

**TC for Metrology in Chemistry:
Highlights and Challenges**



**Bernd Güttler, TC-MC Chair
PTB, Germany**

**5th EURAMET General Assembly
Sarajevo, Bosnia & Herzegovina, 06 to 10 June 2011**

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General Aspects

- attendance at TC meeting continuous on a high level
- large number of CMC claims in re-review process
- Workshop on new EMRP calls
(Health, SI broader scope, New Technologies)
- project example

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Meetings


- general TC-MC meeting & meeting of all 4 Sub-Committees in
Helsinki, Finland 1 – 4 Feb 2011 (71 participants)
- discussion of Cycle XII CMC claims
- discussion of iMERA-Plus and EMRP projects within and in addition to the sub-committee meetings
extra day (31 January) for annual meetings of EMRP projects
- discussion on future EURAMET and EMRP projects (TP Health, SI broader scope & New technologies)
- Sub-Committee Electrochemical Analysis Francesca Durbiano (INRIM, Italy) takes over the convenorship from Petra Spitzer (PTB, Germany) in the Sub-Committee Electrochemical Analysis
- Michela Sega (INRIM, Italy) becomes new TC-MC chair as successor to Bernd Güttler (PTB, Germany)

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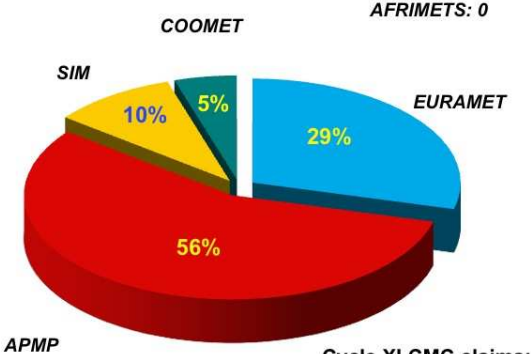




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CMCs: Cycle XI

(running in '10, more than 100 re-reviewed claims still pending)




Activity	Percentage
APMP	56%
EURAMET	29%
SIM	10%
COOMET	5%
AFRIMETS	0


**Cycle XI CMC claims:
Regional activities**

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CMC Cycle XI

New CCQM CMC claims in cycle XI: 165



Re-Reviewed claims:

Cat.4 (gases)	140
Cat. 6/7 (electrochemistry)	107
still pending:	127

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Workshop: TPs "Health, SI broader scope, New Technologies"

Health I (Proteins, Metallomics)

Isotope dilution ICP-MS as the metrological basis for accurate determination of health relevant parameters
Claudia Swart, PTB

Requirement for novel elemental, isotopic and metallomic developments in the diagnosis and treatment of disease
Mike Sargent, LGC

Protein & proteomic metrology
Gavin O'Connor, LGC


Metrology research needs for the efficient standardisation of protein measurements
Heinz Schimmel, IRMM


Metrological requirements for cell/ bio-assays to support innovation in diagnosis and treatment of disease
Mariapaola Sassi, INRIM

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Workshop: TPs "Health, SI broader scope, New Technologies"

SI broader scope

Traceability system for elemental analysis
Heinrich Kipphardt, BAM

Absolute Fluorescence Quantum Yield
Ute Resch-Genger, BAM

New Technologies (food measurements)

Metrology research needs for European regulatory aspects of nanotechnologies
Gert Roebben, Thomas Insinger, IRMM



Speciation of heavy metals in food
Timo Kapp, BVL

Food traceability: tracing food through the production and distribution chain to identify and address risks and protect public health
Michela Segal, INRIM

Potential developments in food metrology
Mike Sargent, LGC

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Participation in successful EMRP proposals (TP Environment & Industry)

Industry (surface analysis)


- Traceable quantitative surface chemical analysis for industrial applications
- Metrology for the manufacturing of thin films

Environment (air & water pollution, climate change)

- Metrology for chemical pollutants in air
- Emerging requirements for measuring pollutants from automotive exhaust emissions
- Spectral reference data for atmospheric monitoring
- Metrology for pressure, temperature, humidity and airspeed in the atmosphere
- Metrology for oceanic salinity and acidification
- Traceable measurements for monitoring critical pollutants under the European Water Framework Directive (WFD-2000/60/EC)

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EURAMET 924, EMRP ENV08: Developing Metrological Infrastructures for Water Analysis in Europe



River Elbe between Hamburg and Cuxhaven © Vademm - Clichévision Agency

Water framework Directive (WFD): Motivation



- 20 % of all surface waters in the European Union are heavily polluted.
- 65 % of the drinking water originate from ground water resources.
- 60 % of the European cities overuse their ground water resources.
- 50 % of the EU wetlands (and their biota) are endangered because of overused ground water
- The artificially watered areas in the EU increased by 20 % since 1985.

