



**ColFerroX**

# Combination of Remediation Technologies:

*In Situ* Thermal Desorption and *In Situ* Immobilization

Katia Pacella – Project Engineer & Account Manager

**1**

Introduction

**2**

Smart Burners™

**3**ColFerroX  
Technology**4**Technologies  
Combination  
Design**5**Conclusions:  
An Innovative Process

We invent and develop Thermal Desorption Technologies



25+ Years  
in Business



Based in Brussels

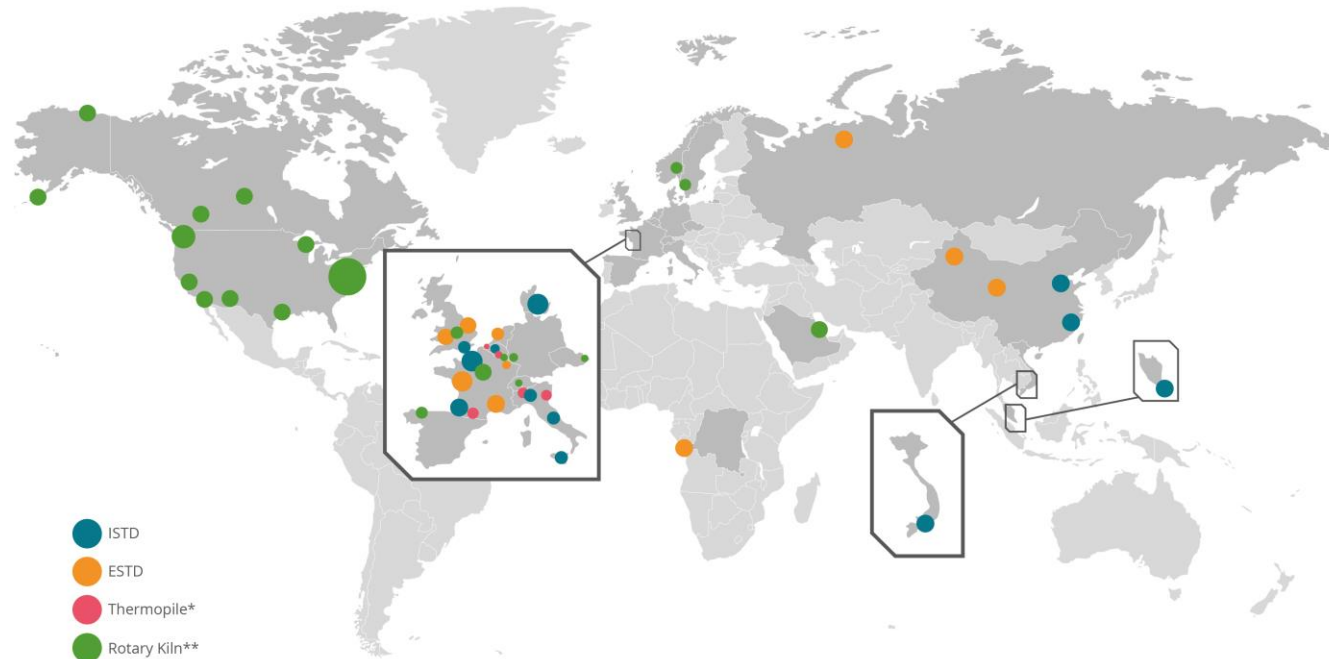


Own Smart Burners  
manufacturing facility



Own Lab and  
R&D facility

Worldwide operations through our local partners:



# Natural remedy for industrial pollution

**We offer:**  
Colloidal iron oxide for water  
and soil cleanup

Our team:



**Sadjad Mohammadian**  
PhD in Hydrogeology

**Beate A. Krok**  
PhD in Biotechnology

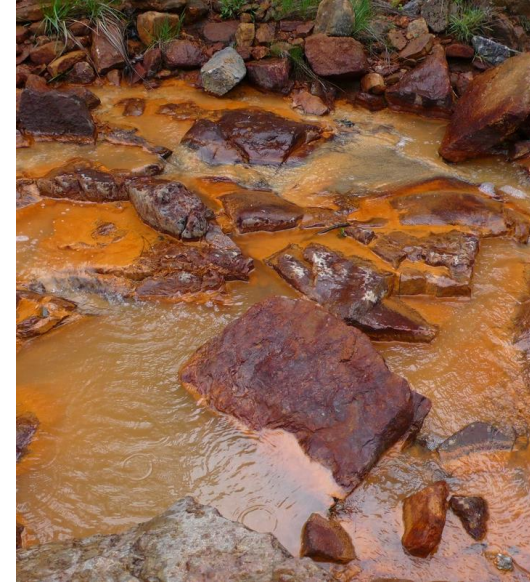
**Rainer Meckenstock**  
Prof. of Aquatic Microbiology



