



Methodological approach towards spatial geochemical risk assessment in case of soil contamination

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Spatially adequate remediation of the polluted soils needs preliminary knowledge of the optimum values of element concentration in the soils before their contamination. In natural conditions the geochemical structure of the soil cover is formed by long-term interaction between living organisms and due to variability, inheritance and natural selection through struggle for life the biosphere is formed of ecological niches which are characterized by the best between the biota and its geochemical environment. Anthropogenic impact has led to expansion of man and the accompanying species to areas with less favorable conditions that increased the risk of formation of endemic diseases of geochemical origin due to excess or deficiency of elements in the ambient environment. Agricultural and industrial development led to new geochemical changes in the environment, and the most important feature is that anthropogenic contamination overlay the natural heterogeneity which have different spatial structure. The developed approach proposes the following steps in remediation of the polluted soils: 1) reconstruction of the natural geochemical state of the contaminated areas on the scale depending of the area under reclamation; 2) zonation of the contaminated area according to the level of contamination versus natural background; 3) selection of the different counter measures according to the level of contamination; 4) restoration of the topsoil layer close to natural; 5) selection of species most adequate to the used topsoil. The developed approach and its verification are presented in recent publications [1, 2].

References

1. Korobova E. M. Principles of Spatial Organization and Evolution of the Biosphere and Noosphere. *Geochemistry International*, 2017, Vol. 55, No. 13, pp. 1205–1282.
2. Korobova E. M. Combined Assessment of the Ecological and Geochemical State of Anthropogenically Impacted Areas. *Geochemistry International*, 2017, v. 55, N 10, 861-871.