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Assessing Impact of Sorption in Geological Medium on Permissible Activity of Radioactive Waste in Near-Surface Disposal Facilities

The paper considers the conservative scenario of potential exposure that envisages simultaneous destruction of barriers with simultaneous release of radionuclides by the example of Lot 3 near-surface radioactive waste disposal facility at the Vektor Industrial Complex located in the Chornobyl Exclusion Zone. A conceptual model that considers migration of radionuclides through the aeration zone and aquifer to the potable water well, as well as mixing of infiltration water containing radionuclides with ground water in case of reaching the aquifer, was developed to analyze the mentioned scenario. Permissible specific activity of radioactive waste in the facility is calculated under the assumption that radioactive waste contains only ^{90}Sr radionuclide. Normalysa software is used for calculations.

Keywords: radioactive waste, ^{90}Sr, sorption, migration, distribution coefficient, aeration zone, aquifer, ground water, modeling, Normalysa software.