

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

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SESSION 4: MONITORING

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The session on monitoring included 18 oral presentations and 47 posters.

A key international document in the area of environmental monitoring is the recently published IAEA Safety Guide No. RS-G-1.8, 'Environmental and Source Monitoring for Purposes of Radiation Protection' (2005), however, it was apparent from the discussion during the session that few of the participants were aware of it. The IAEA safety standards represent the consensus view of senior experts drawn from Member States and are essential for promoting international harmonization. The IAEA should therefore review its approaches for raising awareness and dissemination of safety-related and other relevant technical material.

It was observed from the presentations and posters that some very large monitoring programmes have been established in Member States, some for compliance purposes, some for public dose assessment and some for public reassurance. There is a need for those responsible in Member States to review the focus and objectives of their existing monitoring programmes from time to time to ensure that the most relevant sources of public exposure, such as NORMs and effluents from medical installations, are adequately addressed and that the programmes remain useful and cost-effective. This review should additionally take into account the relevance of monitoring as a means for improving scientific knowledge, and also for maintaining continuity of professional capabilities.

From the presentations, posters and discussion it is apparent that there is a wide diversity of approaches for programme design, measurement, sampling and interpretation in relation to monitoring public exposure to radon. With such diversity, the comparability between countries of results on population exposure to radon is brought into question. There is therefore an important need to establish international protocols and technical standards for designing, conducting and interpreting radon surveys.

Similarly, there is a wide diversity in the approaches used for monitoring NORM with a view to assessing radiological impact and/or compliance with regulations. More guidance on interpreting international standards on regulating NORM would help in the design of efficient monitoring regimes.

A common problem in assessing the potentially harmful effects of environmental sources is the existence of pollutants other than radioactive materials. Radiological monitoring programmes should give consideration to the potential importance of other pollutants, such as heavy metals, in order to account for any synergistic effects and to allow comparative risk assessments.

It is important that the uncertainty associated with the results of a monitoring programme is well understood in order to avoid false conclusions being drawn. In this context, uncertainty assessments should address all aspects of a monitoring programme, such as the steps of sample collection and preparation, and not only the errors associated with measurement.

The WHO water quality standards are widely used to assess compliance for drinking water. It was noted that there are problems in applying these standards, especially for naturally occurring radionuclides.

Thorough and independent international reviews of some nuclear weapons test sites have provided reassurance to the potentially affected populations and to the world community regarding long-term environmental hazards. It would be desirable for all remaining test sites to be monitored similarly.

Many papers reported on monitoring results from uranium mines, which indicated that because the mines were under regulatory control, there was no significant radiological impact for the public during the operational phase of the mine. However, after closure, monitoring during the decommissioning process demands special attention.

The following topics are recommended for the consideration of the international organizations on the basis of this session:

- Methodologies for uncertainty assessments should be developed that cover all aspects of a monitoring programme, including the steps of sample collection and preparation, and not just measurement errors.
- Standard protocols for measuring and assessing doses from thorium-series radionuclides, including thoron (Rn-220) should be developed.
- More guidance on interpreting international standards for regulating NORM should be developed in order to help the design of efficient monitoring regimes.
- The international organizations should review their approaches for raising awareness and dissemination of safety-related or other relevant technical material, including ensuring that older documents are accessible to allow lessons from the past to be shared.
- International protocols and technical standards for designing, conducting and interpreting radon surveys should be established.
- The international guidelines on drinking water quality regarding naturally occurring radionuclides should be reviewed.