International Conference on
Environmental Radioactivity : From Measurements and Assessments to Regulation

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SESSION 3: MEASUREMENTS

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When speaking of the environment, we should consider the entire biological cycle and therefore include not only all the ecosystems (terrestrial, aquatic, atmospheric) but also foodstuff and biological materials.

Nowadays the availability of fast methods for detecting and measuring radionuclides in the environment is of very great importance. The necessity of reliable, precise and fast analytical procedures and instrumental analytical methods is required not only for routine monitoring of radioactivity, but also for emergency preparedness and for forensic investigations on confiscated samples bearing radioactivity.

The session on ″Measurements″ consisted of 15 presentations from 14 different Member States, giving an overview of the applications used worldwide for the determination of natural as well as anthropogenic radionuclides. 16 posters from 13 different countries were also presented. The oral presentations were actually related to the three concepts: routine verifications, emergencies and forensic.

Among the non destructive methods gamma-spectrometry plays the major role as applied both in field and in the laboratory for investigating the terrestrial and atmospheric ecosystems. As for destructive methods, alpha spectrometry and liquid scintillation counting were the most discussed techniques. However, it came out that the radiochemical separations before the instrumental analyses still need improvements and testing. The relatively small number of papers discussing use of mass spectrometry for the long lived radionuclides indicates that these powerful techniques are not yet as widely exploited as they could be.

Major conclusions which could be drawn from the session included the following:

1. A comparison of methodologies used in different Member States is necessary
2. Natural radioactivity determination is an important issue in several Member States. More attention should therefore be given to methods for the determination of naturally-occurring radionuclides.
3. Reference materials and intercomparison exercises are necessary to ensure good quality of the results obtained.
4. Greater use of the results from screening in the field by gamma spectrometry when carrying out a sampling campaign collection for further analyses in the laboratory should be considered.

5. It is important to have a continuous dialogue between regulators and analytical scientists. Many times we have the impression that targets are established without considering whether the analytical capabilities needed to ensure compliance are feasible.