



Oil-Degrading Microbes in SPILL HAND™

The Oil-degrading microbes in SPILL HAND™ are very diverse in nature and capable of working under a wide range of physical and chemical conditions. They can tolerate very harsh environments of temperature, salinity, and contaminant types. SPILL HAND™ will absorb crude oil along with any of its many potential constituents and begin to break the hydrocarbons down immediately with the addition of water, even salt water (up to 25%). The microbes are held in suspension within a proprietary compound called ECOZYMATE™ that is capable of absorbing spills for solidification. ECOZYMATE™ provides an environment where the liquids are separated into microscopic layers yielding immediate and safe access by the microbes. This environment allows movement of nutrients and oxygen and provides space for an optimal microbial substrate to form whereby contaminants are broken down.

Technical Information

The microbes in SPILL HAND™ have a large range of metabolic functions and are highly effective in remediating crude oils, refined fuel products, waste oils, grease and most of the potential 300,000 natural hydrocarbon derivatives of crude oil with molecules containing up to 60 carbon atoms. The microbes are concentrated to a nominal level of 100 million cells per gram (colony-forming units per gram).

SPILL HAND™ microbes consists of a large variety of naturally occurring aerobic and microaerophilic (requires less oxygen) organisms that have been collected from natural and man-made remediation sites around the nation. They have been isolated and propagated in the lab because of their ability to break-down and digest hydrocarbons, then infused in concentrated unaltered (all-natural) form into SPILL HAND™.

SPILL HAND™ microbes have the ability to recycle hydrocarbons and other compounds into non-toxic components that other healthy soil microbes then use as a food source that ultimately supports the life of higher organisms, especially plants. These microbes in are not genetically altered in any way. They are natural soil and water microbes that have been selected for their unique chemical abilities and then concentrated to provide an overwhelming level of activity in the presence of hydrocarbons and nutrients.

Technical Information (Continued)

The microbes in SPILL HAND™ work in soil and water in the presence of oxygen and will never invade storage tanks, wells, pipelines, or other environments crucial to oil and gas handling. The microbes are Cultivated through a proprietary process using crude oil as the sole carbon source. This naturally excludes the growth of potential pathogens or unwanted contaminants while increasing their affinity for hydrocarbons. They are safe.

Multiple strains of microbes are utilized in SPILL HAND™ to facilitate the co-metabolism of hydrocarbons. Basically, while one strain is breaking down a larger chain molecule in to smaller chain substances, another begins working on the new smaller molecules. This continues down the metabolic assembly line so-to-speak until hydrocarbons are degraded into fatty acids that can then be used as a food source by other organisms. What is left in the end are individual base ions, carbon, carbon dioxide, and water.

Even most of the microbes themselves die out when their food source is gone and become food for higher organisms. However, some will remain active as part of a healthy soil's biological environment.

The parameters required for sustained biological activity in SPILL HAND™ are the same as the normal conditions required in the nearby pasture, garden, or field: They need an energy source (carbon from the hydrocarbons), nutrients (Nitrogen, Phosphorous, Potassium, etc), water (>10%) and the exchange of atmospheric air.

SPILL HAND™ microbes work best under the following conditions: pH (5-10), temperature (32F-120F), oxygen (>3%), and salinity (<25%),

More Production Information

- Microbes are Aerobic/ Microaerophilic
- Proven Hydrocarbon Spill Degraders
- Concentration -- 100 million micro-cells per gram
- Dry material -- infused in mineral absorbent (ECOZYMATE™)
- Active in both fresh and salt water (up to 25% Salinity)
- Most active in temperature range from 32° F-120° F
- Optimal pH tolerance 5.0-10.0
- Non-Invasive into oil and gas process atmospheres or media
- Non-Genetically Altered
- Non-toxic
- Non-corrosive
- 5-year shelf life stored under normal ambient conditions

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