



Studies of soil and ecohydrological processes in oil-gas production regions.

E.Ya. Khodyreva and Yu.P. Khodyrev

Kazan State University, Kazan, Tatarstan, Russia (Ella.Khodyreva@ksu.ru)/(843)2924448

For a better understanding and describing of the functional interactions between processes in soil and drinking, underground and stratum waters in oil-gas production regions we used laboratory and field monitoring methods of studies. The control of ecological situation dynamics in oil-gas production regions proposes a presence of primary data about parameter-indicators, which characterize a state of the object under investigation. One of these parameters is the concentration of heavy metal salts in drinking and stratum waters. Isolation of some compounds, which are extracted as impurities of oil and water during recovery of hydrocarbons from productive horizons, would enhance profitableness of recovery. Because accompanying impurities are a mixture of different salts and complexes, the methods of multielement analysis give the most objective evaluation of total content of some elements by search and prospecting. The developed method of laser mass-spectrometric analysis of oil and drinking, underground and industrial waters allows to investigate the samples on all elements of the periodical system simultaneously with limit sensitivity 0.1 mkg/l. The preparation of the oil and water probes was carried out by sublimation of highly volatile fractions in vacuum at 100 0C. The samples of drinking and underground waters, oils and industrial waters from wells of oil field Romashkin (Tatarstan) were chosen as the object for the research. In respect to possible metal extraction scandium is of most interest in inspected area because it's very high cost and availability of water-soluble pattern, most probably chloride. Its concentration in one well was 1 mg/l in water and 0.01 mg/l in oil. According to the received data of laser mass-spectrometric analysis, industrial waters on the activity investigated territory joint-stock company "Tatneft" contain 220-330 kg / ton of salts of metals that does by their potential source of alternative raw material for the chemical industry.

Soil is an important component of the earth's biosphere because of its crucial role in the hydrological cycle. For revealing possible correlation between spatial distributions of the valuable elements contained both in industrial waters and in tests of soils, 79 samples are prepared and investigated. These tests are selected at superficial geochemical shooting (field monitoring methods of studies) Aznakaevskoi, Karamalinskoi and Sabanchinskoi areas of joint-stock company " Tatneft ". Circuits of distribution of valuable elements on the investigated territory are constructed also a quantitative estimation of the maintenance makro- and microcomponents is given. From the found out elements the greatest interest Na, Mg, K, Ca, Cl, Br and their connections represent because of very high concentration and scandium owing to the cost. Now cost of scandium in the world market approximately in 25 times exceeds cost of gold and is not observed yet tendencies to its decrease. Presence of impurity of salts of heavy metals and their connections in soils, drinking, underground and stratum waters, definition of their concentration and comparison from maximum concentration limit allows to establish the control over dynamics of ecohydrological conditions and in due time to take measures on reduction of negative influence of processes of development of hydrocarbon raw material by an environment.