

RADON AND REPRODUCTIVE HEALTH OF POPULATIONS LIVING IN THE REGIONS OF URANIUM MINERS ON NORD CAUCASUS.

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1. The estimation of the combined influence of technogenically increased natural background made by human activities and radon on the health in current and future generations of people is of great importance. A particular interest is the investigation of population exposure fraught with medical effects in the areas where the constructed houses were build with materials containing the higher doses of natural radionuclides emanating radon and its daughter products of disintegration.

2. One of the areas with the increased irradiation of the population due to Rn and its daughter products is the town of Lermontov. It is situated in the centre of the region of the Caucasian Mineral Waters. It is the territory of the Mineral Waters foothills plain near the mountain Beshtow (the hight is 1200 m).

3. The inhabitancy of this town are workers of the uranium output and processing enterprises. In the past for the house construction especially for the private living blocks, the local raw materials having the higher quantity of radionucleids were widely used as a material for building up houses.

4. From the date of the foundation of the town in 1957 to 1994 the number of its population increased from 11000 to 24300. The growth of the population in average is 300 persons per a year, with the natural growth being 100 - 200 persons a year. The most part of the population deals with the uranium output and processing industry (within 1952 - 1991).

5. The range of gamma-background in the town of Lermontow is 10 - 120 $\mu\text{R/h}$, with the mean Russian index being $\mu\text{R/h}$. In addition, the higher level of emanating Rn from the soil reaching 4,5 Bq/m^2 per a second was observed. The high concentrations of Rn and its daughter products were found out in the living blocks of houses in the town of Lermontov.

6. The content increasing the level of 200 Bq/m^3 in the living flats on the ground floor of the multiflact houses was shown by the long-term control (the total number of analysis is over 2000) to be recorded in more than 50% flats examined, with the five-fold increase being (1000 Bq/m^3 and more) observed in 10% investigated living accommodations. In the air of the living accomodations analysed in 1994 the equivalent equilibrium volume activity of Rn was between 5 - 913 Bq/m^3 and that of toron is within the range of 0,3 - 17,2 Bq/m^3 . The maximum indices increase as high as 25 times the Russian standards for Rn daughter products as tot the toron product standard the index is 5,7 times higher.

7. Thus, in the town of Lermontov where for a very long term (during the three generations) the stable (in the migration aspect) population is living, there is a unique opportunity for making radiological, hygienic, clinical, epidemiological investigation together with scientists of different countries in the great schedule.

8. The results of epidemiological observations of uranium miners living in the houses with the higher Rn concentrations (that is they were under chronic influence of Rn and its daughter products for less then 20 hours

per a day are given. Besides, their families were also under the chronic influence (in less doses) of Rn and its daughter products.

9. The oncological mortality in the town of Lermontov for the last years was estimated to be higher in comparison with that of the town population in the Stavropol Kray. Particular attention is drawn to the fact of raising the death rate from pulmonary cancer.

10. It was an attempt to determine the exposure of Rn daughter products on the reproductive health of the population that was first made in studying the Rn influence.

11. The main indices of reproductive health are as follows: health status of the pregnant women, untoward outcomes of pregnancy (miscarriages and spontaneous abortions, premature born children, stillbirths, early neonatal and perinatal death of the newborns), the status of health of the newborns including the estimation of the frequency and character of congenital pathology. On the strength of all the aforementioned evidence it is possible to forecast the consequences of radiation on the health status of the current and future generations.

12. The results of the first step of the investigation made in 1994 - 1995 are full of discrepancy: namely, the rate of stillbirths is less, but there is a growth of newborn with normal adaptive weight (2500 g - 3499 g) and there is an increase of morbidity among the hypoxia and asphyxia (1,49%) and cephalohaematomes (5,24%). The frequency of congenital anomalies in newborns of the town of Lermontov increased 54% in 1993 compared to 1987.

13. The investigation performed between 1982 - 1994 showed the unfavourable medico-demographic evidence in the town of Lermontov: the decrease in the birth-rate, the growth of total and oncological mortality, first of all due to lung cancer.

14. For the determination of the extent of correlation of the mentioned tendencies connected with the radioecological surrounding in the town of Lermontov the further investigations both in finding out the houses with Rn higher concentration and in estimating the health status of the population living in those houses remain to be arranged.