

# Advanced In Situ Bioremediation of Hydrocarbon-Contaminated Soils – LIFE InBioSoil Project



## INBIOSOIL Kicks off!

Using fungi and bacteria to clean  
European contaminated soils

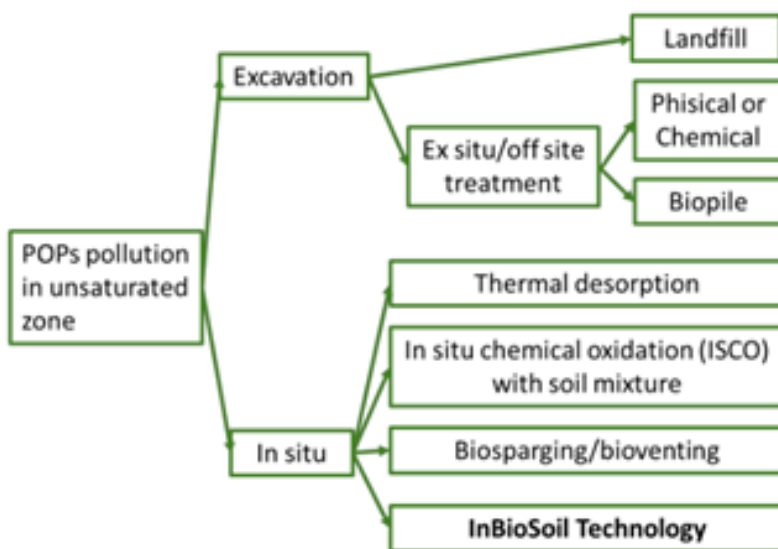





## Context

The LIFE InBioSoil project aims to demonstrate the feasibility of Advanced In Situ Bioremediation (AIB) for Persistent Organic Pollutants (POPs) in contaminated soils, using a low-pressure injection system that enables both mycoremediation and biostimulation of indigenous microorganisms. Through demonstration sites in Spain and Belgium, Injectis validates the efficacy of this approach across contrasting geological and climatic contexts.

The project targets 40–85% degradation rates of POPs while minimizing environmental impacts, including an 80% reduction in greenhouse gas emissions and a 90% decrease in energy consumption compared to thermal desorption. This innovative solution promotes sustainable, low-impact in-situ remediation and supports EU objectives for the circular economy and soil health by avoiding excavation, reducing CO<sub>2</sub> emissions, and restoring soil functionality on-site.

Injectis contributes its patented SPIN® Injection Technology, ensuring homogeneous reagent distribution even in low-permeability formations, thus improving the reliability and scalability of advanced bioremediation methods.



Energy	Economic cost	GHG transport and operation	Removal efficiency	Soil Health
NA	Depends on regulation	↑	X	X
↑	↑	↑	↑	X
↓	↓	↑ ↓	Biodisponibility	
↑	↑	↑	↑	X
↑	↑	↓ ↑	↑	X
↓	↓	↓	Volatile POPs	
↓	↓	↓	Biodisponibility	

## Geology

The project focuses on developing in-situ bioremediation strategies through reagent injection in the unsaturated zone, a challenging environment where biological degradation rarely occurs due to the absence of optimal conditions – particularly the lack of sustained anaerobic environments.

Following extensive laboratory simulations and bench-scale testing, pilot-scale field trials will be carried out on two hydrocarbon-contaminated sites (medium to light hydrocarbons): one in Belgium and one in Spain (Catalonia). On both sites, Injectis' expertise in injection design and low-pressure delivery will be key to optimizing reagent distribution and contact efficiency under these specific unsaturated conditions.

The geological settings are expected to be variable, ranging from sandy to silty-sand formations, allowing evaluation of the injection system's performance across different soil textures and permeability levels.

## Injection Technology – SPIN®

As a specialized expert in in-situ injection systems, INJECTIS is responsible for the technical execution of the injection activities within the project. The company provides its patented SPIN® technology, designed to enable low-pressure, homogeneous injections in soils of varying lithologies.

Low injection pressure is a critical factor when working with living organisms such as bacteria or fungi, as it minimizes shear stress and prevents cell destruction during injection. This ensures the successful delivery and survival of the biological agents within the subsurface environment.

For this specific project, INJECTIS' innovative approaches, including the potential use of horizontal injection systems, could be further developed to optimize reagent and microorganism distribution under complex field conditions.

# Injectis, your specialist partner for in situ soil remediation

Innovative techniques for cleaning and restoring contaminated soil in its original location.

