

PROJECT DATA:

Partners: CTM Centre Tecnològic (coordinator), Amphos 21 and Calatalana de Perforacions

Duration: 4 years (2013-2017)

Site of demonstration plant: Sant Andreu de Llaveneras

insirate.ctm.com.es

OBJECTIVES

The LIFE+ InSiTrate project aims to demonstrate the potential of an innovative technology for tackling groundwater pollution from nitrates. The technology will be used to restore groundwater quality and to improve the safety of drinking water in wells, especially for small communities that do not have access to other freshwater sources.

ACTIONS OF THE PROJECT

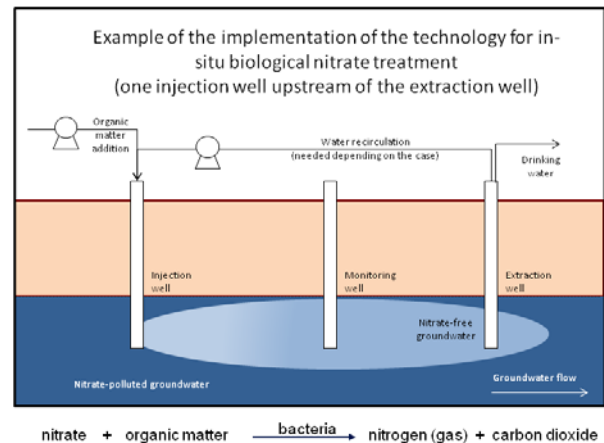
- Demonstrating at pilot scale, the feasibility of in-situ bioremediation technology for treating nitrate-polluted groundwater to a standard suitable for human consumption;
- Developing an innovative tool for design and prediction, based on mathematical modelling, to describe the performance of the in-situ bioremediation technology in any aquifer, and assist in the design of the optimal remediation strategy at each new site;
- Studying the feasibility of the in-situ technology from a technical, environmental and economic perspective, and comparing this technology with other existing technologies;
- Fostering uptake of the technology and involving stakeholders and target groups in the technology's development;
- Assessing the potential for transferring the technology to other European specific sites to demonstrate its potential implementation;
- Preparing a decision matrix to select the best organic matter to be used in the in situ bioremediation, based on technical, economic and environmental criteria.

To disseminate the environmental problem targeted and the main objectives and results of the project to the general public, stakeholders and target groups, several means will be used such as a project website, a Layman's report, leaflets, a video, social networks, social sessions, open days, scientific conferences and scientific journals, among others.

IMPLEMENTATION ACTIONS

- B1 Hydrogeological and chemical characterization of the aquifer
- B2 Organic matter prospection for in situ groundwater denitrification
- B3 Design of a model-based strategy for the pilot denitrification test
- B4 Design and construction of the in situ denitrification pilot plant
- B5 Operation and assessment of the in situ denitrification pilot plant
- B6 Feasibility of the project on technical, environmental and economic criteria
- B7 Public perception and social outreach
- B8 Technology extrapolation and up-scaling

ACTION B4: Construction of an in-situ denitrification plant



EXPECTED RESULTS

- A validated strategy and technology for in-situ treatment of nitrate-polluted groundwater and the production of drinking water for small communities;
- One pilot plant will be designed, operated and optimised;
- Removal of nitrates from groundwater and obtaining water that meets drinking water standards;
- Design of a tool, based on mathematical modelling, to support the development of the project pilot plant, and two other plants at different sites to show its potential transferability;
- Selection criteria established for organic matter, taking account of technical, economic and environmental aspects, and including the evaluation of 15 organic substrates;
- Quantified comparison of the developed technology with two other existing ex-situ technologies and the water blending option. The comparison will include technical, economic and environmental aspects;
- An environmental profile of the in-situ treatment for the main environmental impact categories: climate change; potential freshwater eutrophication; marine eutrophication; freshwater ecotoxicity; and water depletion (m³/m³ of produced water);
- An assessment of the cost in euros per m³ of the water produced through the in situ bioremediation technology.