

In-situ Bioremediation of Chlorinated Solvents in Source Areas

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BioSoil dares to go outside the common paths in order to find innovative and economical solutions for soil contamination problems. BioSoil was one of the very first firms in the Netherlands that performed commercial in-situ bioremediation projects with a guaranteed result and, most important, that were finished accordingly.

Most of the remediation concepts of BioSoil are based on the stimulation of natural biodegradation processes (enhanced natural attenuation). The basic idea is simple. The natural soil microbial flora is stimulated to degrade contaminants like diesel, petrol and other types of mineral oil, but also more difficult contaminants like creosote, and chlorinated hydrocarbons. To this end the limiting factors for growth of the desired microorganisms are determined and the soil is enriched in such a manner that the limitations are overcome. Mineral oil and PAH's, etc. are biodegradable under aerobic conditions (in the presence of oxygen) and chlorinated hydrocarbons or dehalogenated under anaerobic conditions. To achieve the latter an electron donor has to be added, which is a mixture of natural organic substances, developed by BioSoil R&D BV. The remediation of source areas with chlorinated contaminants, is difficult or thought to be not feasible. BioSoil however has extensive experience with the in-situ remediation of these kind of contaminated sites. To illustrate this different cases will be presented, these are cases in the Netherlands, Germany, Finland and Italy. In these cases free phase was present. In some of these projects the biological degradation was combined with a small pump & treat, to speed-up the remediation process. What is also interesting in the project in Finland is that the contamination is for a large part present in fractured bedrock. Of the cases presented 2 are already finished and the other 2 are still operational.

Martin Slooijer

Ing. Martin Slooijer is general manager of BioSoil International BV of the Netherlands. Over the past 10 years he has been working closely in the design, implementation and operations of in situ / on-site remediation projects, the majority of these projects were based on biological processes. His experience extends from ground operations through to project management and design. During his career at BioSoil he has been a project manager for projects in the Netherlands and abroad dealing with soil and groundwater remediation, aerobic and anaerobic bioremediations, on-site treatment of contamination (biological and physical), and turnkey systems. Since the last 2.5 year he has been the general manager of BioSoil International BV and part of the management team of the BioSoil Group.