

# ATMOSPHERIC RELEASES OF TRACE ELEMENTS IN CENTRAL KAZAKHSTAN BY MEANS OF MOSS-BIOMONITORS AND NEUTRON ACTIVATION ANALYSIS

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Since the end of the 1970s, Western Europe used a common method proposed by Scandinavian scientists, the moss biomonitor method using moss species common in countries of temperate climate (UNECE ICP Vegetation: <https://icpvegetation.ceh.ac.uk/>) to study atmospheric deposition of heavy metals and other toxic elements. Mosses are analogous to aerosol filters and are living systems, the elemental composition of which reflects the state of the atmosphere. From the point of view of their prevalence, availability and ease of sampling, they are universal objects for research. For many years, the Laboratory of Neutron Physics of the Joint Institute for Nuclear Research (FLNP JINR) has been working on the study of air pollution by heavy metals using neutron activation analysis (Frontasyeva et al., 2016). Since 2014 Kazakhstan has been participating in this program of the UN Commission on the Long-Range Transboundary Transport of Air Pollution in Europe (UNECE LRTAP) using the moss-biomonitor method. Previously, results were obtained for Eastern and Western Kazakhstan (Nurgalieva et al., 2018). This paper presents preliminary results of elemental analysis of (Na, Mg, Al, Cl, K, Ca, Ti, V, Br, Sr, I) based on short-lived isotopes of 39 moss samples collected in early October 2018 in Central Kazakhstan (Karkaraly region of Karaganda region). A full analysis of samples at the IBR-2 reactor of the FLNP JINR will be completed shortly. This study serves the grounds for the master's thesis of the first author of the Abstract.

## References

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