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Pollution of the Amur river after the technogenic accident in China

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Reliability of risk estimate is relative for every moment of time

All approaches need to be corrected with an account of advantages:

of fundamental science, experiences of extreme situations in various regions.

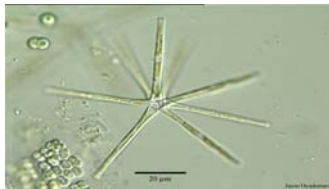
1996- 2002 "Phenol" pollution (smell of fish)

2002-2006 fish polytoxicosis

New problem – benzene and its isomers + chronic pollution by persistent organic matter

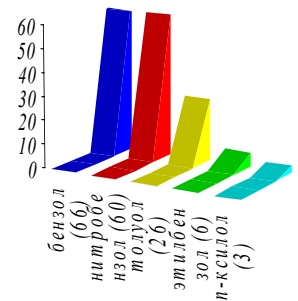


A passage of the Amur upper and lower the Sungari juncture has been investigated and the state of phytoplankton, zooplankton, bacterioplankton, zoobenthos and fish has been assessed.



Deterioration of phytoplankton physical state, reduction of the river self-purifying potential, disturbance of a nitrogen cycle

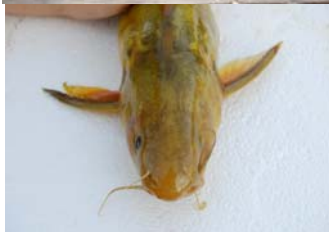
According to Russian-Chinese monitoring data benzene derivatives and volatile chlorine-containing substances accumulated in bottom sediments, ice and hydrobionts were the main risk factors in the river freezing period. Maximal concentrations of methylbenzene were registered after the ice break in the bottom sediments at the right bank lower the Sungari juncture



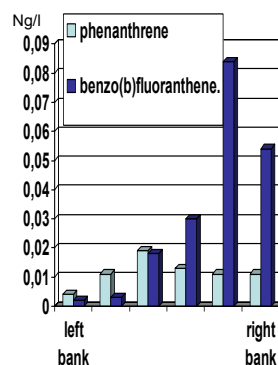
Phthalate, naphthalene, highly toxic anisole and benzothiazole, as well as phosphorus-containing pesticides of a new generation have been identified in fish for the first time.

In summer time different compositions of benzene derivatives (ethylbenzene, xylene, toluene) remained in hydrobionts of this river passage. The dominant substance stretching up to the water-inlet in Khabarovsk was benzo(b)fluoranthene. Response reactions of the Amur hydrobionts much depend on the total impact of toxic substances regularly discharged from the Sungari (chlorophenols, polycyclic aromatic hydrocarbons, trace metal ions).

Maximal concentrations of methylbenzene were registered after the ice break in the bottom sediments at the right bank

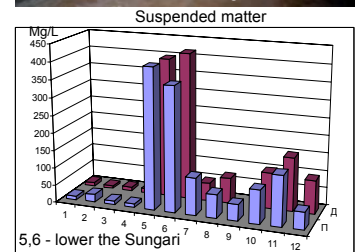


Structural changes of benthos communities, changes of mollusk and fish structure have been revealed in the Amur passage impacted by the Sungari discharge.



The Sungari River also discharged stable polycyclic aromatic hydrocarbons that produce mutagenic, teratogenic and carcinogenic effect.

Ecological risks for Amur hydrobionts caused by the technogenic accident in the Sungari Basin are enhanced by the additional effect of the regular pollution of the Amur River in recent years.



The following priorities for the Amur research:

- Transformation mechanisms of organic matter of natural and anthropogenic origin
- Analysis of biocomplex population long-life dynamics
- Accumulation and migration mechanisms of toxic substances
- Development of regionally acceptable standards of pollution
- The Amur River discharge impact on coastal marine bioresources
- Ecological feasibility study for new effective and safe water treatment methods
- Revealing ecological and social factors that influence Priamurje population sick rate

