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Radiation impact on wildlife in the vicinity of RW repositories in Russia

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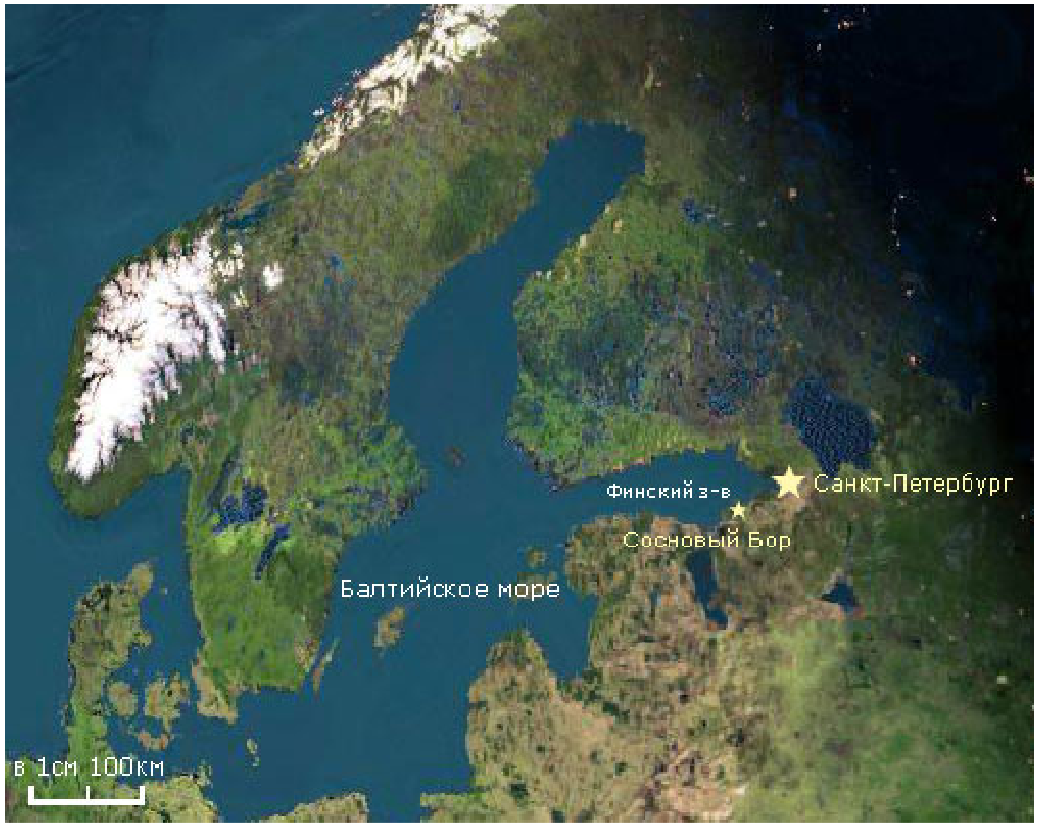
INTRODUCTION

At present, national Russian recommendations are prepared for radiation protection of wildlife.

In this context, estimation of doses are made for natural biota, living in the vicinity of different objects of nuclear industry.

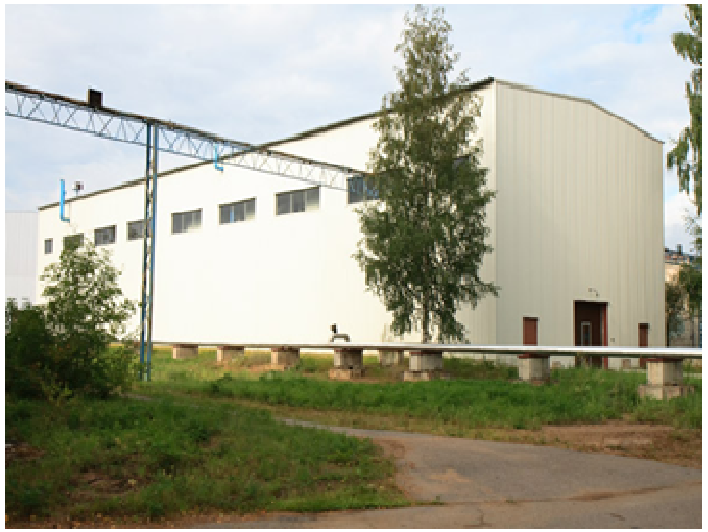
Now I give you estimations of biota doses near some RW repositories in Russia.

Radiation impact was evaluated on wildlife, living in the immediate proximity to RW storage buildings of the RW storage enterprise “Leningrad filial of RosRaO” , situated near the Leningrad NPP. Estimations of radioecological impact on wildlife in the vicinity of radioactive waste repositories were performed for reference organisms of biota.



Location of Leningrad NPP (Russia) and regional RW storage enterprise

One of the RW storage buildings



Dose rates of chronic exposure of wildlife in the close vicinity of the RW storage buildings (Leningrad region, Russia)

Reference organism	Dose rate of external exposure, microGy/h	Dose rate of internal exposure, microGy/h	Total dose rates, microGy/h
Mice	15	125	140
Earthworm	19	91	110
Grass	19	72	91
Tree	5	80	85

Estimated dose rates to mice are about 2.6 mGy/day, and for earthworm – about 3.4 mGy/day. These values are some higher than the threshold 1 mGy/day for appearance of deterministic effects in in terrestrial animals.

However, only very small fractions of local populations may be exposed for elevated doses, therefore, potential damage to populations is negligible. Outside the RW enterprise territory, doses to biota are at background levels.

Geological repository in Krasnoyarsk Region, Russia

For a planned geological RW repository in Krasnoyarsk Region (near Krasnoyarsk Mining and Chemical Combine) doses to biota were calculated from atmospheric emissions of radionuclides (carbon-14, radon-222 and tritium) expected during a period of repository loading.

Estimated doses to wildlife from expected atmospheric emissions of geological RW repository during operational phase.

Organism	Dose rate from gas-aerosol releases of radionuclides, $x10^{-6}$ Gy/day
Tree	1,2
Grass	0,94
Mammal (deer)	0,94
Mammal (mice)	1
Frog	0,87

Calculated doses to reference biota near geological RW repository (Krasnoyarsk region, Russia) did not exceed 0.05 mGy/h, and were small in comparison with reference threshold levels of a chronic irradiation of biota.

Thank you for your attention !