

BODY BURDEN OF  $^{137}\text{Cs}$  AND THE RADIATION DOSE OF  
A POPULATION GROUP IN FINNISH LAPLAND

Tua Rahola and J.K.Miettinen  
Department of Radiochemistry  
University of Helsinki

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ABSTRACT

Higher radionuclide contents in the biota of Lapland than in that of southern Finland and other non-arctic areas have been observed, despite the obviously lower fallout deposition in Lapland. Since 1961 the  $^{137}\text{Cs}$  body burden of Finnish Lapps has been estimated by using a mobile whole-body counter. These measurements have been performed every spring but only two times also in the autumn, in 1962 and 1969. A change of seasonal variation is now noticed and reported in this paper.

The average maximum whole-body burden of the highest exposed group of male reindeer herders was found in the year of maximum values, 1965, to be 1.5  $\mu\text{Ci}$ , while the highest individual value was about 3  $\mu\text{Ci}$ . In March 1969 the corresponding values were 0.52 and 1.1  $\mu\text{Ci}$ , in September 1969 0.45 and 1.2  $\mu\text{Ci}$  and in March 1970 0.49 and 1.2  $\mu\text{Ci}$ . The autumn value of the male reindeer herder group was now 84 per cent of the spring value while it was in 1962 61 per cent.

The annual radiation dose of reindeer herders from  $^{137}\text{Cs}$  was in 1969 about 60 mrem/y. The integrated dose to the present generation of reindeer herders (1955-1985) is estimated to be about 1 rem/30 years, if no major changes in the fallout situation will take place. The dose from other artificial fallout nuclides will be much smaller than this. For southern Finns the dose from  $^{137}\text{Cs}$  is estimated to be 0.025 rem/30 years. An estimate of the total radiation dose to be delivered to the Lapps between 1955-1985 is given. The dose commitment to this population from the natural radionuclide  $^{210}\text{Po}$  is exceptionally high, of the order of 3 rem/30 y.

It can be noticed that the contribution of the natural radiation sources to the total dose of the present generation will be significantly greater than that of the artificial sources even in the group of reindeer herders.