



AC ENVIRONMENTAL SERVICES

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AC BIO-ONE

A liquid blend of naturally occurring bacteria used to consume hydrocarbons and remediate contaminated sites.

AC Environmental is pleased to present information about our environmentally friendly microbial product (Bio-One) for cleanup of specific hydrocarbon and hydrocarbon related contaminants.

The market for this product includes industries such as Oil and Gas or Mining, Spill Response Organizations and anyone dealing with hydrocarbon contaminated sites.

A highly effective, low-cost bioremediation solution for oil spills and the cleanup process, Bio-One™ is a patented, liquid blend of naturally occurring, contaminant-digesting bacteria. The blend includes microbes that serve as the primary digesters of the contaminant as well as beneficial secondary microbes that digest the waste of the primary metabolizers. Depending on the contaminant, Bio-One™ can be custom blended for a more precise and effective outcome.

Depending upon the specific constituents of the hydrocarbon contamination and site-specific characteristics, Bio-One™ can be custom blended to ensure complete remediation. AC Environmental's Bio-One™ has been successfully utilized on projects to remediate gasoline, crude oil, condensate, diesel fuel, JP4, jet fuel, alcohols, chlorinated solvents, toxiphenes, PAH (Polynuclear Aromatic Hydrocarbons), DDT (Dichloro-Diphenyl-Trichloroethane) and explosive wastes (nitrate compounds). In wastewater, Bio-One has been effective in reducing or, in some cases, eliminating TPH (Total Petroleum Hydrocarbons), BOD (Biochemical Oxygen Demand) FOG (Floating Oil and Grease) and COG (Chemical Oxygen Demand) from the system.

Bio-One is truly an environmentally friendly product for all hydrocarbon remediation situations.



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Bio-One, the natural solution for hydrocarbon remediation

- 100% naturally occurring microbial treatment for hydrocarbon remediation – no toxic chemicals
- Easy to administer to hydrocarbon spill...active microbes seek their food source
- Safe to use in any remediation situation – land, water, industrial, residential, etc
- Recommended by professionals
- Environmentally beneficial – helps bring soil back to the state it was prior to contamination
- Microbes are non-hazardous, non-toxic, non-carcinogenic, do not violate air emission standards and require no special handling or storage permits.
- The bacterial strains in Bio-One™ have been selected, cultured and acclimated according to their particular genetic traits and ability to degrade hydrocarbon chains ranging from C4 to C100.
- The microbes are guaranteed to be alive as they have a shelf life and we identify this with our 'Best before' label on every container





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Bio-One Application for Contaminated Soil:

Sample stockpiles for BTEX, TPH and TCLP metals as required by regulatory agencies. The pH must be in the 6-9 range and should be maintained as such.

Screen soil or grind to uniform size and consistency. The soil should be as fine as possible so that even application of bio- product can be achieved.

A suitable location for the bioremediation should be selected so that the ambient temperature can be kept at 52°F (11°C) or above. Lower temperatures reduce the metabolic rate of the bacteria and extend the remediation times.

Large Scale Application – High Nitrogen plant fertilizer (30-0-0) can be used as a stimulant. It should be mixed with the water as per the fertilizer instructions. This mixture of eater and nutrient should be added to the bacteria (Bio-One) at a ratio of 50:50. For example, treatment of 1 cubic yard of soil would take ½ gallon of Bio-One and ½ gallon of nutrient and water mix. To insure proper fragmentation of the soils, feed the soils through soil grinders, shredders, pug mills or similar device. The finer grain size will allow for better results. There should be no lumps present. Bio-One and nutrient water mixture should be applied when soils are exiting the grinding device.

NOTE: Once the nutrient water is added to the Bio-One, it must be used quickly due to the fact that the bacteria will undergo extremely rapid growth.

Soil should be placed on plastic sheeting approximately 10ml and bermed or surrounded by suitable containment. Liquids should not be allowed to escape.
The maximum height of the pile should not exceed 18 inches.

For Small Applications – the soil should be put into 2-3 inch layers and sprayed evenly with the bio-product. Another 2-3 inch layer should be placed on the already sprayed soils and then the entire pile should be sprayed again. This process should be repeated until the cubic yard of soil is completely treated. At approximately every 2 layers, soil should be lightly stirred with a garden rake.

Moisture content should be maintained at a level of 16-20% with periodic application of water (preferably de-chlorinated). Do not apply too much water as it will slow down the bioremediation process

BTEX and TPH should be checked after 30 days.

NOTE: It is recommended that additional tilling be performed at the end of the second week.



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Mixing Instructions for Bacterial Nutrient and Bio-One:

The Bacterial Nutrient contains three compounds. The compounds are placed in the pail in layers. If less than the full 40 lbs of Bacterial Nutrient is used, it must be pulverized and thoroughly mixed in the pail.

11.5oz (by weight) of Bacterial Nutrient is used for each gallon of Bio-One. The Bacterial Nutrient is dissolved in clean water at a ratio of one part water/nutrient mix to one part Bio-One. Example: 11.5oz (dry weight) Bacterial Nutrient in one gallon of water for each gallon of Bio-One used.