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Operational safety measures taken during dismantling and conditioning of neutron and low activity disused sealed radioactive sources in Cameroon

Under supervision of the International Atomic Energy Agency (IAEA), neutron and low activity disused sealed radioactive sources (DSRS) have been dismantled, conditioned and safely and securely stored within the Cameroon centralized storage facility. Safety measures implemented allow on to dismantle and to load DSRS in two retrievable capsules which have been transferred to the shieldings and then the whole has been transferred to the drums (200l drum for low activity gamma sources and 100l drum for neutron sources). Drums have been locked, sealed and labelled according to the measured dose rates at 1 meter. Security measures within the centralized storage facility included delay and detection measures as well as the response procedure. During the dismantling operations, wipe tests were carried out on the source supports and leads to the conclusion of non-contamination. The contamination was measured using a hand held contamination monitor (RadEye B20). The measured values which were within the interval [0.21-0.46] Bq/cm² are less than the limit value of 4 Bq/cm² from which contamination of source supports may be suspected. Safety measures taken contribute to improve security through the use of adequate seals and lock mechanisms. In addition, the robust and heavy drums used increase the difficulty for an adversary to remove or sabotage the packages. During operations, NRPA carried out individual dosimetry monitoring of international experts and other involved persons. OSL dosimeters have been used to perform individual dosimetry of workers under ionizing radiation during the whole process. Low radiation dose of 0.05 mSv can be measured with OSL dosimeter that was used to control effective dose received by each exposed person. Another advantage of OSL technology is the possibility of proofreading. A total of 12 dosimeters were distributed to workers. These dosimeters were collected at the end of operations and the exposure radiation dose of each involved person was measured and recorded.

Primary author: Dr BEYALA ATEBA, Jean Felix (National Radiation Protection Agency (NRPA))

Co-authors: Dr GUEMBOU SHOUOP, Cébastien; Dr SIMO, Augustin

Presenter: Dr BEYALA ATEBA, Jean Felix (National Radiation Protection Agency (NRPA))

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