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Radiostrontium hot spot in the Russian Arctic: ground surface contamination by ^{90}Sr at the "Kraton-3" underground nuclear explosion site. *Journal of Environmental Radioactivity*, Volume 95, Issues 2-3, June-July 2007, 107-125.

Strontium-90 activity concentrations in surface soils and areal deposition densities have been studied at a site contaminated by an accidental release to atmosphere from the underground nuclear explosion "Kraton-3" conducted near the Polar Circle (65.9°N, 112.3°E) within the territory of the former USSR in 1978. In 2001-2002, the ground surface contamination at 14 plots studied ranged from 20 to 15m², which significantly exceeds the value of 0.44m² deduced for three background plots. The zone with substantial radiostrontium contamination extends, at least, 2.5 km in a north-easterly direction from the borehole. The average $^{137}\text{Cs}/^{90}\text{Sr}$ ratio in the ground contamination originated from the "Kraton-3" fallout was estimated to be 0.55, which is significantly different from the ratio of 2.05 evaluated for background plots contaminated mostly from global fallout. Although vertical migration of ^{90}Sr in all undisturbed soil profiles studied is more rapid than that for ^{137}Cs , the depth of percolation of both radionuclides into the ground is mostly limited to the top 10-20cm, which may be explained, primarily, by permafrost conditions. The horizontal migration rate of radiostrontium in the aqueous phase exceeds the radiocaesium migration rate by many times. This phenomenon seems to be a reason for the significant enrichment of the soil surface layers by radiostrontium at some sites, with variations occurring in accordance with small-scale irregularities of landscape.

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