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**RADIONUCLIDES MIGRATION IN THE SYSTEM  
SOIL-POROUS SOLUTION- SURFACE WATER DURING THE SINKING****A. Shevchenko<sup>1</sup>, V. Gudzenko<sup>1</sup>, and V. Dolin<sup>2</sup>**<sup>1</sup> *Radioecological Center, O.Gonchar str, 55-b, 01054, Kyiv, Ukraine*<sup>2</sup> *Institute on Environmental Geochemistry, 34-a, Palladin av., 03680 Kyiv, Ukraine*

The range of observations on the slopes of the reclamation canals in the Chernobyl Exclusion Zone as well as laboratory experiments over the monoliths collected there allow to clarify some features of <sup>90</sup>Sr distribution in the soil profiles after the floods of different duration. The leaching rates are compared with the radionuclides' distribution versus a depth in the monoliths, relationships between the grain sizes in the separate layers, changes of pH and specifics of the chemical composition of the solution. Observed data allowed to calculate the thickness of the effective mass exchange layer under the static conditions. It made up to 7-12 cm of the soil in dependence on soil density and the height of the capillary edgings ascending. Maximum leaching of <sup>90</sup>Sr from soil to the surface water took place during the sinking of the highest slope marks elevation. When the rate of fission products release from the fuel matrix is higher than the rate of their water removal from soils <sup>90</sup>Sr accumulation has been took place in the pore space of the soils of zone of suspended water.

In the lab experiments <sup>90</sup>Sr concentration in the eluate has increased during 42 days. About 6% of <sup>90</sup>Sr in the monolith were transferred into the water phase. Concentration of <sup>90</sup>Sr and <sup>137</sup>Cs in the water phase decreased after 57 day of experiment. Momentary coefficient of washout and integrated rate of radionuclides leaching was calculated taking into account changes of the thickness of layer of effective mass exchange during the experiment. Some portion of leached nuclides was bound in the suspended organic matter of aquatic life origin. Content of organic dredge in water phase increased during the all course of experiment. Share of <sup>90</sup>Sr that was sorbed by dredge increased from 11 to 87% of its total activity in the water phase. Thus radionuclides leaching from the slopes of reclamation canals are the major source of surface waters secondary contamination.