13.9 MONITOREO RADIOLÓGICO A LOS EFLUENTES RADIАCTIVOS DE TRES SERVICIOS DE MEDICINA NUCLEAR EN ECUADOR

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ABSTRACT

At some nuclear medicine units of Ecuadorian hospitals there is a lack of data on how efficient is the treatment decay of radionuclide for disposing the wastewater into the sewer system. Herein the objective was to determinate the concentrations of Iodine 131 and Technetium 99 at the sewer system for the calculation of workers exposition scenarios. The monitoring of 92 points for analyzing Iodine 131 was based on gamma spectrometry with Germanium High Purity Detectors. The Iodine 131 dose rate was measured with a Ludlum Monitor and IdentiFinder Detector. At hospital 1, the maximum value for the annual inhalation dose was 7.09 Sv. In contrast, the hospital 2 the annual inhalation dose was 3.67E-05. The workers intake levels were measured for superficial contamination. At hospitals 1, 2 and 3 the intake levels were 2.4E-5 Sv, 4.79E-5 Sv and 9.47 E-4 Sv respectively. At hospital 1, a 91.4% of the liquid samples overdoses the Iodine 131 recommended level. At hospital 2, a 100% of the liquid samples overdose the Iodine 131 regulatory level. However, the modeled exposition scenarios from liquid samples and superficial contamination data show that if a worker stays for short time in the sewer system, the inhalation dose and intake levels for superficial contamination are low.