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Radioecological criteria and norms during remediation of shore infrastructure of Russian nuclear fleet

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Abstract

Remediation of sites and facilities belonging to the sites of temporary storage (STS) of spent nuclear fuel (SNF) and radioactive wastes (RW) at Andreeva Bay and Gremikha village on the Kola Peninsula is one of the regulatory functions of radiation protection. After termination of operation of the ex-Navy serviced facilities, their infrastructure degraded resulting in radioactive contamination of some parts of the site. As one end-goal of remediation is putting STS into ecologically safe conditions, elaboration of quantitative radiation-ecology criteria and norms for STS site and facility conditions is urgent.

Remediation criteria and norms defining requirements for radiation protection of workers, public and limits of environmental contamination have been developed for three main options: conservation, conversion (partial or overall renovation) and liquidation in the form of:

- dose limits and dose constraints;
- levels of radioactive superficial contamination of workshops and equipment inside them;
- specific activity of radionuclides in marine media, including fish;
- activity concentration of radionuclides in ground waters on-site STS.

The Environmental radiation monitoring findings served as a basis for the associated databank arrangement. The experimental results received have been plotted on the electronic map of the place. Further steps relate to generation of full geographic information system, which permits to carry out the computer calculation of the main indexes for simulation and prognosis of radio-ecological situation with the purpose of the radiation safety regulation.

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