

project Accomplishment of territory: 53% of respondents want to see in their backyards separate sports field for soccer, basketball and other outdoor games. 67% of respondents noted that the themed playground is of interest for the development of children's fantasy and fairy tale image improves the perception of the territory. Just ask to pay attention to landscaping, as it is often overgrown with grass area, there are no beds. 17% say there is no organized parking in the yard. 100% of men said that they need parking for cars, 17% of women against the separate place for parking cars, 62% of respondents among the female population still consider it necessary to do so. [2]

However, the information provided gives only a superficial assessment of the situation, they missed the personal relationships of different groups of the population to the present situation, as well as opinions on future developments that will affect the national project of improvement of modern cities. Thus, we conducted a case study is a step towards better relations in society, greater understanding between the authorities and the population of the city, raising the ratings of influence and trust in the local authorities. Diagnosis of existing problems, timely proposal to resolve conflicts – the basis of social harmony and the common rhythm of life in the city.

The government should pay attention to even minor problem in the Accomplishment of territory and encourage citizens to contribute their decision. One means of citizens' participation in the project is the improvement of adjacent territories contest. To summarize this work, we would like to note the following:

In 2015, Naberezhnye Chelny won the national contest "The most comfortable item of Tatarstan in the category of cities with a population of over 100 thousand people", carried out by the Ministry of Construction Architecture and Housing and Communal Services of the Republic of Tatarstan. As well as the interaction of various social institutions of the city will help in the formation of spiritual and moral culture of the younger generation [4, 5].

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ACCUMULATION OF RADIONUCLIDES IN NATURAL OBJECTS IN CENTRAL PART OF MURMANSK REGION

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The work presents results of research, carried out in central part of Murmansk region, area of Kolskaya nuclear power station. Distribution of natural and anthropogenic radionuclides in soil profile and their accumulation in plants has been studied.

Enterprises of mining and metallurgic industry, base of Northern fleet, objects of storing radioactive wastes and processed nuclear fuel are located in Murmansk region, Kolskaya NPS is also placed in it, and it can be considered as an object of potential radioactive hazard for people and natural environment [2]. Kolskaya NPS is the first nuclear power station in Russia, constructed outside Polar circle. It is located at the bank of lake Imandra, 11km away from its satellite town Polarniye Zori and 170 km away from the regional center – the city of Murmansk [1]. The nuclear power station was erected in 1973–1984 and now has 4 power blocks with reactors of WWER in exploitation, power of each one equals 440MVt [6].

Many years of experience in ecological researches, carried out in the region of Kolskaya NPS, testify for a lack of any significant changes in radioactive background in the region of its location [3]. However, until modern days no detailed study of radionuclide accumulation in vegetative surfaces have been carried out.

Objects and methods. Objects of the research are: soil (illuvial-chalybeate and illuvial-humus-chalybeate podzols, small-podzol and tiny soils, and also sandy soils on boulder rocks) and components of vegetation – blackberries (*Vaccinium myrtillus* L.), birch trees (*Betula pendula* Roth. X *Betula pubescens* Ehrh.), and reindeer lichen (*Cladonia stellaris* (Opiz) Pouzar & Wezda).

Selection of samples has been carried out during 2009–2014 at 10 stationary sample areas that represent pleurocarpous moss lichenous blackberry pineries. Areas were located within the area of observation, at distance of 10–15 km from Kolskaya NPS.

Radiometrical filming of the territory was carried out via searching radiometer SRP-68-01 and dosimeter-radiometer DRPB-01. Samples of soil and vegetation were selected in accordance with general requirements of sample selection [7].

Evaluation of exposition dose power (EDP, mcZv/h), total specific α - β - γ -activity in probes was carried out via radiometrical method. Concentration of natural (^{226}Ra , ^{232}Th and ^{40}K , Bq/kg) and anthropogenic (^{137}Cs , Bq/kg) radionuclides was carried out via gamma-spectrometric method [4].

Results and discussion. As a result of the research, we have established that natural radioactive background at territories, located in the area of KNPS observation, was within 0.10 mcZv/h , whilst outside the area of observation this index did not exceed 0.09 mcZv/h . EDR at the surface of wet and aerial-dry mass of vegetative samples equaled 0.15 mcZv/h . These indexes do not exceed EDR, suitable for population of open space (0.2 mcZv/h) and correspond to low levels of ionizing emission (range of small doses for live objects is located within $0.2\text{--}0.5 \text{ Zv}$) [5].

Specific α - β - γ -activity of soil and vegetative objects varied in dependence on location of sampling areas, it was defined by different accumulation of radionuclides. The studied objects contained natural ^{226}Ra , ^{232}Th и ^{40}K radionuclides and anthropogenic – ^{137}Cs .

Distribution of natural and anthropogenic radionuclides according to soil profile is displayed. An increased concentration of the following radionuclides has been registered in composition of primary minerals of soil-forming grounds: ^{226}Ra ($9\text{--}13 \text{ Bq/kg}$), ^{232}Th ($8\text{--}10 \text{ Bq/kg}$) and ^{40}K ($420\text{--}430 \text{ Bq/kg}$). Increasing concentration of ^{137}Cs was, quite oppositely, observed in organogenous soil horizons ($40\text{--}50 \text{ Bq/kg}$).

Heterogenetic accumulation of radionuclides took place in plants. An increased concentration of ^{137}Cs was registered in leaves of blackberry (83 Bq/kg) and reindeer lichen (62 Bq/kg). Its penetration into reindeer lichen can be defined by sedimentation from atmosphere, and into leaves of blackberry – by root consumption from organogenous horizons of soil. In smaller quantities this radionuclide has been found in leaves of birch (14 Bq/kg), and it can be related to insignificant root consumption, as area of tree root consumption is located quite deep in soil, and concentration of ^{137}Cs in this area is small. Biological accessibility of ^{137}Cs for plants degrades in line (m^2/kg): leaves of blackberry (0.16) – reindeer lichen (0.12) – shoots of blackberry (0.10) – leaves of birch (0.03). Concentration of ^{137}Cs in plants have not exceeded maximum permissible level for this radionuclide in products of forestry ($1.6 \times 10^{-8} \text{ kBq/kg}$)

and maximum permissible concentration of its content in medical plants (up to 200 Bq/kg) [5].

An increased content of ^{40}K was registered in leaves of birch (140 Bq/kg), it can be related to a physiological need for it of a plant. Biological accessibility of this radionuclides for plants degrades in line (m^2/kg): leaves of birch (0.007) – reindeer lichen (0.002).

Maximum content of ^{226}Ra was registered in shoots (16 Bq/kg), and ^{232}Th – in leaves (8 Bq/kg) of blackberry. Minimum content of ^{226}Ra was registered in leaves of blackberry, and ^{232}Th – in leaves of birch. Contents of ^{226}Ra and ^{232}Th in reindeer lichen was insignificant (1 Bq/kg). A possible reason of accumulation of these radionuclides is heterogeneity of physiological need for them among plants. Biological accessibility of ^{226}Ra for plants degrades inline (m^2/kg): shoots of blackberry (0.04) – leaves of birch (0.03).

Conclusion. A new information on radionuclide accumulation (^{226}Ra , ^{232}Th , ^{40}K , ^{137}Cs) in soil and vegetative cover in central part of Murmansk region has been received. Potential sources of these radionuclides for natural objects have been revealed. Maximum values of radioactive characteristics have not exceeded the limits of natural background and utmost permissible values for human. Biological radionuclide accessibility lines for different parts of plants have been demonstrated.

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