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CHEMICAL PROCESS

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Once OIL SPILL EATER II is applied to a hydrocarbon spill, the enzymes and other product constituents start emulsification and solubilization of the hydrocarbon substrate. Emulsification and solubilization generally take from a few minutes up to a few hours for weathered heavy-end hydrocarbons, once OSE II is applied with a temperature of 40 degrees F. or greater. Once solubilization is completed, the hydrocarbon substrate is less toxic (and the hazard of fire is diminished) so the enhanced - naturally occurring bacteria will have a higher affinity for the solubilized hydrocarbon substrate.

NOTE: There is no hydraulic loading with the use of OSE II and therefore related hydrocarbons are not pushed into the lower depths of the water column. During these reactions, OSE II offers up a complete nutrient system to promote the rapid growth or colonization of naturally occurring indigenous bacteria.

OSE II is also formulated so that once application to the hydrocarbon substrate occurs, molecular adhesion takes place. This prevents OSE II from being removed from the hydrocarbons easily. The above reaction forms the substrate complex.

Once the outer molecular walls of the hydrocarbon substrate complex have been weakened or broken, then this allows bacteria better access to the hydrocarbon substrate. The nutrients in OSE II's product matrices (readily available nitrogen, phosphorous, carbon and vitamins) rapidly populate naturally occurring bacteria. There are certain product constituents to specifically enhance various hydrocarbon degrading bacteria.

The naturally enhanced hydrocarbon degrading bacteria rapidly populate until product nutrients are depleted, at which time they readily convert to the only food source left (the weakened or broken hydrocarbon substrate). The transition- state complex is when the enhanced naturally occurring hydrocarbon degrading bacteria start converting hydrocarbons to CO₂ and water.

Chemical Process (continued)
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The enhanced naturally occurring hydrocarbon degrading bacteria convert the solubilized hydrocarbons to CO₂ and water which is the end point or the Bioremediation of the hydrocarbon substrate. Any OSE II product components left are 100% Biodegradable and will be used up naturally.

This process emulates mother nature completely!

NOTES:

OSE II's optimum temperature range is 40 degrees F. to 110 degrees F. - however OSE II is effective in the range of 28 degrees F. to 120 degrees F.

OSE II has a five (5) year shelf life if stored in a covered area where the temperature does not exceed 102 degrees F.

Our research has determined that the age and weathering of hydrocarbons (if weathered over 1 to 2 years) may slow Bioremediation somewhat.



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SRP/AJL