

SKIN DOSE ESTIMATES FROM RADIOACTIVE SKIN CONTAMINATION

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ABSTRACT

ICRP has established a secondary dose equivalent limits based on the deep dose equivalent index for the stochastic effects and the shallow dose equivalent index for the non-stochastic effects. One important contribution to the shallow dose equivalent is that from the radioactive skin contamination. Although skin dose estimates from such contamination are only regarded as qualitative procedures due to the imprecise measures of the percutaneous absorption of contaminants, the assessed result should be included in the individual's personal record if it exceeds one-tenth of the appropriate dose equivalent limits. In this work, we have examined the effects of the percutaneous absorption of pig's skin for several radioactive compounds both in the dry state and the aqueous state of different pH values. A practical methodology has been developed for determining the maximum beta-ray energy and the skin dose equivalents at various depths based on the Loewinger formula and the depth-activity distribution according to the percutaneous absorption data.