



Sampling campaign was implemented in seven ridges and two massifs in 2018-2019. The interval between sampling locations within each transect was 200 m by altitude. Undisturbed soils were sampled from upper 0-10 cm layer. The air-dried and homogenised soil samples were kept sealed in order to establish secular equilibrium between Radium and short-lived progeny and then analysed using HPGe detector coupled to a multi-channel analyser (Canberra). Activity concentrations of NORM: ^{236}Ra , ^{232}Th and ^{40}K , and artificial ^{137}Cs were determined.

Activity concentration of ^{236}Ra , ^{232}Th and ^{40}K varied in the range of 2.49-70.14, 2.85-97.69, 70.56-1149.0 Bq/kg respectively ($n=117$). Statistical treatment of data suggests abnormal distribution in ^{232}Th and ^{40}K samples while lognormal distribution was revealed for ^{238}U . Mean \pm SD value was proposed as suitable for use as ^{232}Th and ^{40}K generic activity concentration in Armenia's soils background range: 33.58 ± 18.33 ; 443.1 ± 208.0 Bq/kg, whereas antilogarithm of Mean \pm antilogarithm of SD was suggested as baseline activity for log-transformed ^{238}U sample: 15.17 ± 1.73 Bq/kg.

Activity concentration of ^{137}C are significantly correlated with the altitude (Spearman $\rho = 0.476$ at 0.01 level), therefore its baseline varies within the range of 1.28-60.27 at the altitude 990-1200 m a.s.l. to 108.37-445.69 Bq/kg at 3000 m a.s.l.

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GEOCHEMICAL FEATURES OF THE ACCUMULATION OF PHOSPHORUS AND FLUORINE IN SOILS IN THE ZONE OF INFLUENCE OF THE PHOSPHOGYPSUM DUMP

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Phosphogypsum is a waste product of the phosphorus industry. Every year phosphogypsum waste only increases. And this circumstance, in turn, leads to increasing pressure on the environment. In the present study, the change in the concentration of sulfur and phosphorus in the soils adjacent to the phosphogypsum dump was studied.

The research was carried out on the area of the Kingisepp phosphorite field (Leningrad region, Russia). 43 soil samples were taken to determine the gross content of sulfur and phosphorus. Sulfur was determined by infrared spectroscopy, and phosphorus was determined by mass spectrometry.

The results of the study showed that in the area adjacent to the phosphogypsum dump the phosphorus total content is 8148 ppm (local background value — 915 ppm), and the sulfur total content is 619 ppm (local background value — 382 ppm). Differences in samples are statistically significant, according to the Mann-Whitney U-test. The total content of phosphorus and sulfur near the dump exceeds the known standard values. We can assume that sulfur and phosphorus accumulate in the soils adjacent to the dump as a result of the aerogenic movement of phosphogypsum particles.

An increase in the total content of phosphorus and sulfur in comparison with the local background territory can be considered as indicators of the impact of the phosphogypsum dump. To minimize the impact of the phosphogypsum dump, it is recommended that the dump be reclaimed.

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