

Workshop on Measurement Results Uncertainty Estimation and Method Validation

ALMERA (Analytical Laboratories for the Measurement of Environmental Radioactivity) Network Technical Meeting

Antalya, Turkey

12-16 November 2012

Meeting ID: 42889

Meeting hosted by the Turkish Atomic Energy Authority (TAEK)

BACKGROUND

ALMERA (Analytical Laboratories for the Measurement of Environmental Radioactivity) is a world-wide network of analytical laboratories, established by the IAEA. Through methodological and data quality support received from the IAEA and collaborative method development and validation, ALMERA member laboratories are able to provide internationally acceptable radioanalytical data in normal situations as well as in case of accidental or intentional releases of radioactivity, as requested by their nominating authorities.

The ALMERA network holds annual coordination meetings to discuss the implementation of planned activities and to define future activities of the network and workshops to discuss common methodologies.

Within this context, ALMERA laboratories representatives are invited to attend the **Workshop on Measurement Results Uncertainty Estimation and Method Validation**, to be held from **12 to 16 November 2012** in **Antalya, Turkey**.

OBJECTIVES OF THE MEETING

Implementation of a quality assurance system according to ISO-17025 requirements in ALMERA network laboratories is an important factor for producing reliable and valid analytical results for radiological environmental monitoring. With this regard, the main pillars of any laboratory quality system are the proper implementation of method validation and estimation of measurement results uncertainty.

This ALMERA workshop is organized for young scientists, laboratory technicians and practitioners to upgrade their theoretical knowledge and skills to assist them in implementing method validation experiments, to set-up an uncertainty budget and to estimate measurement results uncertainty (MRU). This workshop aims also to enhance the participants' practical skills and to expose them to practical study cases for calculations and statistical approaches needed for MRU estimation for nuclear analytical techniques (gamma-ray spectrometry, alpha-ray spectrometry, liquid scintillation counting and radiochemical procedures).

The workshop will focus on statistical treatment of data related to method validation and MRU estimation and at providing the participants with practical methodologies applied in this field to ensure the reliability and validity of the reported analytical results. Participants will be exposed to real study cases of different analytical techniques to determine gamma emitting radionuclides, Pu isotopes, Po-210, Pb-210 and Sr-90 and will have to work out their own calculations. The participants will be encouraged to bring with them the already available results of method validation experiments and uncertainty budgets for discussions and further treatment.

The participants will have the opportunity to meet with different specialists and experts to discuss and answer their specific questions and to assist in developing their own uncertainty budget.

SCOPE AND FORMAT OF THE MEETING

The workshop will consist of a series of lectures and group practical exercises on the implementation of prepared case studies.

The workshop will include five sessions:

- Session 1: Basics on MRU estimation
- Session 2: Theoretical approaches to MRU estimation
- Sessions 3 and 4: Applications of MRU estimation to nuclear analytical techniques
- Session 5: Method validation and use of reference materials

Within these sessions, the following topics will be tackled through theoretical lectures, practical examples and/or group exercises:

- Role of MRU in metrological traceability,
- Analytical system stability,
- Single laboratory method validation,
- Quality control mechanism,
- Control charts, their role in MRU estimation,
- Statistical tools for data evaluation in analytical laboratory,
- Hypothesis Testing, calculation and applications of ANOVA,
- MRU estimation according to GUM approach,
- Theory and practical examples of Kragten approach,
- MRU estimation for the determination of gamma emitting RNs,
- MRU estimation for Pu isotopes determination using alpha-ray spectrometry,
- MRU estimation for Sr-90 determination using liquid scintillation counting,
- MRU estimation for Po-210 and Pb-210 using radiochemical procedures,
- Use of control charts, method validation data in estimation of MRU,
- Method validation
- Proper use of reference materials.

The draft workshop agenda is attached.

PARTICIPATION

The workshop is open for 30 participants from ALMERA laboratories. All ALMERA representatives wishing to attend the Meeting should be nominated by their Government (Ministry of Foreign Affairs or National Atomic Energy Authority). Nomination for participation (**Form A**) should be received by the IAEA not later than **1 October 2012**.

The confirmation of acceptance will be sent to the participants by 5 October 2012.

FINANCIAL SUPPORT

Please be informed that the meeting attendance is free of charge to the ALMERA members. However, members participation is at no cost to the IAEA (accommodation, travel costs and all the expenses shall be covered by participants' institutes), with the exception of a limited number of grants, which will be made available to applicants from developing Member States.

Should you qualify and intend to apply for a grant, please inform the IAEA Meeting Secretary as soon as possible and no later than **24 September 2012**. No grant application will be considered after this date. Detailed instructions for grant application will be provided thereafter.

LOCAL ARRANGEMENTS

It is the responsibility of all participants to make their own travel arrangements to/from Turkey. Detailed information on accommodation, local transport to/from the meeting venue, and other organisational details, will be sent to all designated participants by the host.

VISA

Designated participants who require a visa to enter Turkey should submit the necessary application to the nearest diplomatic or consular representative of Turkey well in advance of entry. An official letter of invitation will be issued to all designated participants by the IAEA Meeting Secretary.

MEETING SCIENTIFIC SECRETARY

Mr Aurélien Pitois

Terrestrial Environment Laboratory

IAEA Environment Laboratories, Seibersdorf

Department of Nuclear Sciences and Applications

Telephone: +431 2600 28226

Email: A.R.R.Pitois@iaea.org

MEETING SECRETARY

Ms Julie Le Normand

Radiometrics Laboratory

IAEA Environment Laboratories, Monaco

Department of Nuclear Sciences and Applications

Telephone: +377 9797 7215

Fax: +377 9797 7273

Email: j.le-normand@iaea.org