

DETERMINATION OF OPTIMAL ELECTROPHYSICAL PARAMETERS OF THE PROCESS OF DEGRADATION OF ZHANAOPEN OIL SLUDGE WITH THE HELP OF ELECTROHYDRAULIC EFFECT

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The choice of technology for processing and neutralizing of oil sludge depends mainly on the amount of petroleum products contained in them and in each specific case it requires a differentiated approach, taking into account both environmental and economic indicators. In recent years, thermal methods have been developed using wave processing methods, in particular, high-frequency (HF) and microwave ranges.

The purpose of this work is to determine the optimal electrophysical parameters of the process of destruction of Zhanaopen oil sludge by means of electrohydropulse effect (EHE). To determine the optimal conditions and create a mathematical model for this process, laboratory studies were carried out using the method of probabilistic-deterministic planning of the experiment, in which the mutual influence of various factors, such as processing time, capacitor bank capacitance, interelectrode distance, catalyst, volume of the added donor (alcohol) were taken into account. On the basis of the generalized Protodyakonov-Malyshev equation, the results of all experiments were considered as the parameters Y_{1exp} and Y_{2exp} : Y_{1exp} is the kinematic viscosity of the oil sludge; Y_{2exp} is fraction output up to 300°C; Y_{1theor} is the calculated value of the kinematic viscosity of the fraction up to 300°C; Y_{2theor} is calculated values of light and middle fraction yield up to 300°C.

We took the value of the decrease in the kinematic viscosity of hydrogenate and the yield of the fraction up to 300°C as a function of the response of the influence of the electrohydropulse action. It has been established that the increase in the yield of light and middle fractions up to 300 °C from the Zhanaopen oil sludge during the destruction of a heavy portion of the organic mass of oil is the dominant factors that affect the decrease in the kinematic viscosity: interelectrode distance, processing time and discharge voltage. Optimal electrophysical parameters of the process of destruction of Zhanaopen oil sludge with the help of EGE have been determined.