

## **The concentrations of radioisotopes and trace elements in the annual cedar and larch needles in New Urengoy region (Arctic part of Western Siberia)**

K. MEZINA<sup>1</sup>, D. BELYANIN<sup>1,2\*</sup>, YU. VOSEL<sup>1</sup>,  
M. MELGUNOV<sup>1,2</sup>, M. KROPACHEVA<sup>1</sup>, B. SHCHERBOV<sup>1</sup>,  
M. RUBANOV<sup>1</sup> AND I. ZHURKOVA<sup>1</sup>

<sup>1</sup>Sobolev Institute of Geology and Mineralogy, Siberian  
Branch of the Russian Academy of Sciences, Koptyug  
ave., 3, Novosibirsk, 630090, Russia  
(mezinaka@igm.nsc.ru)

<sup>2</sup>Novosibirsk State University, Novosibirsk, Pirogova st., 1,  
630090, Russia (\*correspondence: bel@igm.nsc.ru)

Annual larch and cedar needles were sampled in the tundra zone of the Arctic part of Western Siberia in order to determine composition of trace elements (ICP-MS) and <sup>7</sup>Be, <sup>210</sup>Pb and <sup>137</sup>Cs specific activities (semiconductor gamma-spectrometry using HPGe well detector). The sampling points were located along the route Novy Urengoy – Korotchaevo – Tarko-Sale. Sampling was carried out at a distance about 100 meters from the road, to eliminate its possible impact.

Natural radioactive isotopes <sup>7</sup>Be and <sup>210</sup>Pb enter in significant quantities the Earth's surface from the atmosphere depending on the season and weather conditions. The similarity of isotopic ratios and the difference of <sup>7</sup>Be and <sup>210</sup>Pb specific activities between cedar and larch needles may indicate that the volume of accumulated aerosol particles by these species is different over the last 6 months. The results show a noticeable accumulation of <sup>210</sup>Pb and <sup>7</sup>Be in the larch needles compared to cedar needles. The concentration <sup>137</sup>Cs in the cedar needles is an order of magnitude greater than in the larch needles. As for the trace elements in the needles, Ba, Si and Pb concentrations are higher in the needles of larch than cedar, and for Rb, Cd, K and Cs there is an inverse relationship.

The study was carried out by a grant from the Russian Science Foundation (project № 18-77-10039). The analytical investigations were carried out at Analytical Center for multi-elemental and isotope research SB RAS.