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ENVIRONMENTAL CONSEQUENCES OF INTENSIFIED EXOGENOUS PROCESSES  
AND TRACE ELEMENT ACCUMULATION IN LANDSCAPES DURING MINING  
OPERATIONS IN PRIOKHOTYE

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The Okhotsk Region holds a leading position in the Russian mineral resource sector for gold and platinum mining. This study was conducted at gold and platinum mining sites in the Ayano-Maysky district of the Khabarovsk Territory (Tas-Yuryakh, Ryabinovy, Muktana, and Konder). Mining operations in the extreme natural conditions of the Northern Khabarovsk Territory significantly impact the state of local soils and water bodies. Open-pit mining and traditional processing technologies lead to the accumulation of industrial waste and the intensification of exogenous processes in disturbed areas, which serve as the primary causes of soil and surface water pollution. Waste heaps, tailings facilities containing liquid pulp, and settling ponds pose the greatest environmental hazards during mineral extraction. The interaction of decomposition products with under-oxidized minerals contributes to the enrichment of wastewater. During periods of heavy rainfall, turbid enriched solutions are washed into the soil and surface watercourses via sheet erosion processes. Even after decommissioning, these sites remain long-term sources of local pollution for natural ecosystems, particularly affecting soil cover and natural waters. The technological methods used in mining involve the release of various heavy metal compounds into the environment, especially into surface soil layers and water bodies. This article examines the distribution patterns of chemical elements (Fe, Cu, Zn, S, Pb, Cd, Co, Ni) at various distances from operating enterprises and the conditions of their concentration depending on environmental factors. High concentrations of nickel and zinc, as well as elevated lead content, were detected in soil profiles, resulting from the dissolution of chemical compounds in ore-bearing rocks and the activation of exogenous processes. The distribution of element anomaly levels in soils revealed that the migration of chemical compounds within the soil space and subsequent soil pollution manifest at a distance of up to 300–500 m from waste heaps and tailings facilities. Elevated levels of iron, aluminum, manganese, and copper were also noted in watercourses. Finally, the core principles have been formulated for an environmentally adapted land-use regime tailored to the mountainous conditions of the northern Russian Far East.

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**Keywords:** mining operations, migration activity, concentration.

**References:** Bragin A.N., Makhinov A.N. Permafrost-geoecological Conditions of Economic Activity on the Periphery of the Cryolithozone (on the example of Lower Amur Region). *Bulletin of the Transbaikal State University* **31** (1) (2025), 21–31.  
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