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PECULIARITIES OF $^{239,240}\text{Pu}$ BEHAVIOUR IN FLOOD-PLAIN SOILS OF THE TECHA RIVER

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The Techa river was contaminated with the liquid nuclear waste discharged from the nuclear plant "Mayak" within 1949-1956 years. In 1999-2002 flood-plain soils of the Techa river were investigated and the levels of content, a migration and a vertical distribution of $^{239,240}\text{Pu}$ in the flood-plain soils were studied. Reference plots were located in the pre-bed and in central flood plain at different distances from the source of contamination (78-240 km). It was shown that in the soils of the pre-bed the content of Pu isotopes was decreasing from 10.5 to 2.8 kBq/m² with the distance from the plant "Mayak". Besides, a non-uniform spatial distribution of $^{239,240}\text{Pu}$ was found in those plots, which were at the same distance from the source of the contamination. As a rule, the central flood plain (25-100 m from the river-bed) was contaminated with $^{239,240}\text{Pu}$ less than the area in the pre-bed (5-20 m from the river-bed). Thus, in the area of the middle length of the river the density of the soil contamination with $^{239,240}\text{Pu}$ of the central flood plain is 0.3 to 0.8 kBq/m² and that of the pre-bed is 1.0 to 4.7 kBq/m² at a maximum migration depth being 25 to 30 cm and 40 to 50 cm, respectively. The determined value of the $^{239,240}\text{Pu}/^{137}\text{Cs}$ ratio proves that rates of the vertical migration of the Pu isotopes in the flood-plain soils of the Techa river are comparable and higher (in some cases) than those of ^{137}Cs .