

ABSTRACT

Nuclear medicine is a specialized field in medical science that utilizes open radiation energy from atomic nuclei to observe organ function, for diagnostic purposes, as well as for therapy for various types of diseases. This procedure is carried out by using the radioactive emissions from specific radionuclides. Any facility that uses radioactive substances must consider the potential hazards arising from the resulting waste, in accordance with applicable regulations, one of which is by implementing radioactive waste management. This study aims to monitor the management of liquid waste containing radioactive substances from Iodine (I-131) ablation therapy at the Nuclear Medicine Unit before the radioactive liquid waste is discharged into the environment, in order to minimize the risk of radiation exposure, reduce environmental pollution, and support the sustainability of ecosystems around the radioactive waste source. The technique used is observation of radioactive waste management activities using a method of calculating radiation exposure rates around the temporary storage of liquid radioactive waste. Based on the results of environmental radiation exposure rate measurements around the temporary storage, the following values were obtained: 0.15 $\mu\text{Sv/h}$ on the east side; 0.17 $\mu\text{Sv/h}$ on the west side; 0.23 $\mu\text{Sv/h}$ on the south side; 0.53 $\mu\text{Sv/h}$ on the north side; and measurements at the inlet and outlet were 0.08 $\mu\text{Sv/h}$ and 0.11 $\mu\text{Sv/h}$, respectively. From these measurements, it can be concluded that the management of liquid radioactive waste at the Nuclear Medicine Installation has complied with the Standard Operating Procedures (SOPs), which directly refer to the applicable regulations.

Keywords: *Liquid Radioactive Waste, Iodine-131, Radiation Exposure Rate*