



INTISARI
PENGUJIAN *SHIELDING* RADIASI
UNTUK FASILITAS CTSCAN SINAR-X 3D

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Telah dilakukan pengujian terhadap rancangan tameng (*shielding*) radiasi sinar-x berbahan *paving block* untuk fasilitas CTScan. Pengujian dilakukan dengan melakukan pengukuran laju dosis radiasi sinar-x pada enam belas titik (I_0 - I_{15}) kemudian dibagi menjadi tiga area (A, B dan C) yang mencakup sekitar fasilitas CTScan yang telah diberi *shielding* dan ruang kontrol alat tersebut (lokasi peneliti). CTScan tersebut diatur pada tegangan sebesar 200 kV, arus 5 mA dan waktu paparan 0,2 menit. Penelitian ini bertujuan untuk mengetahui efektifitas penggunaan bahan *paving block* sebagai *shielding* dalam menyerap radiasi sinar-x yang diwakilkan dengan nilai koefisien attenuasi (μ) dan mengetahui hubungan antara laju dosis radiasi sinar-x dengan kuadrat jarak sumber radiasi.

Hasil penelitian menunjukkan nilai μ *shielding paving block* di area **A** sebesar $0,62 \pm 0,01 \text{ m}^{-1}$ yang mampu menyerap radiasi sinar-x sebanyak 20%, di area **B** sebesar $4,78 \pm 0,05 \text{ m}^{-1}$ yang mampu menyerap radiasi sinar-x sebanyak 85,3%, dan di area **C** sebesar $0,89 \pm 0,03 \text{ m}^{-1}$ yang mampu menyerap radiasi sinar-x sebanyak 24%. Selain itu, dapat diketahui bahwa laju dosis pada suatu titik (I_x) semakin kecil dengan bertambahnya jarak R terhadap sumber.
Kata kunci: *Shielding, paving block*, sinar-x, koefisien attenuasi



ABSTRACT

TESTING ON RADIATION SHIELDING FOR 3D XRAY CTSCAN FACILITY

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The radiation shielding testing has been carried out on an x-ray shielding made from paving blocks for a CTScan facility. The test was carried out by measuring the dose of x-rays radiation at sixteen points (I_0 - I_{15}) then divided into three areas (A, B and C) which included around the CTScan facility that had been shielded and the control room of the device (location of the researcher). The CTScan is set at a voltage of 200 kV, a current of 5 mA and a exposure time of 0.2 minutes. This study aims to determine the effectiveness of paving block materials as shielding in absorbing x-ray radiation represented by attenuation coefficient (μ) and knowing the relationship between x-ray radiation dose rates and the square of the radiation source distance.

The results of this study indicate that the value of μ paving blocks shielding in area A of $0.62 \pm 0,01 m^{-1}$ is able to absorb x-ray radiation as much as 20%, in area B $4,78 \pm 0,05 m^{-1}$ is able to absorb x-ray radiation as much as 85.3%, and in area C of $0.89 \pm 0,03 m^{-1}$ is able to absorb radiation x-rays as much as 24%. In addition, it can be seen that the dose rate at a point (I_x) is getting smaller with increasing distance.

Key words: Shielding, block paving, x-rays, attenuation coefficient