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ECOLOGICAL ASPECTS OF THE USE OF FAST REACTORS IN A CLOSED NUCLEAR FUEL CYCLE UNDER THE “PRORYV” PROJECT

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The development of nuclear power engineering with closing of a fuel cycle and the use of fast reactors must ensure a higher level of ecological safety of the population and the environment. The highest ecological effect is achieved by recycling of spent fuel and isolation of long-lived radionuclides (90Sr, 137Cs and 99Tc) and transmutation of 99% of americium.
In normal operation of CNFC facilities exposure doses to the population are formed via different critical pathways: for a rector plant – due to inhalation intake of 3H, for fabrication and refabrication module – due to inhalation of Pu aerosols, for SNF recycling module – due to external radiation from the soil and ingestion in case of surface contamination of plants.
The use of nitride fuel generates large amounts of 14C (270 g per 1 ton fuel). Insolubilizing most of 14C ensures compliance with the project standards for the population exposure to the gas phase of release.

Country/Int. Organization

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