

Model experiment for cleaning oil-contaminated soils

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Abstract

The ability to absorb oil hydrocarbons is inherent in microorganisms represented by various systematic groups. These include various types of micromycetes, yeast, and bacteria. The most active oil destructors are found among bacteria. They are characterized by the ability to absorb a wide range of hydrocarbons, including aromatic ones, have a high growth rate and, therefore, are of great practical interest. The restoration of oil-contaminated lands is currently one of the complex and at the same time little-studied object of reclamation. The article presents the results of studies of the adsorption capacity of hydrocarbon-oxidizing microorganisms of the genera *Bacillus*, *Micrococcus* and *Rhodococcus* and their oil-oxidizing activity after immobilization on zeolite and expanded clay in model conditions.

It was noted that as a result of research work, strains of the microorganisms *Rhodococcus*, *Micrococcus* are better adsorbed on the surface of zeolite, expanded clay and at the same time have a high oil-oxidizing activity. Representatives of natural hydrocarbon-oxidizing microorganisms are characterized by high emulsification rates; the cultures of *Rhodococcus erythropolis* and *Rhodococcus ruber* have the highest emulsifying activity. This may indicate a high destructive activity of microorganisms. When assessing the degree of oil destruction after 60 days when introducing free cultures of microorganisms, it ranged from 32.84 to 64.94%, and in the variants with the introduction of immobilized cultures of microorganisms on zeolite, oil utilization was from 47.94 to 86.84%. When immobilized cells of hydrocarbon-oxidizing microorganisms were introduced onto expanded clay, the destruction ranged from 47.69 to 92.75%.

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