

# ガラスバッジ、電子線量計または OSL 線量計を使用した原子力産業従事者の光子被ばくに対する線量計レスポンス試験

Experiments on dosimeter response to photon exposure for nuclear industry workers with glass badge, electronic personal dosimeter or optically stimulated luminescence dosimeter in use

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## Background

Japanese nuclear workers cohort study has been conducted since 1990 and analyzed radiation risk in association with H<sub>p</sub>(10). However, evaluation of risks using organ absorbed dose is recommended. In addition, data from the National Cancer Registry became usable in Japan.

The most comprehensive preceding study on reconstructing organ dose was the Study of Errors in Dosimetry under the framework of the IARC 15-Country Collaborative Study, which conducted experiments on dosimeter response to photon exposure for three types of dosimeter used before 1990s. These data were useful for the Japanese study but not sufficient. Usage of dosimeters in Japan developed from those to glass badge (GB), electronic personal dosimeter (EPD) or optically stimulated luminescence (OSL) dosimeter in around 2000.

## Aim

To describe the experiments on dosimeter response for GB, EPD and OSL dosimeter.

## Materials and Methods

Following the IARC's approach, the experiments on dosimeter response were carried out within the two laboratories of JAEA. X rays of N-150 and N-250, and <sup>137</sup>Cs source were used. Three types of dosimeters were selected for the study.

To simulate working conditions, combinations of a specific photon energy; 119 keV, 207 keV and 662 keV, and a specific geometry; AP and ISO geometry, were applied for RANDO phantom set up on the horizontally rotating device with an angle between the rotation axis and the source.

## Results

Data on dosimeter response to air kerma were calculated along with uncertainty, which were compatible with IARC's data.

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