

## A Proposal of Standard of Radioactivity of Patient Permitted to Release from Radioactive Ward

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An individual who have received a radionuclide may be a source of undesirable radiation to other persons. If both non-radioactive and radioactive persons are confined to bed in a room, exposure is practically continuous. Radiation exposure (D mrem/mCi) of non-radioactive person is estimated as follows.  $D_{\text{external}} = \frac{\Gamma}{r^2} \int_0^{\infty} e^{-\lambda t} dt$  ( $\Gamma$ : specific gamma-ray constant,  $r$ : distance from radioactive patient,  $\lambda$ : decay constant)  $D_{\text{internal}} = \frac{10^{-4}}{dmp} \frac{1}{n_i v_i} \int_0^{\infty} e^{-\lambda t} dt$  (dmp: maximum permissible concentration,  $v$ : volume of the room,  $n$ : number of ventilation).

Radioactive patient should not be released from radioactive ward until the radioactive content is small enough that exposure of non-radioactive

person does not exceed the dose limit in a year.

In order to estimate the ratio contributing to the internal exposure, two experimental studies were carried out. On patient with hyperthyroidism activities in urine, blood, saliva and sweat were measured periodically after administration of therapeutic amount of radioiodine. Activity in sweat was estimated about the order of one tenth of urine. Radioiodine leakage rate to the air from filter-paper was also measured.

A standard of radioactivities permitted to release from radioactive ward to the home and to the non-radioactive hospital room is proposed for ten radionuclides.