



Use of the
EDAGUM[®]SM
humic product
in the elimination
of oil spills

Oil contamination is one of the wide-spread technogenic threats to the nature, that causes complex harmful effects on every biocenosis components. Oil spills influence on the soils, ground and open waters, living organisms both by hydrocarbons (in liquid, gaseous and even solid forms) and by stratal waters. This influence often cause drastically landscape degradation, decrease soil fertility, transforming it into the barely-inhabitant deserts.



Landscape self-remediation processes are very slow and must be somehow stimulated. One of the most effective tool in oil spill recultivation is the use of humic products.

HUMIC SUBSTANCES ARE THE MAIN AND THE ONLY WORKING AGENTS IN THE TYPICAL HUMIC PRODUCTS. THEIR PRESENCE ALLOWS:

- To stimulate soil microorganisms complex;
- To bound pollutants (not only an oil components, but a heavy metals and nuclides as well) into the non-soluble complexes;
- To improve contaminated soil properties in case of low impact;
- To absorb oil spill on the open soil surface.

*«However, in case of strong oil impact **soil microorganisms** complex is badly damaged and **are not capable to somehow decompose oil components.***

That is why, an alternative source of microorganisms is needed.»

In contrast with above-mentioned facts, **“EDAGUM[®]SM”** play a double role: it is not only a **highly effective humic product** with high concentration of humic substances (up to 50 grams per liter), but can be applied **as a source of microorganisms**, preserved from its natural source. In addition, it also contain comparatively small-sized molecules of aminoacids, carbon acids, sugars and a wide range of components, inevitable for the initial stages of microorganisms growth.

That is why **“EDAGUM[®]SM”** possesses the additional abilities:

- It is a powerful source of the microorganisms-destructors;
- It allows to drastically increase activity of the soil microorganisms complex not only by addition new strains, but also to support it's further growth;
- It does not require application any additional preparation – either biological or humic

In the experiments, conducted by Institute of Microbiology of Russian Science Academy was investigated the effect of “EDAGUM®SM” application on the oil-contaminated samples. No additional oil-destructive agents were added in order to find the effects of simultaneously action of “EDAGUM®SM” microorganisms and humic substances.



The samples, collected from Kapotnensky sludge tanks complex were located on the open fields and were underwent by the actions of different kind of humic products including “EDAGUM®SM”; check plots was left without any oil-destructive reagent.





During the experiments **“EDAGUM®SM”** was proved to have serious advantage due to it high biological activity, unlike coal-based humic substances. Besides, possesses remarkable sorption ability – every 1 grams of humic substances allow to absorb and to store up to 90 milligrams of heavy metals (Hg, Cd, Co, Ni, Zn, Cu, Cr, Fe)or radionuclides cations.

Completely decomposed oil-contaminated sample ("EDAGUM SM" used)

Progress stage of the oil decomposition (average humic products in action)

Initial stage of the oil decomposition (no chemicals used)



“EDAGUM[®]SM”

was shown to drastically increase the speed of oil decomposition processes: **90% of oil carbohydrates were decomposed just in two month** whereas on the other plots oil decomposition rates were much slower - on the **check plots more than 1 year was required** to reach the same results.

It must be admitted, that in the **hot climate** “EDAGUM®SM” will be able to stimulate microbiological activity even **more intensively**, that will further increase the rate of oil decomposition.





As a result, **“EDAGUM®SM”** allows to transform contaminated land close to the innate condition in **short times**, with **small operation costs** and **without strong requirements of additional microbiological products** application.

Thus, “EDAGUM[®]SM” play a double role of both biological and humic preparation, which makes possible total and quick oil hydrocarbons decomposition from the contaminated samples **(on the right side)** with formation of fertile soils **(on the left side)**.



EDAGUM SM RUS LLC

SM Group of companies

Moscow Russia

www.edagum-sm.ru

info@edagum-sm.ru

Thank you for attention!