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WHITE-ROT FUNGI vs. OIL GATOR

PCP and CREOSOTE DEGRADATION

The Escambia Wood Preserving Site-Brookhaven, Mississippi is one of eight SITES (Superfund Innovative Technology Evaluation) which have been selected for field evaluation of bioremediation. It is a former wood preserving facility which used PCP(pentachlorophenol) and Creosote to treat wooden poles.

Preliminary studies have been conducted by the U.S. EPA Risk Reduction Engineering Laboratory (RREL) and the U.S. Department of Agriculture Forest Products Laboratory (FPL) using White-rot fungi treatment. Results have shown that the use of white rot fungi is effective in bioremediating PCP and Creosote, however, there are several factors to be considered before determining the overall effectiveness in using this type of procedure over OIL GATOR.

First, it has been shown in recent literature that PCP adsorption to mycelia is very low approximately 0.01 to 0.05g PCP per gram of mycelium (dry weight basis) (1). This type of application would require the addition of substantial amounts of mycelium in the field to effectively remediate a site such as the one in Brookhaven. OIL GATOR, however, has a comparably higher absorption rate with PCP. Thus, reducing the amount of sorbant needed for this type of application. Once absorbed, the contaminant will not be released back into the environment as with an adsorbent such as white rot fungi.

Second, with the application of a specific species of fungus (white rot) there are the consequences of introducing a foreign species into the soil ecosystem. Many times a foreign species will not be able to overcome indigenous microorganisms already resident within the soils. Indigenous microflora establish a hierarchy by which the more durable and less fastidious species are more likely to survive than a more fastidious or less durable species. Competition for available nutrients as well as for available carbon sources enable the indigenous microflora to remain dominate within the ecosystem. Introducing a specific species of fungus into a foreign system would require that vast amounts of the species be introduced in order to overcome the difficulties of entering a foreign system. OIL GATOR products have indigenous microorganisms incorporated into their structure. Therefore, there is a greater probability that the microorganisms will be able to survive in a new environment. Since the basis of this type of application hinges on the maintenance and utilization of the microorganisms for the bioremediation of the given pollutant it would be of great concern to use a process which is most favorable for the achievement of the desired result.

Third, often when applying a particular procedure for remediating a hazardous site, expert or professional personnel must be involved in the process. Specifically, the conductors of the project in Brookhaven excavated the contaminated soils, passed them through a sieve and then inoculated the soil with microorganisms. These types of procedures are costly and could be eliminated. OIL GATOR application does not require expert personnel and is very simple to use once a general assessment has been made as to the extent of contamination and what type of pollutant is being treated. Once these assessments have been made the product is simply tilled into the soils using either a garden tiller or a rake and then the mixture is moistened.

In summary, there are several proposed method for the remediation of wood preservatives (PCP and Creosote) in the environmental remediation industry.

However, OIL GATOR is the only one which combines both cost effectiveness and dependable results. In comparing OIL GATOR to the use of white rot fungi in the remediation of the Escambia wood preserving site in Brookhaven, the white rot fungus may be somewhat effective, however, OIL GATOR will provide better results in a more cost effective manor.

LITERATURE CITED

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