

# Enhanced biological degradation to prevent off-site migration for the automotive sector



## Context

On the production site of a major car manufacturer includes activities like welding, painting and final assembly; all processes which typically involve the use of lubricating oils and cleaning solvents. At this plant, the handling and storage of these chemicals has led to the occasional spill or leakage in the past. And several significant historical pollutions in the soil and groundwater (with the presence of a floating layer and proven risks of dispersion) have been identified at various locations (☒ BTEX up to 18.000 µg/l).

zone 1 (painting area): mineral oils, BTEX and HCOV.

zone 2 (water treatment area): volatile aromatics and chlorinated solvents.

The groundwater contaminant concentrations are low but persistent. Due to the direction of the groundwater flow, the contamination is at risk of migrating across the plant's site boundary.

## Reaction

After the realization of the pilot test, Injectis intervened for the treatment on a 1:1 scale of the two zones by aerobic biological degradation of the contamination present in the groundwater.

Zone 1: 2 Permeable Reactive Barrier (ORC + plumestop)

Barrier 1 : 30 m with 12 injections from 2,5 to 4,5m-bgl

Barrier 2 : 15 m with 6 injections from 2,5 to 4,5m-bgl

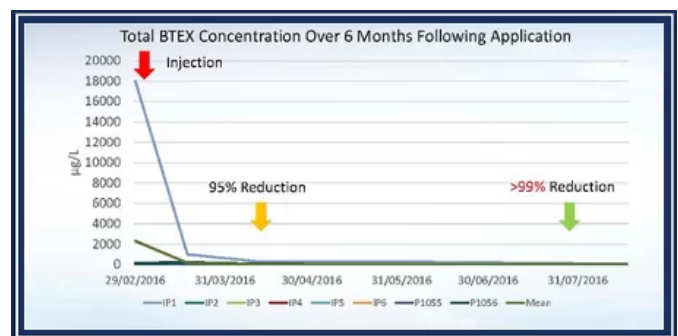
Zone 2: Grid injection (ISCO ; Regenox) : 3 injections > 30 injections

## Particularity

**Zone 1:** A particularity of this project is that it has been possible to quickly limit the risk of dispersion in Zone 1 by injecting a reactive barrier downstream of the source to stop the spread of groundwater pollution.

**Zone 2:** Biological oxidation under aerobic conditions. The process of degradation of contaminants by oxidation thanks to endogenous bacteria has been stimulated by the addition of ORC. This compound release in a progressive and

continuous way oxygen (O<sub>2</sub> as final e-acceptor in the oxidation reaction) and promote in the long term the aerobic conditions necessary for the oxidation. This technique allows to limit the number of interventions compared to traditional oxidation processes by injection of H<sub>2</sub>O<sub>2</sub> or O<sub>3</sub> for example.



<b>Location:</b>	Flanders, Belgium
<b>Geology:</b>	Sandy
<b>Pollutant(s):</b>	Zone 1: MO, BTEX, HCOV / Zone 2: HCOV
<b>Reaction:</b>	Zone 1: Chemical oxidation aerobic with previously absorption / Zone 2: ISCO
<b>Reagent(s):</b>	Zone 1: ORC + plume stop / Zone 2: Regenox
<b>Application type:</b>	Zone 1: Permeable Reactive Barrier (PRB) / Zone 2: Grid
<b>Surface/length:</b>	Zone 1: 15 m / Zone 2: 200 m <sup>2</sup>
<b>Number of points:</b>	18 / 30
<b>Depth interval:</b>	2,5 – 4,5 m-bgl
<b>Dosage: zone 1:</b>	500 l/m / zone 2: 400 l/m

# Injectis, your specialist partner for in situ soil remediation

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

