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Mosses as bioindicators of air pollution with potentially toxic elements in the Burabay State National Natural Park, Kazakhstan

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The Burabay State National Natural Park is a national park of the great natural and historical values located in the north of Kazakhstan, which has been exposed in recent years to significant anthropogenic impact. The moss biomonitoring was performed in the Borovoye resort community, an important tourist destination in the national park, to identify the level of air pollution. Mosses collected at 29 locations were subjected to neutron activation analysis to determine 36 elements and additionally to ICP-OES to detect the level of Cu and Pb. Factor analysis was applied to check if there are any associations between identified elements and to link them with possible emission sources. According to contamination factor and pollution load indices the investigated area belongs to three classes of pollution: unpolluted, suspected and moderate. Potential ecological risk index calculated for selected elements revealed harmless risk to human health. The level of element obtained in Burabay State National Natural Park was compared with the data available for other national parks.

Authors: ZINICOVSCAIA, Inga (Joint Institute for Nuclear Research); NURKASSIMOVA, Makhabbat (L.N. Gumilyov Eurasian National University)

Co-authors: IUSHIN, Nikita (JINR); Mrs OMAROVA, Nuriya (L.N. Gumilyov Eurasian National University); CHALIGAVA, Omari (Joint Institute for Nuclear Research - FLNP)

Presenter: ZINICOVSCAIA, Inga (Joint Institute for Nuclear Research)

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