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Theoretical and practical aspects in determining the current geochemical status of the Crimean peninsula and anthropogenic risk to public health

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The implementation of basic principles of medical and ecological monitoring programs in Crimea previously reported in EGU proceedings consists of determining the content of a wide range of toxic, essential and rare earth elements in various biological substrates: soil, plants, water, human body. Biosubstrates are sampled in different locations with contrast natural and anthropogenic conditions: urbanized-rural, industrial-agricultural, natural resources. Lichens and poplar leaves are used as indicators of environmental contamination, particularly atmospheric pollution; liquid precipitation is used as an indicator showing the negative impact of air pollution on ecosystems; hair is used as an indicator of the total body intake of chemical elements. The update of databases, on some of the territories (Simferopol, Sevastopol, geographical regions with different soil characteristics, etc.) with regard to some of the elements (mercury, lead, cadmium, selenium, etc.) at this stage allowed to determine their biogeochemical status in conditions of intensive growth of anthropogenic load in recent years, and to compare it with the elemental status of the humans living in this territory. The databases for other types of territories continue to be extended, the relationship between morbidity to estimate of the environmental burden of disease for environmentally determined diseases (neurodegenerative, endocrine, respiratory, etc.) and chemical load on the territories, based on USEtox model; the functional state of target systems (nervous, immune, cardiovascular) and level of chemical elements in the human body and the overall elemental imbalance, is established. This has provided us with a degree of understanding on how the degree of population and individual health risk could be determined.

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