

GEOCHEMISTRY AND ORIGIN OF WATERS IN THE GEOTHERMAL SYSTEMS OF THE SOUTH KAMCHATKA (RUSSIA)

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The Kamchatka peninsula of eastern Russia is an area of active volcanism and contains a variety of thermal waters and fumaroles. About 75% of Russia's hydrothermal and mineral waters resources are found in Kamchatka. Our recent study has concentrated on the Paratunka, Karymshina, Malki, Apachi geothermal systems. The geochemical features of waters in geothermal systems are controlled by several factors including geological setting and tectonic control, as well as water-rock interaction, the influence of deep sources of chemical elements. All waters of studied area are meteoric origin. The thermal waters have high electrical conductance values up to 2350mS/cm with Na+K Ca and SO₄ as the dominant anions. The concentrations of ions depend to a large degree on temperature. Contents of Cu, Zn, Co, Zr, Ni, Mo in thermal waters are not so high and have there are no large differences between the groups. Most chemical elements income to the thermal waters from bedrocks (andesite, basalt, and their tuffs) and their contents are depend from water-rock interaction. Chloride, Br, F, S, and I are likely to be partly derived from deep volcanic gases. Carbon and Helium in the gas phase dissolved in thermal waters are more likely to be mantle origin.