

Studi emisi gas radon dan thoron pada bangunan tua di DKI Jakarta dengan menggunakan durridge RAD 7

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Abstrak

Telah dilakukan sebuah studi penelitian tingkat konsentrasi gas Radon dan Thoron pada gedung tua yang berada di DKI Jakarta. Konsentrasi gas Radon dan Thoron diukur dengan monitor Radon DURRIDGE RAD7 yang menggunakan detektor alfa semikonduktor untuk mencacah partikel alfa yang dipancarkan oleh gas Radon. Tempat pengukuran dilakukan di gedung tua di DKI seperti Museum Nasional, Fatahillah, Museum Keramik, Museum Wayang, Gedung Kesenian Jakarta dan 1 gedung baru sebagai perbandingan, selama kurang lebih 60 hari. Monitor Radon ini diletakkan pada 1 m dari lantai selama 2 jam/titik sampel. Konsentrasi rata-rata Radon dan Thoron di bangunan tua berkisar antara 2.82 - 12.62 Bq/m³. Konsentrasi Radon yang tertinggi adalah 12.62 Bq/m³ yang diperoleh pada pengukuran di Museum Nasional lantai 3 yang beruangan AC. Dosis gas efektif tahunan Radon yang masuk kedalam saluran pernafasan pada manusia di bangunan tua sebesar 0.16 mSv/thn. Sedangkan untuk Thoron sebesar 0.14 mSv/thn. Dosis efektif tahunan ini masih bawah ambang batas yang diijinkan, sehingga masih aman bagi manusia yang berada di bangunan tersebut.

<hr>A study on Radon and Thoron emission has been done on several antiquated building in Jakarta dated back to 17-19th century. Radon and Thoron concentration were measured using DURRIDGE RAD 7 Radon Monitor that has a semiconducting alpha detector and counter. Locations were chosen as the National Museum, the Fatahillah Museum, the National Ceramic Museum, Jakarta Art Performance Building (GKJ) and one new building as a comparison. Measurements were done during the course of 60 days. The Radon Monitor were placed 1 m above the floor for at least 2 hours per sample point. The average readings for all building were found to vary between 2.62 – 12.62 Bq/m². The highest reading were taken from 3rd floor of the National Museum which is used for office use and fully airconditioned. The average annual Radon effective dose through human respiration were calculated to be 0.16 mSv/year while for Thoron were found to be 0.14 mSv/year. These two numbers were below safe allowed thresholds.