

USING ALPHA AND BETA LIQUID SCINTILLATION COUNTING FOR SAMPLE SELECTION IN DECOMMISSIONING PROJECTS

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During the decommissioning of a nuclear site the operator must assure the protection of the workers and the environment. It must furthermore identify and classify the various wastes, while optimizing the costs. At all stages of the decommissioning radiological measurements are performed to determine the initial situation, to monitor the demolition and clean-up, and to verify the final situation.

To address these various operations, direct measurement methods can be used (onsite gamma or X spectrometry, autoradiography). For clean surfaces, contamination detectors can be used (COMO, LB, etc.). But for soils, especially damp ones, direct alpha or beta measurement can't be performed, preparation is needed.

Radiochemical analysis is crucial for the radiological evaluation of soils contaminated by alpha and beta emitting radionuclides such as plutonium and strontium. These analyses are expensive and time consuming, due to the many chemical preparations steps needed to purify the radionuclide to be measured. A sampling plan is needed to get an accurate characterization of the pollution. In this way, alpha liquid scintillation counting can be a precious tool.

This paper describes a study performed to highlight the capacity of the alpha LSC to detect abnormal counting rates in soils. Standard counting rates has been measured in clean soils then compared to soils containing plutonium and/or strontium. This protocol, including short preparation and high efficiency detection reveal itself useful and time-saving. This study was performed in the SM \square RT mobile laboratories of the expertise platform in Fontenay-aux-Roses.

Country or International Organization

CEA

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