Title	Analysis of remotely accrued complex gamma ray spectra – proficiency test
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Abstract

This report presents details pertaining to an exercise conducted as part of the NKS-B programme using synthetic gamma ray spectra to simulate the type of data that may be encountered in the early phase of a nuclear accident. The aim of the exercise was to provide participants with an opportunity to exercise in the type of situation and with the type of data that may result after a nuclear accident. Attempting to conduct such exercise internationally using actual samples presents practical and logistical difficulties and a synthetic spectrum was employed to negate some of these problems. A HPGe spectrum was synthesized containing a range of typical fallout isotopes and distributed, along with calibration information, to the participant laboratories. The participants were required to submit results within three hours of receipt and with the option of submitting further results within one week. The results provided by the laboratories indicate that all laboratories were able to identify and quantify some of the isotopes but only some labs were in a position to identify and quantify virtually all the constituents of the spectrum. Results indicate that there remain some problems with aspects such as true coincidence summation and using file formats with which labs may not be familiar with. The exercise provided a useful opportunity in exploring the possibilities of using synthetic spectra for exercise purposes and offered participants the chance to practice with the sort of scenario that may result after an accident.

Key words Gamma spectrum, HPGe, coincidence summing, nuclear accident, synthetic spectrum

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