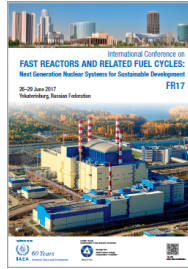


# International Conference on Fast Reactors and Related Fuel Cycles: Next Generation Nuclear Systems for Sustainable Development (FR17)



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

*Tuesday, June 27, 2017 5:30 PM (1h 30m)*

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 ( $^{90}\text{Sr}$ ,  $^{137}\text{Cs}$  and  $^{99}\text{Tc}$ ) 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 reactor plant – due to inhalation intake of  $^3\text{H}$ , 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  $^{14}\text{C}$  (270 g per 1 ton fuel). Insolubilizing most of  $^{14}\text{C}$  ensures compliance with the project standards for the population exposure to the gas phase of release.

### Country/Int. Organization

RUSSIA/Institution «ITC «PRORYV» Project»

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