(e.g., European Environmental Agency, report 1995)

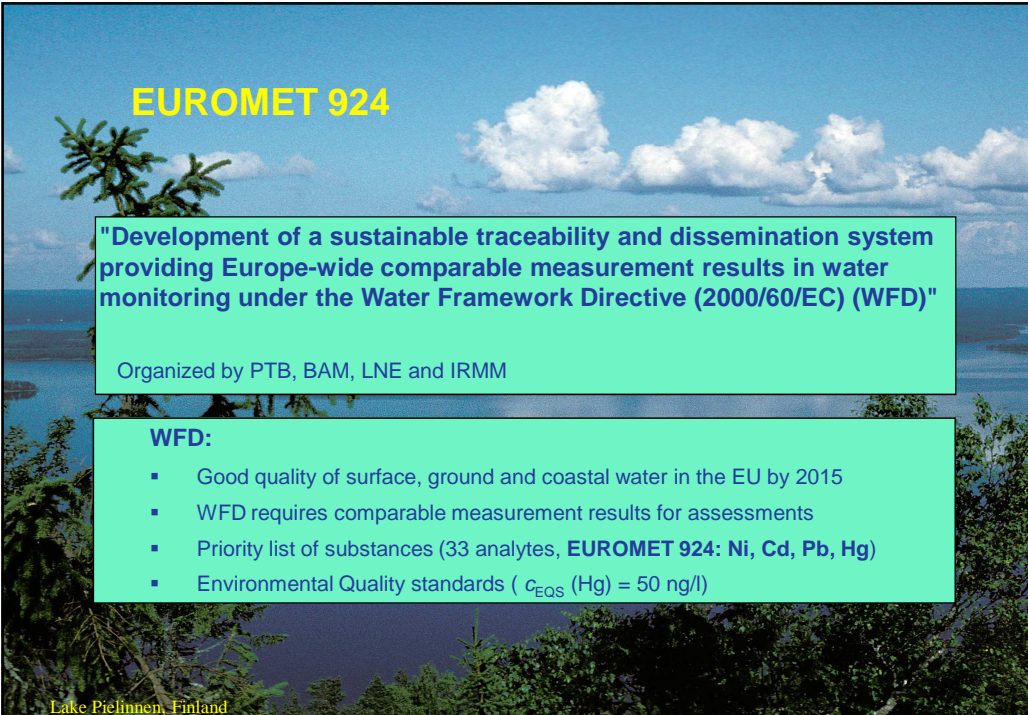


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EUROMET 924

"Development of a sustainable traceability and dissemination system providing Europe-wide comparable measurement results in water monitoring under the Water Framework Directive (2000/60/EC) (WFD)"

Organized by PTB, BAM, LNE and IRMM

WFD:

- Good quality of surface, ground and coastal water in the EU by 2015
- WFD requires comparable measurement results for assessments
- Priority list of substances (33 analytes, **EUROMET 924: Ni, Cd, Pb, Hg**)
- Environmental Quality standards (c_{EQS} (Hg) = 50 ng/l)

Lake Pielinen, Finland

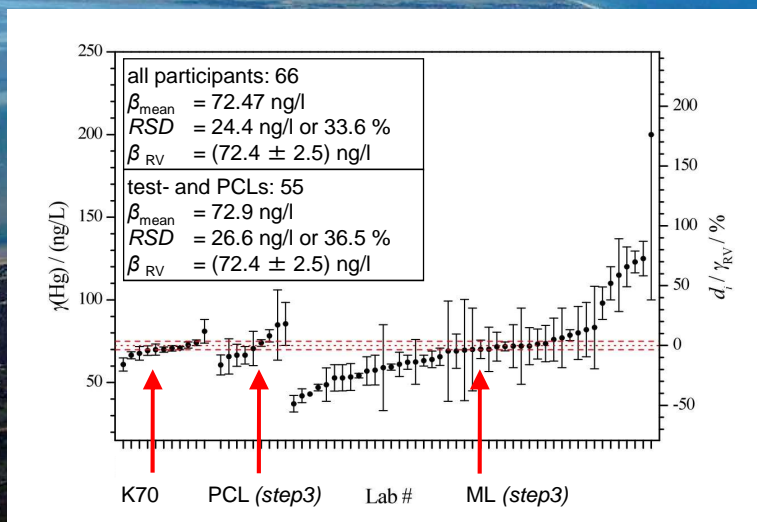


Participants of Euramet 924 Step 3

Germany	33
Israel	2
Hungary	12
Bosnia-Herzegovina	1
Portugal	4
Slovenia	1
Czech	1
Croatia	4
Bulgaria	6
Austria	11
Italia	9
Romania	1
Norway	1
Sweden	4
France	18
Spain	5
Finland	1
Σ Countries:	17
Labs:	114

Euramet 924 Step 3:
114 monitoring and expert labs from 17 countries
4 NMIs (BAM, LNE, PTB, NCM)

