

**PENGUJIAN EFEKTIVITAS PERISAI RADIASI  
DAN EVALUASI PENERAPAN PROTEKSI RADIASI  
DI INSTALASI RADIOLOGI RSUD PROF. Dr. MA HANAFIAH SM  
BATUSANGKAR**

**SKRIPSI**



**DEPARTEMEN FISIKA  
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM  
UNIVERSITAS ANDALAS  
PADANG**

**2023**

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**Karya tulis sebagai salah satu syarat untuk  
memperoleh gelar Sarjana Sains  
dari Universitas Andalas**



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**ABSTRAK**

Telah dilakukan penelitian tentang pengujian efektivitas perisai radiasi dan evaluasi penerapan proteksi radiasi di Instalasi Radiologi RSUD Prof. Dr. MA Hanafiah SM Batusangkar. Instalasi radiologi terdiri atas 3 ruangan yaitu ruangan *CT-Scan*, *dental panoramic*, dan sinar-X konvensional. Penelitian bertujuan untuk menguji efektivitas perisai radiasi, mengevaluasi fasilitas proteksi radiasi, dan mengevaluasi laju dosis radiasi yang diterima pekerja radiasi. Pengujian efektivitas perisai radiasi dilakukan dengan cara mengukur dosis radiasi sebelum dan setelah melewati perisai radiasi menggunakan TLD-100. Evaluasi fasilitas proteksi radiasi dilakukan dengan cara mengamati secara langsung ruangan radiologi. Evaluasi laju dosis radiasi yang diterima pekerja radiasi dilakukan dengan cara mendata laju dosis yang diterima pekerja radiasi yang terukur pada TLD *badge* selama bulan November 2022-Januari 2023, kemudian dilakukan wawancara terhadap pekerja radiasi terkait proteksi radiasi. Hasil pengujian efektivitas perisai radiasi menunjukkan persentase tertinggi terdapat pada ruangan *CT-Scan*, nilai persentase efektivitas diperoleh >80%. Nilai efektivitas perisai radiasi pada ruangan *dental panoramic* diperoleh >47% dan ruangan sinar-X konvensional diperoleh >74%. Hasil evaluasi fasilitas ruangan radiologi secara umum telah memenuhi ketentuan Peraturan BAPETEN No. 4 Tahun 2020. Nilai laju dosis radiasi yang diterima pekerja radiasi sebesar (0-0,132) mSv/tahun, dan masih berada di bawah nilai yang ditetapkan oleh PERKA BAPETEN No. 4 Tahun 2013 sebesar 20 mSv/tahun.

Kata kunci: instalasi radiologi, laju dosis radiasi, pekerja radiasi, perisai radiasi, proteksi radiasi

**THE EFFECTIVENESS TESTING OF RADIATION SHIELDING AND  
EVALUATION OF RADIATION PROTECTION IMPLEMENTATION  
IN RADIOLOGY INSTALLATION RSUD PROF. Dr. MA HANAFIAH SM  
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**ABSTRACT**

The research has been conducted on the effectiveness testing of radiation shielding and evaluating the application of radiation protection in the Radiology Installation of Prof. Dr. MA Hanafiah SM Batusangkar Hospital. The radiology installation consists of 3 rooms, namely the CT-Scan, dental panoramic, and conventional X-ray rooms. The study aims to test the effectiveness of radiation shielding, evaluate radiation protection facilities, and evaluate the radiation dose rate received by radiation workers. The effectiveness testing of radiation shielding is done by measuring radiation dose before and after it passed through radiation shielding using TLD-100. Evaluation of radiation protection facilities was conducted by directly observing the radiology room. Evaluation of the radiation dose rate received by radiation workers was carried out by recording the dose rate received by radiation workers measured on the TLD badge from November 2022 to January 2023, then interviews were conducted with radiation workers related to radiation protection. The results of the effectiveness testing of radiation shielding show that the highest percentage is in the CT-Scan room, the percentage value of effectiveness is obtained > 80%. The effectiveness value of radiation shielding in the dental panoramic room was obtained >47% and in the conventional X-ray room was obtained >74%. The evaluation results of radiology room facilities in general have met the conditions of BAPETEN Regulation No. 4 of 2020. The value of the radiation dose rate received by radiation workers is (0-0.132) mSv/year, and it is below the value set by PERKA BAPETEN No. 4 of 2013 of 20 mSv/year.

**Keywords:** radiology installation, radiation dose rate, radiation worker, radiation shielding, radiation protection