



APPLICATION OF REGENERATIVE TECHNOLOGY FOR HYDROCARBON WATER PURIFICATION

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Abstract: This research work makes it possible to apply the results obtained directly to industrial enterprises of the oil and gas complex. The introduction of regenerative technology for treating hydrocarbon wastewater is relevant and of great practical interest, as it allows reducing the load of petroleum products on evaporation ponds and biological ponds.

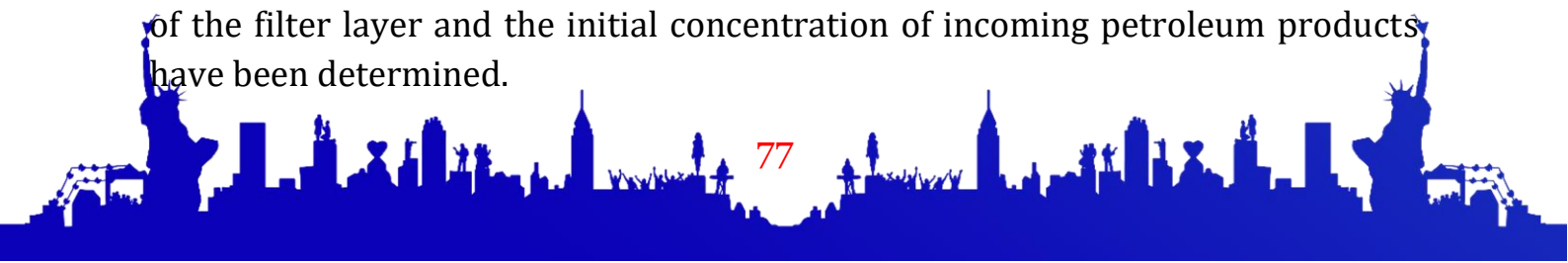
Key words: cultivation, production, oil, pollutants, water, atmosphere, In recent years, to meet the growing needs of mankind, oil and gas production has increased significantly. Every day, oil and gas enterprises generate thousands of tons of waste, emissions into the atmosphere and discharges of untreated wastewater into open water bodies, containing a large list of pollutants, the release of which into the environment harms nature.

Oil and petroleum products are dangerous and widespread pollutants. According to research, the maximum permissible concentration of petroleum products in open water bodies increases by 9-15 times due to the lack of land cultivation in the areas of oil terminals. facilities, the excess reaches 200 times, the legislation of many countries began to establish strict requirements for the quality of wastewater treatment, since in most cases they are discharged into small streams, rivers or reservoirs.

1. Analysis of scientific and technical literature and experience in the operation of industrial structures at oil pumping stations have shown that existing traditional technologies for treating oil-containing wastewater do not allow achieving standard values for the discharge of treated water into open reservoirs. The conducted eco-analytical monitoring of 24 oil pumping stations showed that evaporation ponds experience an increased load of petroleum products by 10.100 times.

2. For the first time, a set of studies was carried out on the use of regenerative technology for the purification of industrial wastewater, where petroleum oils with a density of 0.860.91 g/cm³, poorly soluble in water, but well trapping hydrocarbons, were used as an extractant.

. The hydraulic modes of wastewater supply, the dependence of the cleaning efficiency on the type of oil, its density, water temperature, filtration rate, height of the filter layer and the initial concentration of incoming petroleum products have been determined.





4. The operating conditions of an extraction-sorption facility have been studied, which makes it possible to achieve an efficiency of water purification from oil products at the level of 40-85% at each column (stage), without changing their original state, which ensures the subsequent return of oil products to the production cycle. As a result of the sequential-cascade connection of the columns, the total purification effect for oil products is 98.9%, for phenols 85%.
5. Industrial tests on industrial wastewater confirmed the established patterns and showed the feasibility of introducing regenerative extraction-sorption treatment after oil traps.
6. The proposed options for intensifying the technological scheme for wastewater treatment at the oil pumping station with the inclusion of an extraction-sorption treatment stage will significantly reduce the load on evaporation ponds and biological ponds.

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