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Abstract:
In 2006, ESARDA introduced in issue 34 of its bulletin the idea of special issues aimed at addressing in the same journal topical subjects, thematic areas and detailed studies such as benchmarking and inter-comparison exercises. In this issue 48, we are pleased to be able to continue with this tradition, by presenting to our readers the two reports which culminated from many years of work and evaluations within the Esarda working groups and partners. Namely, the documents report on: 1) International Target Values (ITV) 2010 for Measurement Uncertainties in Safeguarding Nuclear Materials and 2) Performance Values for Non-Destructive Assay (NDA) Techniques Applied to Wastes. We hope these two documents will turn out to be valuable references to operators, practitioners and scientists. The Editor, Hamid Tagziria Abstracts: International Target Values 2010 for Measurement Uncertainties in Safeguarding Nuclear Materials This issue of the International Target Values (ITVs) represents the sixth revision, following the first release of such tables issued in 1979 by the ESARDA/WGDA. The ITVs are uncertainties to be considered in judging the reliability of analytical techniques applied to industrial nuclear and fissile material, which are subject to safeguards verification. The tabulated values represent estimates of the ‘state of the practice’ which should be achievable under routine measurement conditions. The most recent standard conventions in representing uncertainty have been considered, while maintaining a format that allows comparison with the previous releases of the ITVs. The present report explains why target values are needed, how the concept evolved and how they relate to the operator’s and inspector’s measurement systems. The ITVs-2010 are intended to be used by plant operators and safeguards organizations, as a reference of the quality of measurements achievable in nuclear material accountancy, and for planning purposes. The report suggests that the use of ITVs can be beneficial for statistical inferences regarding the significance of operator-inspector differences whenever valid performance values are not available. Performance Values for Non-Destructive Assay (NDA) Techniques Applied to Wastes: An Evaluation by the NDA WG The first evaluation of NDA performance values was undertaken by the ESARDA Working Group for Standards and Non Destructive Assay Techniques and was published in 1993. Almost ten years later in 2002 the Working Group reviewed those values and reported on improvements in performance values and new measurement techniques that had emerged since the original assessment. The 2002 evaluation of NDA performance values did not include waste measurements (although these had been incorporated into the 1993 exercise), because although the same measurement techniques are generally applied, the performance is significantly different compared to the assay of conventional Safeguarded special nuclear material. It was therefore considered more appropriate to perform a separate evaluation of performance values for waste assay. Waste assay is becoming increasingly important within the Safeguards community, particularly since the implementation of the Additional Protocol, which calls for declaration of plutonium and HEU bearing waste in addition to information on existing declared material or facilities. Improvements in the
measurement performance in recent years, in particular the accuracy, mean that special nuclear materials can now be accounted for in wastes with greater certainty. This paper presents an evaluation of performance values for the NDA techniques in common usage for the assay of waste containing special nuclear material. The main topics covered by the document are: • Techniques for plutonium bearing solid wastes • Techniques for uranium bearing solid wastes • Techniques for assay of fissile material in spent fuel wastes


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