BioTech Restorations

Project Summaries

BioTech Restorations (BioTech) and GeoSolve, BioTech's West Coast Affiliate, are pleased to announce the successful remediation of three (3) properties in California using our Factor, to bio-remediate chlorinated compounds detected on the properties listed below, prior to treatment. The contaminants of concern (COC) remediated at this properties include DDT, DDE, DDD, Toxaphene, Dieldrin, Endrin, PCBs and Endosulfan II.

Factor is a proprietary soil amendment consisting of a synthesized protein genetically similar to the DNA of a specific bacteria species living within the soil at the site. The Factor used on these sites was analytically determined by a series of exhaustive microbiological and bio-chemical experiments performed in a BioTech laboratory using soil collected from the site. The protein within the Factor is similar to the protein originally destroyed by the COCs added to the soil, thus genetically crippling the indigenous bacteria from metabolizing the COCs by consuming the chlorinated hydrocarbons and bio-chemically breaking down the COCs into inert substances. Factor restores the indigenous bacteria back to their near original condition, enabling the bacteria to metabolize the pesticides into inert substances (chloride salt, carbon dioxide and water) and bio-remediate the site. The indigenous bacteria present at these sites, which are responsible for breaking-down the various COCs include, but are not limited to, Xanthomonas and Actinomycetes and are not pathogenic in the environment.

Borello Property – June 2005 through October 2005

The Borello Property is located at Cochrane and Peet Roads (APN 728-34-3) in Morgan Hill, Santa Clara County, California. The property consists of a 14-acre parcel previously contaminated with elevated concentrations of Toxaphene and Dieldrin within the surface soil from use as an apricot and cherry orchard from the early 1900s. In September 2004, the orchard was burned on site to increase carbon load in the soil. BioTech Restorations performed a bench study on the soil from the site and determined the soil used in the bench study was successfully remediated using an effective Factor.
BioTech Restorations

Borello Property (Continued)

In June 2005, Factor, lime, manure and nitrogen fertilizer (ammonium nitrate) were used to amend the initial 18-inches of soil on the property. Bi-weekly irrigation followed by soil mixing at 10-day intervals for two months effectively neutralized Toxaphene from an initial concentration of 6.2 parts per million (ppm) to a final concentration of 0.13 ppm and an initial Dieldrin concentration of 0.4 ppm to a final concentration of 0.017 ppm. Both of the final concentrations were below residential cleanup levels of 0.4 ppm for Toxaphene and 0.025 ppm for Dieldrin established in the DTSC approved Removal Action Workplan (RAW). On October 7, 2005, the DTSC formally closed the Borello Property as an unrestricted use site.

Barry Swenson – South Yard Property – November 2005 through February 2007

North American Transformer (NAT) previously owned the South Yard property, which was formerly used to store transformers filled with polychlorinated biphenyls (PCBs), namely Aroclor 1254 and 1260. NAT sold the South Yard property to Barry Swenson Builder. After subsequent Phase II ESAs, elevated concentrations of PCBs were detected in subsurface soil up to 156 ppm. Over 16,000 cubic yards of PCB-impacted soil was determined to contain elevated PCB concentrations over 1 ppm. Barry Swenson Builder contracted with BioTech to use our Factor in destroying elevated PCBs in the soil prior to development of the South Yard facility. A Remedial Action Plan (RAP) was prepared and submitted to the California Regional Water Quality Control Board – Region 2 (Water Board) for review and was approved in June 2005. The Water Board was chosen as the lead agency to oversee cleanup since they were the lead agency on overseeing the adjacent NAT cleanup. However, on-going
Barry Swenson Property (Continued)

groundwater extraction and remediation of a migrating volatile organic compounds (VOCs) plume beneath the site from an off-site source required the destruction of 13 groundwater monitoring and extraction wells on the South Yard facility through the Santa Clara Valley Water District (SCVWD). Upon completion of well destruction activities, the PCB-impacted soil was encountered up to 6 feet below ground surface (bgs) and was excavated and spread over most of the property in a 2-foot lift. In November 2006, approximately 90,000 pounds of Factor, lime and other soil amendments were thoroughly mixed and irrigated on site. The treated soil was routinely mixed (every 10 days) and irrigated (up to 3 times a week) for 7 months. By June 2006, over 75% of the PCB-impacted area at the site indicated PCB concentrations less than 1 ppm. By August 2006, over 90% of the PCB-impacted area at the site indicated PCB concentrations less than 1 ppm. An additional 8,000 pounds of Factor, lime and soil amendments were mixed into the residual elevated PCB area. By February 2007, 96% of the property indicated PCB concentrations less than 1 ppm. Due to construction requirements, BioTech Restorations agreed to excavate and dispose approximately 575 cubic yards of residual PCB-impacted soil at a Class II sanitary landfill. The PCB concentrations in the disposed soil did not exceed 4 ppm. The property was formerly closed by the Water Board in late February 2007.
BioTech Restorations

Mantegani Property – May 2006 through January 2007

Mr. Mantegani used his 0.6-acre property in South San Francisco, California as a nursery from the late 1930s through the late 1980s, in which pesticides DDT, DDE, chlordane, Endosulfan II and Dieldrin was used to control pests. Elevated concentrations of DDT (up to 9 ppm) and Dieldrin (up to 1 ppm) were detected in the surface soil during subsequent Phase II ESAs. Mr. Mantegani, at the recommendation of the DTSC, contracted with BioTech to destroy the residual pesticides within the subsurface soil at his property. A RAW was prepared and approved by the DTSC in April 2006 and in May 2006, approximately 4,000 pounds of Factor, lime and soil amendments were mixed into the soil and irrigated. Mr. Mantegani oversaw the bi-weekly irrigation of his property and BioTech managed the soil mixing operations, which occurred every 10 days. Within 3 weeks of initial Factor application, DDT and DDE concentrations were reduced from approximately 9 ppm to less than 0.5 ppm and Dieldrin was reduced from approximately 1 ppm to 0.5 ppm. Multiple applications of lime were necessary due to the acidic nature of the soil from June through September 2006. However, by December 2006, Dieldrin was reduced to approximately 0.1 ppm and the site was formally closed by the DTSC in January 2007.

BioTech Restorations Principals and Affiliates

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