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Type: **Wedge Participant**

Development of compact detectors for gamma-ray and neutron under high dose environment

To further improve effectiveness of safeguards activity, a new detector to enable monitoring of Pu in solutions with numerous FPs is being developed as a joint research program with U.S. DOE at the High Active Liquid Waste (HALW) Storage in Tokai Reprocessing Plant. The HALW contains Pu and FPs and is located inside a thick concrete cell for shielding.

According to the development plan, we have developed a newly customized ion chamber (IC) type of gamma detector in order to understand the actual dose rates and the distributions inside concrete cell through narrow inspection pipe. This IC in the holder which were modified by JAEA can be lowered down directly next to the tank through detector guides manually at different axial positions. JAEA successfully conducted dose rate measurements at various positions using the IC in the holder. These measurements indicated that the dose rate at 1.6 m from the surface of the HALW tank was max approx. 20 Gy/h.

Based on this dose-measurement value, we have also developed a customized B-10 detector which has low gas pressure in order to decrease its efficiency under high radiation environment. JAEA successfully measured neutron count rate at the inside of the concrete cell at some tank. These system and results suggests using not only measuring radiations under high dose environment but also understanding contamination distribution for decommissioning of facilities.

This paper presents the results of dose measurements with the IC and neutron count rate with B-10 detector inside of the concrete cell.

Which "Key Question" does your Abstract address?

NEW1.2

Which alternative "Key Question" does your Abstract address? (if any)

NEW1.6

Topics

NEW1

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