

Thyroid Cancer Incidence Among People Who Lived in Ozyorsk (Chelyabinsk-65) as Children

N.A. Koshurnikova^a, N.S. Shilnikova^a, N.P. Petrushkina^a, P.V. Okatenko^a, V.A. Privalov^b, S.V. Iaitsev^b, D. Preston^c, E. Ron^d. ^aBranch # 1 of the State Research Center “Biophysics Institute”, Russia; ^bChelyabinsk State Medical Academy, Russia; ^cRadiation Effects Research Foundation, Japan; ^dNational Cancer Institute, USA

The city of Ozyorsk (former Chelyabinsk-65) is located near the Mayak complex, the first Russian nuclear facility, which became operational in 1948. Especially during the early years of Mayak’s operation, when the filtration of nuclear releases was imperfect, the population of the city was exposed to radiation from radioactive atmospheric emissions. The highest radiation doses to the public came from the radioactive iodine in the radioactive releases. Because of the well-known strong association between thyroid cancer and childhood exposure to external radiation (UNSCEAR, 1994) and the recent reports of large increases in thyroid cancer associated with internal exposure from radioactive iodine releases during the Chernobyl accident (Karaglou et al, 1996), we evaluated thyroid cancer incidence among Ozyorsk residents.

Thyroid cancer incidence was determined using our registry of children who once lived in Ozyorsk. This registry includes all individuals who were born in Ozyorsk after 1948 or moved to Ozyorsk after 1948 before they were age 15 years. To identify thyroid cancer cases, we selected approximately 19,500 individuals who are still living in Ozyorsk. Twenty-nine cases of thyroid cancer (22 women, 7 men) were ascertained: 19 papillary cancers, 9 follicular, and 1 other. More than half of the cases were diagnosed under the age of 40 years; the mean age was 36 years for females and 39 years for males. Using Russian national incidence data to calculate the expected number of thyroid cancers, preliminary analysis suggests that thyroid cancer incidence in the study cohort is three times higher than in the general population. No thyroid cancers were diagnosed under the age of 20, however only 0.3 would have been expected. The findings from this study are limited, because thyroid cancer national incidence rates are not available for all years or all ages and because currently we do not have data on radiation doses received by the population of Ozyorsk. These preliminary results, however, do indicate the importance of continuing epidemiological studies of exposed children and of estimating radiation doses.