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Innovative Approaches for Data Collection and Analysis of Surface and Subsurface Residual Radioactivity to Support License Termination

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Modern Approaches for Radiological Measurement, Data Collection, and Data Analysis of Surface and Subsurface Residual Radioactivity To Support NRC License Termination

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General Comment

See attached file(s)

Attachments

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MARSSIM practices and recommendations provide solid background for conducting surveys: 1) scans, 2) direct measurements, and 3) laboratory analysis of samples. Contrary to the laboratory analysis, where requirements of ISO 17025 are understood and implemented:

ISO 17025: 6.5 Metrological traceability

6.5.1 The laboratory shall establish and maintain metrological traceability of its measurement results by means of a documented unbroken chain of calibrations, each contributing to the measurement uncertainty, linking them to an appropriate reference.

scanning surveys and direct measurements techniques often lacking the proper calibrations, measurement traceability and proficiency testing (PT).

Implementation of metrological traceability will help to convert scanning surveys and direct measurements from qualitative to quantitative methods and will reduce time and cost of analysis. To achieve this conversion two things must be incorporated into the surveying program:

1. Calibration of instruments must be case specific and performed under as similar as possible conditions reflecting the isotopic mixture, isotopic distribution, matrix density, height of measurement etc. It will require manufacturing of specific certified reference materials (CRM) or it can be done through the mathematical modelling. Whatever approach is used, proficiency testing measurement must be performed, as the only means to prove methodology and expertise.
2. Proficiency Testing is defined by ISO 17043-2010 - 3.7 proficiency testing. Proficiency tests can validate the participating laboratory's measurement method, technical training, traceability of standards, and uncertainty budgets. It provides objective evidence of the competence of the participant. This evidence can be used to improve the performance of the participant and/or give confidence in the participant's ability to perform a specific measurement.

Current state of technology allows custom calibrations and proficiency/performance testing measurements to be realized in practice at reasonable cost and time.