

Investigation of the Suspected Radioactive Contaminated Container at the Kribi Deep Seaport - Cameroon

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Given the potential growing of the illicit trafficking of radioactive material in the world, Cameroonian seaports inspect a large number of goods entering and exiting national borders. The Kribi deep seaport (in the South Region of Cameroon) is moving toward inspection of all containers crossing the sea borders of Cameroon. These inspections objective was to identify the most important research initiatives and the major policy issues that need to be addressed in order to improve security of imports and export using shipping containers, particularly against the unauthorized importation and exportation of nuclear and radioactive materials, and contaminated foodstuffs. Following the request of the Commander of Kribi deep seaport for the potential presence of the radioactivity in an export container, a fact finding mission was organized by the National Radiation Protection Agency (NRPA) of Cameroon. The process was triggered following two alarms obtained during two consecutive passages of the concerned container to the Radiation Portal Monitor (RPM) whose orders are held by TransAtlantic S.A. A team of experts from NRPA conducted a safety assessment mission around the said container.

The approach involves container isolation, dose rate measurement around the container (horizontal and vertical measurement by scanning), remote process approach (for reduction of the received dose), determination of the hottest points, identification of the source, opening of the container, sampling and laboratory analysis if necessary. The investigation began at the Radiation Portal Monitor command office and continued to the container by raising the dose values at several points of the container. Two situations were then observed when reading the measured data. Firstly, it was noted a distribution of dose rates with average values ranged between 0.06 and 0.14 $\mu\text{Sv/h}$ for the upper parts of the suspected container, and secondly an area consisting essentially of the base of the container where the dose rates ranged from 0.10 to 0.24 $\mu\text{Sv/h}$. This last value, although lower than the public dose rate limit (0.5 $\mu\text{Sv/h}$), is higher than the action level, which is three times the natural background. This finding motivated further investigations allowing the following conclusion: The material transported in the container FCIU3774607 subjected to the investigations was not radioactive. The radiation that triggered the alarm came mainly from sludge covering the base of the container. It should be noted that the planned nuclear security measures for the scanning of exports through a coupled system of the Sentry Portal Scanner and the Radiation Portal Monitor allow Kribi seaport to guarantee the export of uncontaminated foodstuffs.

This work identified a sample technical approach that is feasible technically and operationally and involves components already in the early deployment stage by the NRPA. A protocol of similar incidents in the future was write and documented in view of improving nuclear security at seaports in Cameroon. As for Kribi deep seaport perspectives will be a question of making arrangements for set up a mechanism to manage the illicit traffic of

radioactive sources and other nuclear material detected during scanning operations and put in place a mechanism for managing food and other consumer products with radioactive contamination, in partnership with the NRPA.