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Radiation dose to the iodine ward staff of the National Cancer Institute (NCI), Maharagama

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Oral administration of radioiodine is a standard treatment for thyroid carcinoma. Precautions are necessary to limit the radiation dose to family members, nursing staff and members of the public. Patients receiving 100 mCi of radioiodine are confined as in-patients at the NCI to limit this dose. Harshaw thermoluminescent dosimeters (TLD) placed in the walls at various locations of the iodine ward were used in four groups, each group consisting of five patients warded for a period of 5-6 days to determine the cumulative dose to the nursing staff who may come in contact with a patient. The cumulative dose measured from the patient ward ranged from 0.44-2.43 mSv over a period of 5-6 days. Considering the upper value the corresponding dose to a nurse caring a totally helpless patient would be 0.10 mSv per week taking the time spent to be 60 min per day as given in the Aberdeen formula. The cumulative dose measured from the nursing station over a week was 0.11 mSv. The work schedule for a nurse in this ward is 8 h per day for a 5 day working week. At the NCI iodine ward patients in - house stay is for a period of 26 weeks y^{-1}. Considering the hypothetical situation of an extreme case where the same nursing staff work in the iodine ward for 26 weeks each would receive 2.86 – 5.48 mSv y^{-1} depending on patient contact time and is within the ICRP 60 and local regulatory recommended dose limit of 20 mSv y^{-1} for occupationally exposed personnel. An average dose of 0.12 mSv was measured by a GRAETZ X5DX dose rate meter during a shift lasting around ~5 min by radiographers who administer the radioiodine to each group of patients. As radioiodine is administered once in a fortnight if the same radiographer carries out both administrations the dose received would be 0.24 mSv per month and 3.12 mSv y^{-1} and is within the recommended dose level allowing him to be engaged in other radiography duties during a given year.

This study reveals that the dose to both radiographers and nurses at the iodine ward are within the 20 mSv y^{-1} recommended dose for occupationally exposed groups and the working conditions and precautions taken at the NCI are adequate and meet the regulatory requirements with regard to radiation protection