Finland, 20-24 May 2013. During the week there will be a two-day work-shop (20-21 May), Eurachem working group meetings (21-22 May), as well as General Assembly meeting (23-24 May) and Executive Committee meeting (23-24 May).

The Eurachem Workshop on Quality Assurance of Measurements from Field to Laboratory on 20-21 May will comprise of lectures and a poster session. The workshop focus on two main topics: on challenges related to on-site/on-line measurements and on challenges of measurements related to nanotechnology. Participants may additionally present and discuss posters during poster sessions. The workshop will be held in English. Conference location: Centre for Metrology and Accreditation (MIKES), Tekniikantie 1, 02151 Espoo, Finland.

[www.eurachem2013.com](http://www.eurachem2013.com)

### PT Workshop 6–9 October 2014

The Eurachem Proficiency Testing Working Group is organising the 8th event of a series of Workshops addressing current practice and future directions of proficiency testing (PT) and external quality assessment (EQA) in analytical chemistry, microbiology and laboratory medicine. The workshop will be held in Berlin during October 2014 (6th to 9th). The Workshop will be structured to include key-note lectures along with a number of short presentations, discussions in working groups and poster sessions, to enable interactive participation and cross-fertilisation of ideas. Two training sessions will precede the Workshop. Topics to be covered will include a review of the implementation of the ISO/IEC 17043 standard, user perspectives of PT/EQA, the revised ISO 13528, PT/EQA for sampling, PT/EQA in developing countries and the harmonisation of performance assessment in qualitative PT/EQA.

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To get involved with Eurachem in your nation, contact the Eurachem Secretariat for details on how to contact your national representatives or visit the Eurachem website.

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Eurachem member countries. Note that on this map the Eurachem member country Cyprus is missing. Orange colour indicates countries to be members 2013.