ผลของการแผ่รังสีการกระเจิงในอากาศและ Slap Phantom สองประเภทระหว่าง PMMA และ Phantom น้ำ ISO สำหรับการสอบเทียบเครื่องวัดปริมาณรังสีส่วนบุคคล

Effect of the Scattering Radiation in Air and Two Type of Slap Phantom between PMMA and the ISO Water Phantom for Personal Dosimeters Calibration

ช่วงเวลาดำเนินการ ปี พ.ศ. 2560

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รายละเอียดสรุป

The calibration of personal dosimeter to determine the quantities of the personal dose equivalent, Hp(d), is required to be placed on a suitable phantom in order to provide a reasonable approximation to the radiation backscattering properties as equivalent as part of body. The dosimeter which is worn on the trunk usually calibrated with slap phantom which recommended in ICRU 47 with dimension of 30 cm (w) x 30 cm (h) x 15 cm (t) PMMA slab phantom to achieve uniformity in calibration procedures, on the other hand the International Organization for Standardization (ISO), ISO 4037-3, proposed the ISO water slap phantom, with PMMA walls, same dimension but different wall thickness (front wall 2.5 mm and other side wall 10 mm thick) and fill with water. However, some laboratories are still calibrating a personal dosimeter in air in term of ambient dose equivalent, H*(d). This research study the effect of the scattering radiation in two type of those slap phantoms and in air, to calibrate two type of OSL (XA and LA) and electronic personal dosimeters. The X-ray and Cs-137 radiation field with the energy range from 33 to 662 keV were used. The results of this study will be discussed.

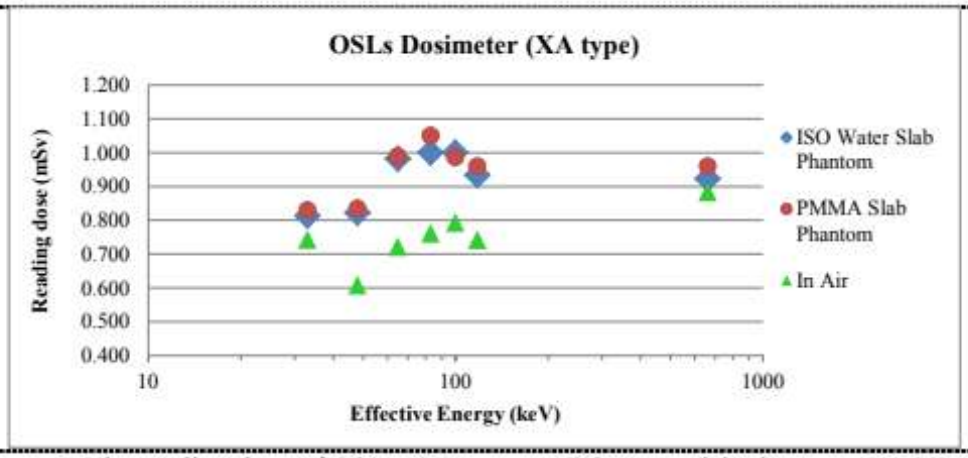

Figure 1. The reading dose of OSLs, XA type on ISO water slab phantom, PMMA slab phantom and "in air" condition.

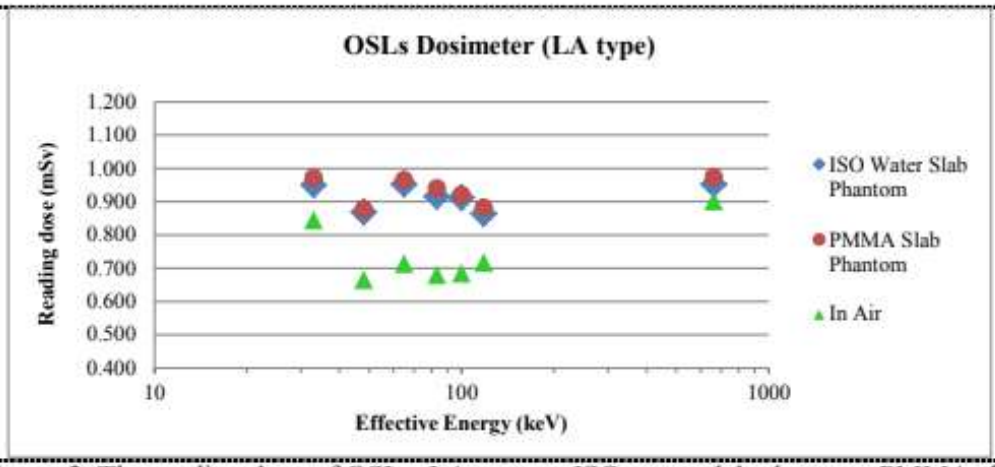

Figure 2. The reading dose of OSLs, LA type on ISO water slab phantom, PMMA slab phantom and "in air" condition.

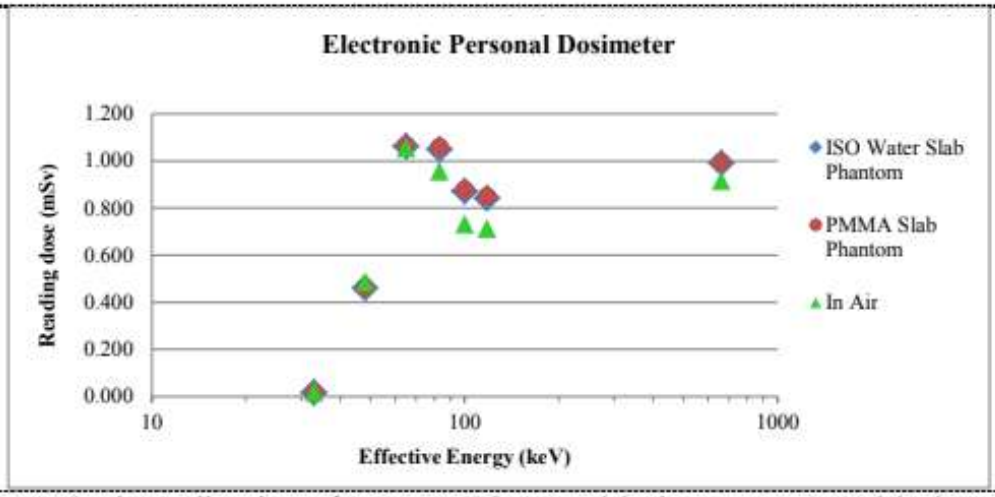

Figure 3. The reading dose of EPDs on ISO water slab phantom, PMMA slab phantom and "in air" condition.