

Risks in mussel consumption: temporary trends according to data from Saldanha bay (South Africa)

Monday, 30 October 2023 14:20 (15 minutes)

The consumption of wild and farmed mussels collected from the coastal water areas with different levels of anthropogenic pressure could lead to harm for human health. The safety of mussels as food could be assessed according to level of heavy metals and other toxic microelements in the soft tissues. In the study the risks of mussel consumption for local populations were assessed by using three approaches: comparison with the existing maximum permissible levels of elements in seafood, calculation of target hazard quotients based on the reference dose established by US EPA, and determination of maximum provisional tolerable consumption rate based on provisional tolerable weekly intakes established by FAO/WHO.

The mass fractions of 20 micro and macroelements in soft tissues of mussels from 3 stations of different anthropogenic pressure in 2013-2019 period were determined by using neutron activation analysis.

According to the study the risks for human health demonstrated such elements as Co, Zn, As, Se and I. The levels of maximum consumption rate for such elements as Al, As and I should be less than 500 g/week per person. The obtained temporary fluctuations in mass fractions of considered elements help to reveal increasing the risks in several times depending on seasonal and annual natural and anthropogenic changes of features of the surrounding waters. It was concluded that the increasing of risks in winter seasons of storms due to high levels of elements in suspended matter.

Primary author: NEKHOROSHKOV, Pavel (FLNP JINR)

Co-authors: ZINICOVSCAIA, Inga (Joint Institute for Nuclear Research); Dr BEZUIDENHOUT, Jacques (School for Science and Technology, Faculty of Military Science, Stellenbosch University, South Africa); Dr FRONTASYEVA, Marina (FLNP JINR); Mr YUSHIN, Nikita (FLNP Sector NAA & Applied Research, Division of Nuclear Physics, Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research)

Presenter: NEKHOROSHKOV, Pavel (FLNP JINR)

Session Classification: Life Science

Track Classification: Life Science