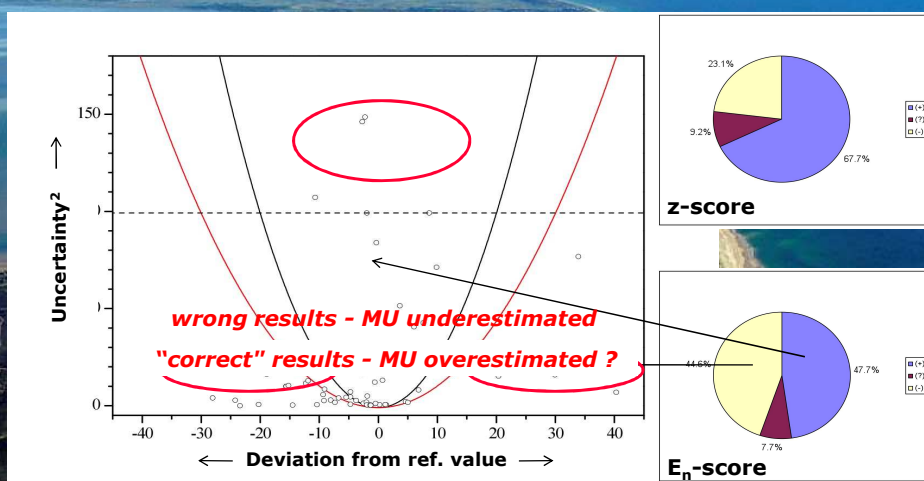
Hg : CCQM K70 & EUROMET 924 step3

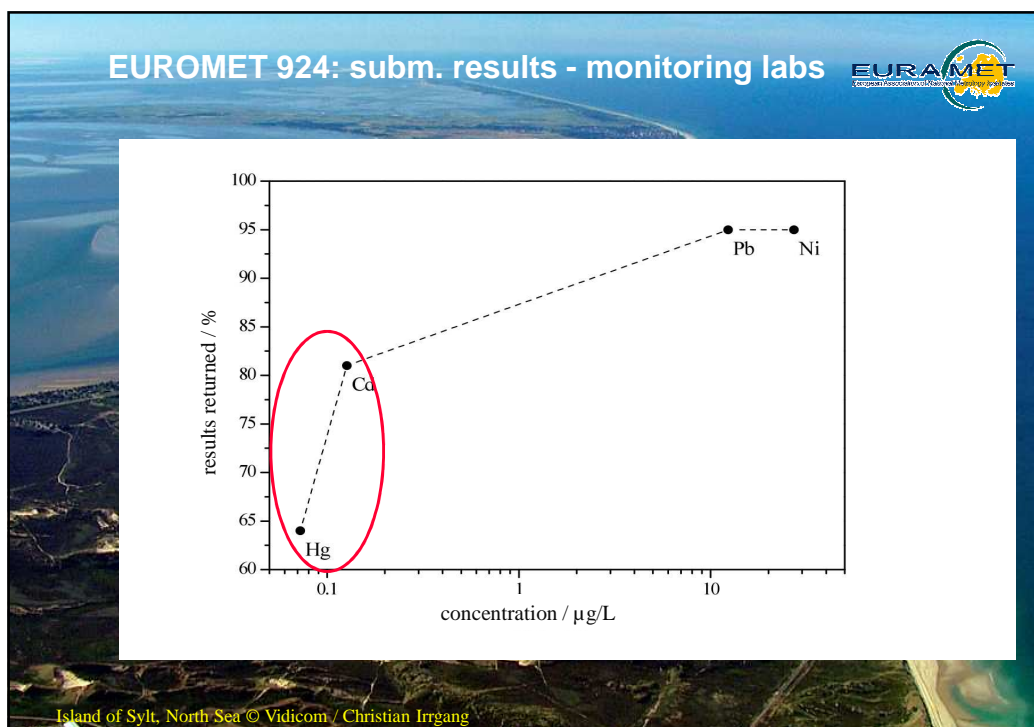


Island of Sylt, North Sea © Vidicom / Christian Irrgang

Hg: Performance of monitoring labs

PTB





WFD: future tasks

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CEN CEN/TC230 - Mandate 424:
Method development to support WFD monitoring


"Critical" pollutants
priority substances for which suitable measurement methods are not available:

- PBDE
- Polycyclic Aromatic Hydrocarbons
- Tributyltin compounds
- 10 to C13 Chloroalkanes

malformation of pacific oyster shells caused by TBT
<http://www.fouling-atlas.org>

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EMRP TP Environment: ENV 08

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Traceable measurements for monitoring critical pollutants under the European Water Framework Directive (WFD) 2000/60/EC

Objectives

Comparability by traceability via

- development of primary reference methods as a basis for traceability for selected priority substances TBT, PBDE, PAH at EQS levels
- study of partitioning in whole water
- concepts for reference materials
- intercomparison measurements
- preparation of a dissemination system

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