

## Materials of Conferences

**THE RESEARCH OF RADIOACTIVITY  
COMMERCIAL ICHTHYOFAUNE OF  
RAZDOLNAYA RIVER ESTUARY  
(PRIMORSKIY REGION)**

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Fishing industry in seas, bays, rivers give the considerable share of protein in ration feed on population of the country. Water always contains definite quantity of natural radionuclides. At the same time, radioecological characteristic of reservoir abruptly deteriorate out of anthropogenic radiocontamination in consequence of development atomic power both military and peaceful aims. The anthropogenic radionuclides in ecosystems of Amursky bay and Razdolnaya River (Peter the Great Bay, Japan East Sea) generally have its origin from nuclear weapon tests pursued formerly. Cs-137 and Sr-90 are the most hazardous in regard to sanitary-hygienic aspect. Artificial radionuclides Cs-137 and Sr-90 are analogies to biogenic elements potassium and calcium accordingly and accompany them in nature. Entering hydrobionics by different ways Cs-137 accumulates mainly in muscular tissues and Sr-90 – in bone tissues. The objects of investigation were freshwaters fishes of Razdolnaya River such as Silver carp, Carp, Crucian carp and semipassing by species of fishery (Far Eastern dace, Asiatic smelt, Haarder). Razdolnaya estuary being the largest in Primorye in the same time is the transitive zone between the freshwater and seawater place for semipassing species of fish and their fatten getting from the river basin. To fix contamination of the radioisotopes in ichthyofauna the radiochemical method was used. Cs-137 was picked out as cesium bismuth iodide and Sr-90 was defined by its daughter's isotope Y-90 in the form of yttrium oxalate. During investigation it was ascertained that the lowest concentration of radionuclides have semi-passing fishes Cs-137 (1.9-2.9 Bk/kg) in muscles and Sr-90 (0.8-2.4 Bk/kg) in bone tissue, concentration of Cs-137 and Sr-90 in fresh water living fishes of Razdolnaya River was 3.5-5.6 and 2.7-6.6 Bk/kg respectively. It shows that the way of life of fishes determines its radionuclide concentration level essentially. Semi-passing fishes calling at Razdolnaya River to propagate mainly lives at sea and thus concentration of Cs-137 and Sr-90 in them are lower of fresh water ones. Adduced data shows that the low level of mineralization of Razdolnaya river water increase concentration of radionuclides in fish tissues.

According to existing standards, which prescribes "Hygienic requirements of food's safety and food's value" the Cs-137 contents in living fishes and in raw must not be more then 130 Bk/kg and Sr-90 contents – 100 Bk/kg. Obtained of artificial

radioactivity of fish in Japan Sea with sanitary norms for food production we can see that these levels considerably lower of permissible and consequently the fish safe in radiationally-hygienic terms.

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**HYDROLOGICAL RISK ON KAMA WATER  
BASINS AS CONSEQUENCE OF CHEMICAL  
POLLUTION**

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Hydrological risk as variety and component part of ecological risk creates the danger of the disadvantage influence on organic and health of the people. The risk into the reservoirs formed the first to account of the contamination their water masses unset industrial enterprise that to account technical press on water objects.

In upper part of the Kama reservoir is located Solikamsko-Bereznikovskiy and in upper part of the Votkinsk reservoir - Permsko-Krasnokamskiy industrial complexes. They are the main source of water pollution, their contribution to technical load on basins more than 90%. For feature of the particularities hydro-chemical mode of the Kama and Votkinsk reservoirs analysed material removals reservoirs executed in 2003. The hydro chemical analysis was made in seven points:

- head range of Kamskoe reservoir (Tyulkino);
- two points near Solikamsko-Bereznikovskiy industrial complexes;
- point under Berezniki;
- point near entry in central enhanced part of water reservoir;
- point in bottom part of reservoir (Dobryanka);
- point in the dam area of Kamskoe reservoir (Kamskaya Hydroelectric station).

*Value general salinity.* At winter period in point Tyulkino amount ion were 150-160 mg/dm<sup>3</sup>, bottom software course (Solikamsko-Bereznikovskiy industrial complexes) it advanced to 240-480 mg/dm<sup>3</sup>, and later decreases to 320 mg/dm<sup>3</sup>. During the spring salinity falls and prepares 150-130-90-170 mg/dm<sup>3</sup>. It joint with ingress of snow water. In summer concentration was 160-560 mg/dm<sup>3</sup>. The maximum of year value salinity in this point was 560-220-140-160 mg/dm<sup>3</sup> and wasn't excess the most possible concentration (MPC).