

# ACCUMULATION OF AMERICIUM-241 IN THE BIOMASS OF AQUATIC PLANTS OF THE YENISEI RIVER: EXPERIMENTAL STUDY

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Due to the operation of the Mining-and-Chemical Combine (Krasnoyarsk-26), which has been manufacturing weapons-grade plutonium for several decades, the Yenisei River is contaminated with transuranic elements (including  $^{241}\text{Am}$ ).  $^{241}\text{Am}$  was found in the riverside soil, sediment and in the biomass of aquatic plants (Bolsunovsky et al., 1999, 2002). Aquatic plants are an important link in the migration of radionuclides in an aquatic ecosystem. In laboratory experiments, we investigated accumulation of  $^{241}\text{Am}$  by the submerged macrophytes from the Yenisei River: the pondweed (*Elodea canadensis*) and the aquatic moss (*Fontinalis antipyretica*), and release of  $^{241}\text{Am}$  from the biomass. The content of  $^{241}\text{Am}$  was measured on a Canberra (USA) gamma-spectrometer. The experiments showed that specific accumulation and concentration factors of  $^{241}\text{Am}$  in the plants were in inverse proportion to their biomass. We obtained new data on release of  $^{241}\text{Am}$  from the biomass of macrophytes. Americium-241 was more firmly fixed in the biomass of the aquatic moss. In 12 months, the biomass of the aquatic moss released about 30% of the initial americium activity into the water. To compare, the biomass of the pondweed released into the water medium up to 64% of the initial  $^{241}\text{Am}$  activity in 1.5 – 4 months. The release rate was dependent on the decomposition rate of the plant biomass. The experiments showed that submerged macrophytes of the Yenisei River can accumulate considerable activities of  $^{241}\text{Am}$  and retain americium for long periods of time in biomass.