

Regularities of soil aggressiveness formation towards the building constructions of reconstructed objects of oil and gas industry in the eastern part of the Republic of Tatarstan

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Abstract

The article presents the results of soils tests, selected during engineering-geological researches at reconstructed oil and gas industry objects in the eastern part of the Republic of Tatarstan. The purpose of researches was to identify the main factors of soil aggressiveness formation in relation to the building constructions. It is shown that chemical composition of the researched soils differs from the composition of soils located outside the exploited objects: pore waters contain sulfate and hydrocarbonate ions; sodium predominates among the positive ions. The average absorption capacity volume is amounted to 4.85 mg/eq to 100 g of soil, pH varies from 4.9 to 9.0. As a result we found an increase in chemical and electrochemical aggressiveness of soils to underground constructions in comparison with not chemically contaminated analogues. Chemical pollution of soils is the most likely reason for increasing of its aggressiveness. The process of chemical pollution occurred in the result of various fluids losses during the operations at the oil and gas industry objects. It is recommended to take into account the increasing of chemical and electrochemical aggressiveness of soils during exploitation for corrosion protection systems design.

Keywords

Aggressive soil chemistry, Underground constructions of oil industry