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Gasseous and Liquid Effluent in Radioactive Waste Management Facility

Radioactive Waste Management Facility consists of an evaporator, compactor, incinerator, cementation, ion exchange, and laboratorium. All these unit are located in one building with integrated system monitoring. The release of radioactive substances from the operation of radioactive waste management facility is one of the radiation dose contributors to environment around facility. The Regulatory Body has requirement to carry out continuous discharges monitoring while the facility is in operation condition. The Radioactive Waste Management Facility (IPLR) has carried out direct monitoring of gas effluent with a stack air monitoring unit and an analytical method for liquid effluent sample. The aims of analysis is to determine the level of radionuclide discharges contained in gas effluent into the air and liquid effluent into water bodies. Gas effluent analysis was performed using the iCam Stack Monitor instrument, while liquid effluent analysis was performed using the HPGe detector Multi Channel Analyzer (MCA) instrument. The highest levels of activity concentration in gas effluent were 0.0470 Bq/m3 (for α emitters) and 0.1785 Bq/m3 (for β, γ emitters). The total volume liquid effluent in 2022 is 103 m3 with a total activities: 0.249x105 Bq/year (for Cs-137); 96.07x105 Bq/year (for Co-60); and 65.79x105 Bq/year (for Zn-65). The radionuclide with the highest concentration in liquid effluent is Co-60. Based on the effluent discharges limits in the Safety Analysis Report, the radionuclide concentrations contained in gas and liquid effluents are still below the required limits.

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