



The GEOLEX biogeo sorbent

The GEOLEX biogeo sorbent consists of greensand – Ionsorb™ and immobilized oil-degrading microorganisms, represented by a symbiotic algal-bacterial-yeast consortium (microalgal strain *Chlorella vulgaris* Beijer. f. *globosa* V. Andr. IPPAS C-2024, bacterial strain *Pseudomonas yamanorum* VKM B-3033D, *Rhodotorula glutinis* yeast strain, VKM Y-2998D). Ion-exchange mineral is the carrier of microorganisms being in hypobiotic state under adverse conditions (temperature, humidity, etc.). Biogeo sorbent is highly adsorptive and oil-oxidizing. When used on contaminated sites, the ratio of saturated hydrocarbons changes, lower homologues degrade rapider. During the melting of snow and ice, the enzyme systems of the hydrocarbon-oxidizing microorganisms of the GEOLEX biogeo sorbent are activated, their dynamic growth and reproduction begin due to the presence of a nutrient source – hydrocarbons adsorbed, macro- and microelements of ion exchange material. Due to the intensive growth of enzyme activity with increasing temperature, oil destruction occurs 2 times more actively than when the biogeo sorbent is applied in the middle of the growing season.

The GEOLEX biogeo sorbent has a long shelf life and can be stored at low temperatures.

SPHERE of APPLICATION

1. For the purification of water bodies (swamps, ponds, lakes, rivers, seas) from oil, phenol and nitrogen pollution, as well as for industrial wastewater treatment.
2. For oil-contaminated soils remediation (oil, diesel fuel, gasoline, spent oil).
3. For cleaning the railway track from various organic and mineral pollution.
4. For cleaning industrial sites and soils from spilled oil spots.

In winter, the biogeo sorbent is applied to snow and ice in the oil-contaminated areas, that are inaccessible in the summer (swamps, ponds), as well as for the treatment of accidental spill areas.

The application of biogeo sorbent provides:

- localization of spills;
- simplification of oil spill recovery;
- prevention of spilled oil from spreading during snowmelt;
- prevention of secondary pollution since hydrocarbons sorbed by GEOLEX are decomposed by microorganisms immobilized.

PRACTICAL IMPLEMENTATION of the PRODUCT

Using the GEOLEX biogeo sorbent, technologies have been developed for the purification of soils, reservoirs, soils of railway tracks, and ballast contaminated with oil and petroleum products.

Experimental industrial trials on oil-contaminated sites in the Yamal-Nenets Autonomous District, the Komi Republic have been conducted in conjunction with EcoAlliance LLC.

Pilot industrial tests of railroad ballast clean-up have been conducted in conjunction with Russian Railways (RZD) in the Komi Republic and the Yaroslavl Region.

Trials of oil handling terminal diesel-contaminated soil recultivation have been conducted in conjunction with Komiaviatrans LLC.

10 000 m³ of oil-contaminated soils have been restored using GEOLEX biogeo sorbent for 2 years.

LEGAL PROTECTION

The GEOLEX biogeo sorbent was custom-designed and tested by the researchers of Biochemistry and Biotechnology Laboratory of the Institute of Biology of Komi Scientific Centre of the Ural Branch of the Russian Academy of Sciences for BIOECOBALANCE LLC.

This invention is protected by RU Patents No. 2 615 458, No. 2 658 134

COMMERCIAL OFFERS for BOTH INTERNAL and EXTERNAL MARKETS
Experimental industrial trials of biogeo sorbent.
License agreements and contracts.



Before



After



Before



After

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