

The Concentration of Natural Alpha Emitters Radionuclides in Fish and Their Contribution to the Internal Dose

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Abstract : Mining can impact the environment, and the major impact of some mining activities is the radiological impact. In human populations, such impact is well studied and regulated. For biota, this assessment always had as focus the protection of human food chain. The protection of biota itself is a new approach, still developing. In order to contribute to this new approach, fish collecting was carried out in areas of naturally occurring radioactive materials (NORM), where a uranium mine is in decommissioning phase. The activity concentrations were analyzed, in Bq/kg wet weight, for Uranium (Unat), Th-232 and Ra-226 in the lambari fish *Astyanax bimaculatus* L. (omnivorous fish) and in the traíra fish *Hoplias malabaricus* Bloch, 1794 (carnivorous fish). Seven composite samples (that is: a sufficient number of individuals to reach at least 2 kg of fresh weight) were collected every six months between 2013 and 2015. The mean activity concentrations (AC) for uranium ranged from 1.12 (lambari) to 0.60 (lungfish). For Th, variations ranged from 0.30 to 0.05 (lambari and traíra, respectively). Finally, the Ra-226 means ranged between 0.08 and 0.03. No temporal trends of accumulation could be identified. Systematically, the AC values of radionuclides were higher in omnivorous fish when compared to the carnivore ones.

Keywords : biota dose, NORM, fish, environmental protection

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