

Groundwater geochemistry and water quality in the Ural region

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The Ural region lasts from the north to the south for more than 3 thous. km crossing all landscape and climatic zones from the coast of the Arctic Ocean to semideserts of Pricaspian (near Caspian Sea area). In this direction the quantity of atmospheric precipitations decreases, but evaporation and water salination increases. Fresh waters of good quality in the region are confined to the zone of active water cycling, they are of infiltration origin. At the Ural, vein-fracture waters prevail, at the Preduralye - pore and stratal waters. Ground water salination remarkably increases from the north to the south, water composition changes from ultra-fresh to saline chloride-hydrocarbonate at the south. At the most part of the territory the Ural waters are characterized by severe lack of iodine, fluorine, many metals. The ecological role of iodine, fluorine, strontium, iron, copper, phosphorus, mercury, arsenic, selenium and others is well determined. Concentration of the most toxic microelements becomes lower in the following raw: rock mass - soil - water - living substance. There is established the relationship of water chemical composition and biochemical cycle. The composition regularly alters following the change of landscape and climatic zones, geomorphologic zones, metallogenic areas and lithological composition of rock masses. Water quality becomes distinctly worse in areas of industrial-urban agglomerations and mining enterprises.