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Hydrogeochemical indicators for the exploration and development of hydrocarbon fields: review, analysis and prospects for use on Sakhalin Island

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Abstract. The paper discusses the directions of hydrogeochemical researches used to solve actual problems of the oil and gas industry: assessment of the oil and gas potential of territories, localization of oil and gas trap, prediction of the phase composition of hydrocarbon fields, control the development process of hydrocarbon fields, etc. Based on the literature data, the analysis and systematization of the main hydrogeochemical indicators of groundwater with oil and gas prospecting significance, as well as used already at the stage of development of oil and gas fields, have been carried out. The most efficiency of the application of hydrogeochemical researches in oilfield practice is achieved with the integrated use of various indicators. On the example of researches of the oil and gas potential of Sakhalin Island, it is shown that the hydrogeochemical data of the middle of the 20th century, obtained by outdated chemical analytical methods, cannot always be considered reliable. In this regard, additional researches are required to update the relevant hydrogeochemical data in this region.

Keywords:

groundwater, hydrogeochemical indicators, prediction of oil and gas potential, development of hydrocarbon fields, Sakhalin Island

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