

OBT® Oil Degradation Treatment consists of all natural, non-genetically altered, non-pathogenic strains of bacteria & enzymes.

Even though bacteria produce their own enzymes to aid in digestion, there is a lag time. All United-Tech formulas are blended with the proper enzymes to make the remediation process even faster. By utilizing a patented micro-encapsulation process, we are able to have the highest bacteria counts per gram possible.

In addition to the highest counts possible, the micro-encapsulation process also insures that only the potent "first-generation" strains are ready to work on the project.

REMOVE UNWANTED OILS, CLEAN SPILLS WITHOUT CHEMICALS

OBT® Oil Degradation Treatment has been formulated for the cleanup of oil spills on land and fresh or salt water as well as ground oil bioremediation in both soil and sand.

It is made from natural microorganisms that have not been genetically altered. The ingredients are FDA-GRAS (Generally Regarded As Safe) listed as safe for plants, animals and humans.

It has the highest bacteria and enzyme count in the industry, meaning less product is required to meet assigned tasks.

A patented microencapsulation process enables stabilization of the bacteria for a minimum of two years.

OBT® Oil Degradation Treatment has been proven effective in the breakdown of hydrocarbons in a variety of applications, including tramp oils in machine coolants.

This reduces machine smoking, odors and the need to use biocides. It is also suited for cleaning waste oil tanks and the breakdown of oil and grease and films on manufacturing facility floors.

Summary of Applications & Benefits

Gas Transmission Terminals, Filter Presses, Reclamation Facilities & Tank Cleaning (Bottom Solids Removal)

All of the applications described below are designed to enhance existing operations and protocols, resulting in efficiency and cost savings.

Treatment Of Wastewater Storage Tanks - Hydrocarbon contaminated waters can be remediated in days by utilizing OBT®, resulting in water that can possibly be released to the local POTW.

Treatment Of Wet Filter Cake - By treating the filter cake with OBT®, the burden is lifted of traditional & costly mechanical removal of hydrocarbons.

Remediation Of Tank Bottoms Exceeding 20% Solids - By treating tank bottoms on-site with OBT®, transportation and treatment cost are drastically reduced.

Treatment Of The API Separator - By treating the separator with OBT®, the capabilities of the separator are significantly enhanced.

Treatment Of Over-Scheduled Solids - Bottom solids can be treated directly in the containers with OBT®, reducing the backlog of solids easily and efficiently.

Treatment Of Hydrocarbon Contaminated Soils - Hydrocarbon contaminated soils due to spills, overflows, etc. can be easily and efficiently treated either in-situ or ex-situ with OBT® in weeks instead of months with minimal labor and equipment costs.

Treatment Of Waste Oils - Waste oils can be treated with OBT® preventing costly haul-off.

Call for more information
on our complete line of products.
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Product of United-Tech, Inc.

The Natural Response to Fuel/Oil Spills & Contamination On Land, Water, Secondary Containment Areas & Holding Tanks



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BIOREMEDIATION & OBT® OIL DEGRADATION TREATMENT

THE PRODUCT AND THE TECHNOLOGY

OBT® Oil Degradation Treatment is a compound of naturally occurring bacteria and enzymes coupled with adapted microbial nutrients used to remediate hydrocarbons. Bioremediation is the process of using microbial agents to convert or degrade organic compounds such as crude oil and gasoline into non-toxic substances such as carbon dioxide, water and oxygen. While the term "bioremediation" implies a process used to treat or remedy effluents, that is, waste material that has been discharged into the environment, applications of these products include use in a controlled, typically industrial, environment. Potential applications thus include:

- Clean-up of massive environmental disasters such as open water oil spills and oil tanker break-ups;
- Soil and groundwater hydrocarbon contamination;
- Breakdown of diesel range organics and gasoline range organics in a bioremediation system.

The efficiency of bioremediation is demonstrated most dramatically by nature itself. Through the process commonly known as the "carbon cycle", nature recycles organic compounds. For example, while millions of dollars have been spent on the clean-up of the Prince William Sound, site of the Exxon Valdez oil spill, by many reports, the current surprisingly good state of the area is attributable in significant part to natural causes, including bioremediation.

Many thousands of different species of bacteria exist in the world, and most sustain bacterial digestion in some way. Any given bacteria, however, may occur naturally only in a limited environment, require specialized food sources or have a unique biological role. In most cases, naturally occurring organisms are not in sufficient concentrations to produce a complete or prompt result. Thus, there exists an opportunity to

enhance and accelerate the natural process by the introduction of additional microbes and nutrients.

The art in the development of bioremediation products is in the selection and combination of microbes and nutrients. The goal is to identify a compound that produces a sustained chemical reaction, breaking down in stages, the complex and harmful contaminant into simple and harmless molecules and base elements. For reasons of both principle and pragmatism, only naturally occurring, non-genetically manipulated microorganisms were considered for inclusion in OBT®.

Initially, a selection of microbes were isolated and evaluated in the laboratory to identify their respective abilities to degrade specific chemical structures. Further experimentation was conducted to test the interaction of the microbes with environmental variables. Finally, additional efforts were made to identify both the strains of microbes which produced the best result at various points in the process (for differing complex molecules need to be broken down at various junctures) and the energy sources from which the microbes could feed to sustain that process. The results are bioaugmentation compounds containing microorganisms that work in concert, possessing the bacteriological and enzymatic systems necessary to degrade targeted contaminants in a manner both effective and cost efficient in a number of applications.

These products take the form of a free-flowing powder activated by the introduction of warm water. In dry-form, the products remain stable for a period of two (2) years when stored in a cool and dry place. Test results indicate that the products are efficacious in remediating contamination of soil and water (both fresh and salt). Normative treatment of contaminated soils can be *ex situ*, in earthen dikes or through use of bioreactor equipment and *in situ*, treatment is done through land farming or direct spray application.

OBT® Oil Degradation Treatment will:

- Resist toxic shocks (including sudden influx of hydrocarbons and limited concentrations of heavy metals),

- Be effective across a broad range of pH levels and temperature ranges,
- Have an extremely high residual bacterial count,
- Not generate hydrogen sulfide, thereby minimizing noxious odors, and
- Be equally effective in salt and fresh water.

The Natural Response to Fuel/Oil Spills & Contamination on Land, Water, Secondary Containment Areas and Holding Tanks

A United-Tech Inc. microbiologist who saw the need for a faster, more thorough means of bioremediation developed OBT® Oil Degradation Treatment. All United-Tech formulas have been tested and proven by a diverse range of clientele. A few of the benefits that come from treatment utilizing United-Tech formulas include:

- A completed project time of 3-5 weeks, even faster in aqueous applications.
- A competitive project cost, generally thousands of dollars less than traditional "dig & haul" methods.
- Customers have more control over the project by utilizing their own resources for manpower & equipment.
- Liability issues are limited because the contaminated areas are treated on-site.
- Eliminates "eye-sores" on sight that tend to be magnets for regulatory authorities.
- The contamination is treated on-site, rather than simply relocating the problem.

Some Bioremediation Applications Include:

- Treatment of spills on site, eliminating the need for a costly second party to come in to excavate & remove the contamination.
- Removal of hydrocarbons from wastewater to ease the load on the wastewater treatment plant.
- Remediation of spills within secondary containment areas to insure compliance with stormwater management plans.
- Expediting the process of tank cleaning by converting heavy oily sludge to light floating oil.
- Remediation of remote areas where mobilization of traditional equipment is not possible.
- Open water oil spills