

ANALISIS FAKTOR-FAKTOR YANG BERHUBUNGAN DENGAN DOSIS RADIASI EKSTERNA PADA PEKERJA RADIASI

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RADIATION DOSE ON WORKERS

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SUMMARY

ANALYSIS OF FACTORS ASSOCIATED WITH EXTERNAL RADIATION DOSE ON WORKERS

The widespread usage of radiation in several fields with possibility of exposure to human will cause the occurrence of radiation risks, so that it is important to provide protective measures to both employers who involved in radiation installation and public society in order to prevent the damage effects of radiation. The decision of The Head Supervision of Nuclear Energy No.01/Ka- BAPETEN/V-99, ionizing radiation, further called as radiation is an electromagnetic wave and loaded particle where its energy capable of ionizing any medium its passed (Government Rules No. 33/2007). Radiation is both emission and energy spreading through space (medium) in electromagnetic wave or particles with very high kinetical wave released from any materials or radiation devices used by any installation in hospital (Kepmenkes RI No. 1204/Menkes/SK/X/2004). The aim of the study is to analyse factors related to external radiation expose dosis received by workers in radiology section caused by interaction with radiation source in their work environment. In hospital, there are several medical service units, one of them is radiology service unit utilizing X-Ray where in advanced being used to diagnose, disease therapy, etc. In operation, radiation devices producing ionizing radiation scattering in room, while provide positive effects to help the diagnose of any disease, its potentially provide negative effects when the radiation is above the permittable levels. This study is belong to descriptive study aimed to studying radiation exposure among radiological workers relating to time, distance, shielding, frequencies to the amount of radiation received by workers and based on the fact collected from the field. According to the design, this study belongs to observational study cause only observed radiological workers without any treatment to study samples. While based on the time, this study was belong to cross-sectional study observed relation of radiological workers to its job and work environment influenced on dosage levels of radiological workers. Radiology service in hospital is unseparatable section of medical service as a whole. It is one of determine factors of service quality and the image of hospital in society. In this global era, radiology service has been classified to two procedures, in general, diagnostic and interventional procedures. Radiational service period is time required by radiological workers in radiology room in provide radiational service to patients. Their ability to efficiently spend their time as efficient and short as possible in order to minimize any radiation exposure effects reached cause it is important for the safety of workers from any dangerous effects

of radiation on their health. Workers who ignore their expose time to radiation by being around the source for a long period, potentially have higher level of radiation dosage than those who spend less time in their exposure. Keep away from source is one of strategy to self-protection from radiation source. This action will increase radiation level received by workers, in contrast those who keep their distance to source will reduce the radiation level they had. Shielding wear in fluoroscopy process would determine radiation level received by workers. Those workers who keep wear shielding in their work could avoid themselves from higher contamination of radiation. However, according to research of shielding usage in radiological work by these workers has no significant effect on radiation level decreased received by the workers. Radiation service frequency performed by radiological workers who spend more time in fluoroscopy job tend to cause higher radiation levels. Radiation level of radiation device around radiological workers has no significant effect on radiation level received by workers. Those workers who more discipline in wearing selfprotection device in their fluoroscopy job will be able to avoid themselves from higher radiation level. Conversely, those who ignore this thing would potentially have higher radiation level of contamination.

ABSTRACT

ANALYSIS OF FACTORS ASSOCIATED WITH EXTERNAL RADIATION DOSE ON WORKERS

Nuclear technology or radiation have been used in life including agricultural, health and industry. However, other than positive effects, nuclear power have also radiation hazard to workers, society and environment when ignore nuclear safety in the usage. In perform this, those workers related to radiation source or radioactive substances. So, the potention of radiation exposures to workers either internal or external are high. It could caused health problem so that it needed better monitoring of radiation level both on workers and their work environment to avoid radiation level above allowable levels. This study was aim to review factors related to external radiation level received by radiological workers caused by interaction between these workers and their work and working environment. Results of statistical test showed that age, sex, education have no significant relation to radiation level, while work procedure, supervis ion and working area of environmental radiation exposure, have significant effect on external radiation level. So for the competent institutions to take steps to reduce radiation exposure in the workplace and more attention / monitoring of radiation workers in doing the work to follow established work procedures and medical examinations for radiation workers who received larger doses. The levels of radiation were determined by usage frequency, intensity of radiation, function and health service facility and radiological service facilities. Therefore, every workers always have radiation exposure risk of ionizing radiation during their job. In order to guarantee both safety and health of workers, society and environment, the employees who performed installation from every usage of nuclear energy activities potentially causing radiation level should following safety and health measures as followed: Justification, Limitation, Optimalization. Remembering that radiation could

provide health problems, radiation usage need to be monitored, either through legislations related to radiation substance and radioactive usage, as well as regulation body that have responsibility to the legislation. Effectivity and efficiency of service period need to be more increased in order to get more control in radiation levels of workers received. Management keep make their workers to stay aware in wearing radiation shielding though it showed no significant effects.

Keywords: Radiation dose to workers, factors related and Threshold Value in Allow All

