

## **Vitality's evidence of CMC's - INTI-Chemistry**

**2007 - 2012**

### **Organization of Proficiency Testing**

- 2007, 2009 and 2011: "Water – Basic Parameters": K, Na, Ca, Mg, Cl<sup>-</sup>, NO<sub>3</sub><sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, Total Alkalinity, Total Hardness, Total Solids, pH and Conductivity.
- 2008, 2010 and 2012: "Water: Zn, Fe, K, Ca, Mg, Cl<sup>-</sup>, NO<sub>3</sub><sup>-</sup>, SO<sub>4</sub><sup>2-</sup> and F<sup>-</sup>", and "Traces in Water": Hg, Cr, Cd, Pb, As
- 2011 "Steel Samples Analysis": C, Mn, P, Si, Cr, Ni, Mo and Cu

The reference values were assigned by different methods: gravimetry, AAS, etc. For cations and traces in water as measured by Atomic Absorption, technical procedures were submitted for evaluation during the 2012 Peer Review.

The assigned values during interlaboratory comparison of steel analyses were determined through different methods: gravimetry, colorimetry, AAS, XRF, OES and ICP.

### **Harmonization of Measurements at different INTI Centres. 2011-2012 (Participating Centres: Chemistry, Concepcion del Uruguay, Mendoza, Cordoba and Rosario)**

Atomic absorption spectrometry measurements were harmonized in different Centres of INTI. Measurement procedures and uncertainty calculations were reviewed.

Interlaboratory comparison was organized by INTI-Chemistry for different cations: Zn, Fe, K, Ca and Mg in water.

Eventually some audits were carried out. The final report is attached.

### **Participation in Conferences/Seminars**

- 10<sup>th</sup> Rio Symposium on Atomic Spectroscopy. Brazil 2008
- 11<sup>th</sup> Rio Symposium on Atomic Spectroscopy, Argentina 2010
- IV<sup>th</sup> Latin American Conference on Chemical Analysis and Xth National Seminar on Environmental Chemical Analysis, Chile – November 2010
- Colloquium Spectroscopicum Internationale XXXVII, Brazil – September 2011
- Metrology Seminar, INTI - September 2009

## **Training courses at INTI-Chemistry during 2010 (by NMI experts)**

Trainer: Dr. Lu Yang, of NRC-Canada

“Application of ICP-MS”

“Uncertainty Calculation”

“CRM Preparation”

Trainer: Dr. Heidi Goenaga-Infante, of LGC-UK

“ICP-MS with IDMS”

“ICP-MS for Speciation Training Course”

“Training in Sample Preparation”

## **Training in NMI's**

*Pablo Álvarez:*

- Symposium organized by Eurachem: “New Developments in Measurement Uncertainty in Chemical Analysis – Sampling uncertainty and uncertainty for compliance assessment” – BAM – Berlin, Germany – April 2008.
- “6<sup>th</sup> Eurachem Workshop on Proficiency Testing in Analytical Chemistry, Microbiology and Laboratory Medicine: current practice and future directions” - Rome, Italy – October 2008.
- The Future of Reference Materials – Science and Innovation – IRMM – Geel, Belgium – November 2010.
- Recent developments in measurement uncertainty – The revised Eurachem/Citac guide Lisbon, Portugal – June 2011.
- Production of Certified Reference Material in aqueous solution – CENAM - Queretaro, Mexico – September 2011.

*Christian Salamone:*

- Production of Certified Reference Material in aqueous solution – CENAM - Queretaro, Mexico – September 2011.

## **Training at INTI and elsewhere in Argentina:**

- ICP-MS, Perkin Elmer – November 2007
- Evaluation of Uncertainty associated with calibration curves, INTI – August 2008
- ICP Atomic Emission Spectrometry, Perkin Elmer – September 2008
- Measurement Uncertainty in Chemical Analysis, INTI – December 2008
- ICP-OES Practice Course, Perkin-Elmer – December 2009
- Validation of Analytical Methods and Internal Quality Control, INTI – May 2010
- Course on ICP-OES Theory and Practice, Perkin-Elmer – August 2010
- ICP-OES Maintenance Seminar, Perkin Elmer – August 2010
- Uncertainty Evaluation through the Montecarlo Method, INTI – August 2010
- Quality Management and Method Validation in EDXRF Practice, CNEA – March 2011
- Applications of isotope dilution in clinical analyses, INTI – June 2011
- VI<sup>th</sup> Argentine Conference on Analytical Chemistry, Argentina – September 2011

- Uncertainty for Metrologists, INTI – July 2012
- Workshop on CMC's, INTI – September 2012

### **Participation in Working Groups**

Attendance to the meetings of the CCQM Inorganic Analysis Working Group (IAWG) since 2009.

Attendance to the Meeting of SIM's Metrology in Chemistry Group. Costa Rica 2011 and Argentina 2012

### **INTI Projects**

“Increase and update metrological capacities in inorganic chemical analysis”  
Approved in 2007

Within the framework of this project, ICP equipment was bought, with both Optical Detection and Mass Spectroscopy Detection units.  
Also, the Trace and Metal Analysis and Inorganic Analysis facilities were retrofitted.

February 2013