



Training Workshop on In Situ Radiological Assessment: Practical Methods and Techniques

IAEA, NSIL

26 – 30 November 2018

Ref. No.: TR1701848

Summary report

(I) Organization

The workshop was organized by Mr Roman Padilla-Alvarez (NAPC/NSIL) with the support of several officers from the Department of Nuclear Sciences and Applications, the Nuclear Security of Materials outside of Regulatory Control Section and the Incident and Emergency Centre. The workshop consisted of lectures and training exercises on Practical Methods and Techniques for In Situ Radiological Assessment. The list of topics covered and the names of the lecturers are provided in detail in Annex 1, Agenda of the Training Workshop. The objectives of the Training Workshop were communicated to members of ENVIRONET network.

For the organization of the practical exercises on screening surveys and production of maps, 4 NaI portable gamma spectrometers (PGIS, Nuvia) from NSIL were used, and two backpack units (ATOMTEX) were kindly provided by Nuclear Security of Materials outside of Regulatory Control Section, Division of Nuclear Security. For high resolution gamma spectrometry measurements, a portable He detector from TEL was used, and one additional unit was loaned by Incident and Emergency Centre. The cooperation received from these IAEA units was crucial for the success of the Workshop.

The provided lectures were of excellent quality in content and methodological outline, and the discussions led by were very productive for the participants. A tutorial on the use of software for production of maps and the results from conducted measurements are provided in a separate Annex.

The Workshop was attended by nine participants from Azerbaijan, Brazil, Greece, Kenya, Jamaica, Senegal, Spain, Sudan, and The Former Yugoslav Republic of Macedonia.

Participants agreed that the objectives of this workshop were met, and in particular:

- The information provided during the workshop will contribute to improve their procedures for radiological assessment using GPS-linked field measurements.
- The presentations in the workshop on the concepts of in-situ measurements have filled the gap of insufficient addressing examples from using these techniques in international and guides.
- The exercises and future inter-comparisons coordinated by the IAEA are very important services to its Member States for assessment of the accuracy of the measurement results and contribute to the evaluation of available instruments and operational procedures.

The participants suggested some future actions to the IAEA, namely:

- To continue the provision of field demonstration exercises to raise awareness on the advantages of in-situ techniques and to contribute to capacity building in the countries.
- To disseminate the developed R-markdown tool to facilitate the interpretation of measurements and the production of maps.
- To publish the developed e-learning material in the IAEA publications website, as to make its access easier.
- To continue organizing Training Workshops in the topics.

It can be said that out of the nine IAEA Member States participants, all were recipients of knowledge.

The general attendance to the sessions exceeded 90 % and the discussions were attended by all the participants.

Annex 1. Workshop Agenda

Time	Monday 26 (VIC C0343)	Tuesday 27 (Seib, TC 21)	Wednesday 28 (Seib)	Thursday 29 (Seib, TC 21)	Friday 30 (Seib, TC 21)
8:00-9:00	Registration at VIC	Transportation from Vienna to Seibersdorf			
9:00 – 9:30	Official opening: <i>Mr F. Foulon</i> ⁽¹⁾ <i>Mr M. Groening</i> ⁽²⁾ Organizational Arrangements: <i>Mr R. Padilla</i> ⁽³⁾	Lecture 5: Introduction to data interpretation and geo-statistics for production of maps. <i>R. Padilla</i>	Practical exercise 3: Field measurements using portable detectors <i>M. Matos</i> ⁽⁴⁾	Practical exercise 4: Interpretation of field measurement results using HPGe <i>A. Mauring, B. Seslak</i>	Practical exercise 6: Write-up of results from Training exercises
9:30–10:00	Self-introduction of the participants				
10:00 – 10:15	Coffee break				
10:15 – 11:00	Lecture 1: The rationale of in-situ approach: NSIL activities <i>Mr R. Padilla</i>	Pract. demo 2 (Seib, TC 17): Portable instruments used in the course <i>R. Padilla, A. Mauring</i> ⁽⁵⁾	Practical exercise 3: Field measurements using portable detectors <i>M. Matos</i>	Practical exercise 5: Interpretation of field measurement results and production of maps <i>M. Matos, R. Padilla</i>	Practical exercise 7: Presentation of results from Training exercises and discussion
11:00 – 11:45	Lecture 2: Radiation detectors for in situ measurements: Comparison of performance, calibration, control checks <i>Mr S. Tarjan</i> ⁽⁶⁾				
11:45 – 12:30	Lecture 3: Efficiency Calibration of gamma spectrometry measurements using ISOCS <i>Mr S. Tarjan</i>				
12:30-13:45	Lunch break				

¹ Mr Francois Foulon, Head, Nuclear Science and Instrumentation Laboratory, IAEA, Seibersdorf, Austria

² Mr Manfred Groening, Head, Terrestrial Environmental Laboratory, IAEA, Seibersdorf, Austria

³ Mr Roman Padilla Alvarez, Nuclear Instrumentation Physicist, Nuclear Science and Instrumentation Laboratory, IAEA, Seibersdorf, Austria

⁴ Mr Milan Matos, Senior Laboratory Technician, Nuclear Science and Instrumentation Laboratory, IAEA, Seibersdorf, Austria

⁵ Mr Alexander Mauring, Gamma Spectrometry Specialist, Terrestrial Environmental Laboratory, IAEA, Seibersdorf, Austria

⁶ Mr Sandor Tarjan, Reference Materials Specialist, Terrestrial Environmental Laboratory, IAEA, Seibersdorf, Austria

Time	Monday 26 (VIC C0343)	Tuesday 27 (Seib)	Wednesday 28 (Seib, TC 21)	Thursday 29 (Seib, TC 21)	Friday 30 (Seib, TC 21)
13:45 – 14:30	Lecture 4: In-situ surface measurements using GPS-linked dose rate meters and high efficiency scintillators: Practical hints Mr. R. Padilla	Practical exercise 2: Measurement of surface activity concentration in two different objects: - a mosaic source field, - Tanks with eluents from Tc generator Mr A. Mauring Mr B. Seslak (7) Evaluation of measurements	Practical demo: Installation of R-based module for production of maps: demonstration of use R. Padilla	Practical exercise 5: Interpretation of field measurement results and production of maps M. Matos, R. Padilla	Final remarks and discussions
14:30 – 15:15	Lecture 5: Validation of efficiency calibration for high resolution gamma spectrometers using mosaic source A. Mauring				
15:15 – 15:30	Coffee break				
15:30 – 16:00	Practical demo 1: Geometry definition for different shape objects A. Mauring	Evaluation of measurements A. Mauring B. Seslak	Practical exercise 4: Compilation of Field measurements results	Write-up	Official closure
16:00 – 17:15					

⁷ Mr Bojan Seslak, Senior Laboratory Technician, Terrestrial Environmental Laboratory, IAEA, Seibersdorf, Austria