

Bio Petro Treet



Biological Petroleum Hydrocarbon Remediation

- *Removes petroleum hydrocarbon from soil and water*
- *Contains microbial organisms which metabolize petroleum*
- *Clean, safe & economical approach to bioremediation*
- *More Eco-Friendly and Economical than Chemical alternatives*
- *Unlike liquid products, our dry product has a shelf life of 2+ years*

Bio Petro Treet is a bioremediation system for removing petroleum hydrocarbon from soil and water. The Bio Petro Treet system consists of a highly concentrated microbial formulation containing a proprietary blend of aerobic bacteria having petroleum molecule metabolizing capabilities for hydrocarbon removal from soil and aqueous environments. A concerted need for environmentally safe petroleum hydrocarbon remediation has become evident in recent years with no practical way to deal with petroleum spills and leaks other than by mechanical and/or chemical means. Bio Petro Treet offers a proven clean, safe, and economical approach to remediation for oil contamination in soil or water. Bio Petro Treet can accomplish in a short time what takes several years to achieve by nature in expensive dedicated landfills or lagoons and is more eco-friendly and economical than any chemical processes which also requires significant investment and handling.

In addition, the clean-up process can sometimes be accomplished *in situ (on-site)* with Bio Petro Treet to provide further savings.

***** Our consultants are available to discuss your special needs. *****

WHAT IS BIOREMEDIATION?

Bioremediation is the application of biological treatment to the cleanup of unwanted chemical contaminants, whether hazardous or non-hazardous. Remediation is derived from the word remedy. It means to correct; to make right again. Biological remediation or “bioremediation”, as it is known in the environmental industry, has become an important and economical means of cleaning up petroleum and other chemical spills in soil, water, wastewater, ocean shorelines, and in many other areas of the environment. Bioremediation incorporates the use of microorganisms to biodegrade these contaminating materials.

Throughout the United States and the European Community, bioremediation is fast becoming the approach of choice in many environmental cleanup projects.

The science of biological remediation is not new. Over thirty years of well documented examples of bioremediation has opened doors for government approval and public acceptance. A number of years ago the United States Environmental Protection Agency (EPA) accepted the use of bioremediation as an effective means to cleanup of hazardous chemicals. All 50 states have followed with approval.

Bioremediation involves the biodegradation of harmful chemicals (such as gasoline, diesel, oil and many other organic compounds) into non-hazardous products (such as carbon dioxide, cellular protein, and water). Unlike other remedial technologies, bioremediation converts injurious materials into non-hazardous components. A current remedial approach is landfilling. The landfill process does not do away with the problem but only hides it. Without actual degradation of the contaminant to non-regulated end products there remains potential liability to the person or party originally responsible for the episode of contamination.

On the other hand, Bioremediation limits liability and public health hazards by converting the contaminants into neutral, non-regulated, end products.

Bioremediation is not a fix-all nor is it miraculous technology. However, when properly and professionally incorporated into the cleanup of harmful and hazardous organic chemicals, bioremediation offers an economical alternative to other remedial technologies.

Bioremediation is cost effective and environmentally sound. In many instances it is becoming the preferred choice of remedial technology for the cleanup of present and future hazardous waste problems.

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In understanding the microbial conversion of hydrocarbons it is necessary to understand some of the physiology of these microbes:

In order to grow and multiply, the microbes require a source of energy. In the case of hydrocarbon remediation the petroleum hydrocarbons serve as the basic energy and carbon source to support microbial metabolism. Microorganisms also require the presence of other elements in their immediate surroundings in order to satisfy their nutritional requirements for growth and multiplication. These other elements may include oxygen, nitrogen, phosphorus, magnesium, manganese, zinc, and molybdenum. Without these elements being available to the microorganisms, they will not have their nutritional requirements met and, although the energy source (carbon source) may be in excess supply, growth of the organism(s) will not occur.

The source of oxygen required for metabolism of petroleum hydrocarbons is atmospheric or free oxygen. Some microorganisms can obtain the oxygen required to metabolize from other chemicals that contain oxygen. This is not the case with the microbes that metabolize petroleum hydrocarbons.

Enzymes (biological catalysts) are produced by microbes. These enzymes cause the different biochemical reactions to occur which result in growth and multiplication. These reactions are affected by temperature and pH. In general, growth is favored by a neutral or slightly alkaline pH (6.5-8.5). Temperature directly affects rates of metabolism. The maximum metabolism rate will occur at about 32oC. Metabolism rates fall as temperatures approach a high of 42oC or a low of 10oC.

Moisture is also required for growth of the microorganisms. Water provides the means of transporting food into the microbial cell as well as the means of transporting waste byproducts out of the cell.

The right species of microorganisms are also important as not all microorganisms can metabolize hydrocarbons.

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RiMAX Bio

Economical Organic Solutions

APPLICATION AND PACKAGING:

For small hydrocarbon bioremediation jobs we offer a “Soil Contamination Clean-Up Kit” containing prescribed amounts of Hydrocarbon Degrading Bacteria, Microbial Activator and a Special Nutrient package (containing nitrogen, phosphorus, potassium and humic acid). This Kit will clean-up 10 cubic yards of contaminated soil when used as directed.

For larger soil and water hydrocarbon contamination problems, please consult with our staff at 940 594-0144 for an analysis and recommendation of treatment.

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