

ABSTRACT

The implementation of radiation protection plays an important role in the utilization of ionizing radiation to minimize the risk of exposure and maintain the safety of radiation workers, patients, and the public. One of the principles of radiation protection is optimization, which can be implemented through the establishment of Dose Limit Values (DV) as operational limits in controlling radiation exposure in the work environment. This final project aims to analyze the distribution and trends of radiation worker doses and establish DV as an effort to optimize radiation protection in the Diagnostic Radiology Installation of Dr. Kariadi General Hospital. This study was conducted using secondary data from the Thermoluminescence Dosimeter (TLD) evaluation of radiation workers for the period 2021–2025, which included radiologists, medical physicists, radiographers, and nurses. The analysis was carried out by calculating the annual dose, average dose, the third quartile of the dose distribution, and dose margins between professions in accordance with BAPETEN guidelines. The results of the evaluation of worker dose data during the period 2021–2025 show that all worker radiation doses are far below the Dose Limit Value (DV) set by BAPETEN, which is an average of 20 mSv per year for five years. The NPDs obtained for radiologists, medical physicists, radiographers, and nurses were 0.429 mSv, 0.345 mSv, 0.558 mSv, and 0.400 mSv, respectively. However, because the dose margin between professions was less than 1 mSv, a uniform NPD of 0.558 mSv was determined based on the highest third quartile value. These results indicate that the radiation exposure conditions of workers are still at a safe and controlled level. Thus, the determination of the NPD of 0.558 mSv can be used as an instrument to optimize radiation protection and evaluate the control of continuous radiation exposure in the Diagnostic Radiology Installation of Dr. Kariadi General Hospital.

Keywords: Radiation Protection, Dose Limit Values, TLD, Radiation Workers, Radiology