# Introduction



## Cocktails of Contaminants



## Heavy Metals

- Hg
- As
- Cu
- Zn
- Cd

## Organic pollution

- Hydrocarbons
- Chlorinated solvents
- Pesticides
- Dioxins/furans





Smart  
Burners™

## /1 Conduction Soil Heating

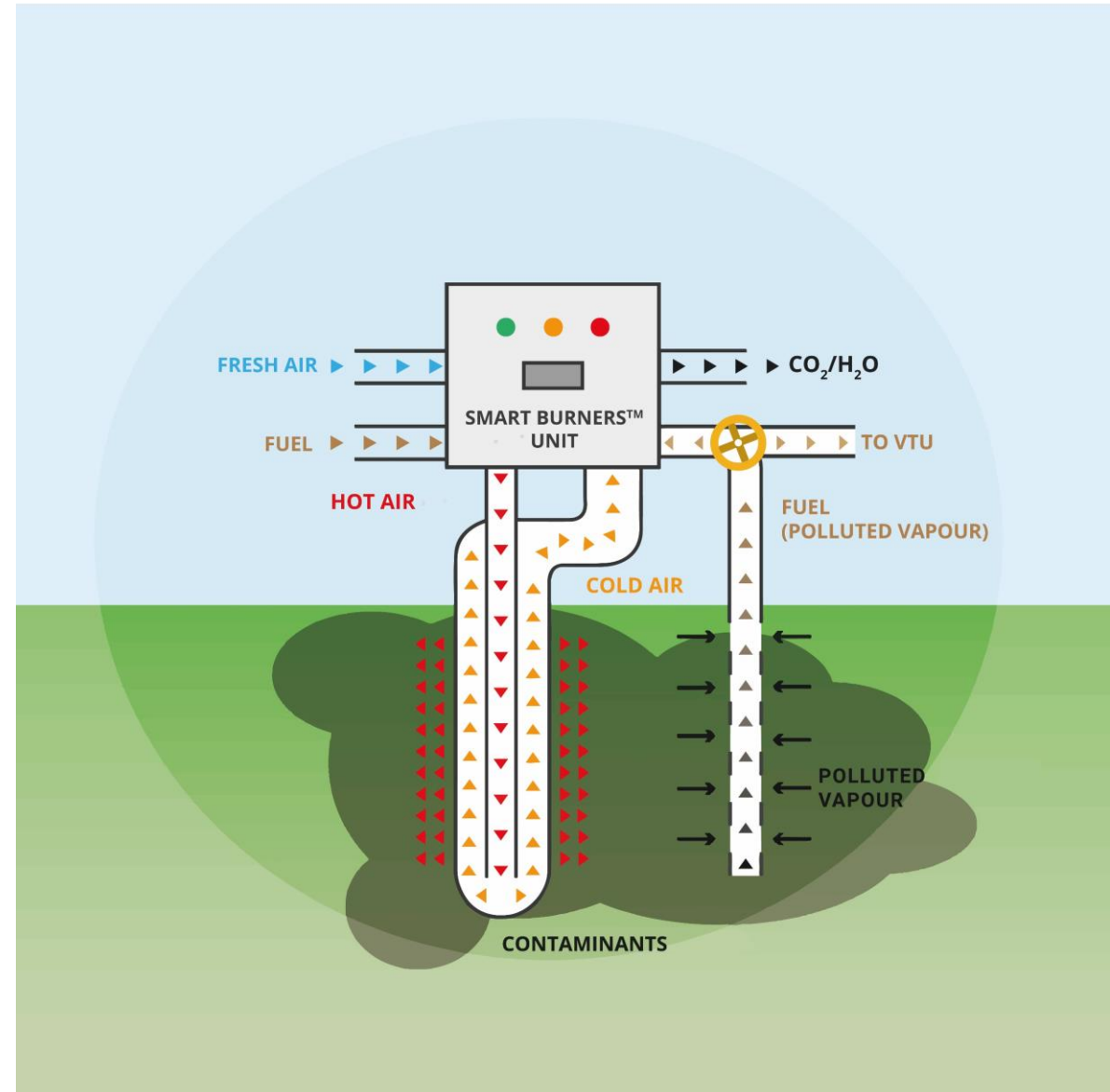
Energy Injection (Smart Burners) into the soil

## /2 Vapor Extraction

Vapor recovery by suction

## /3 Vapor Treatment

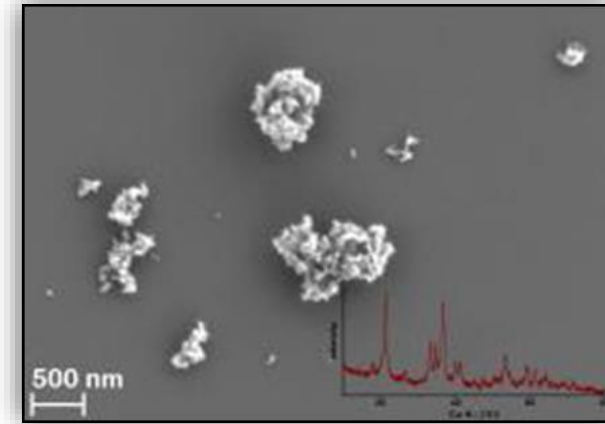
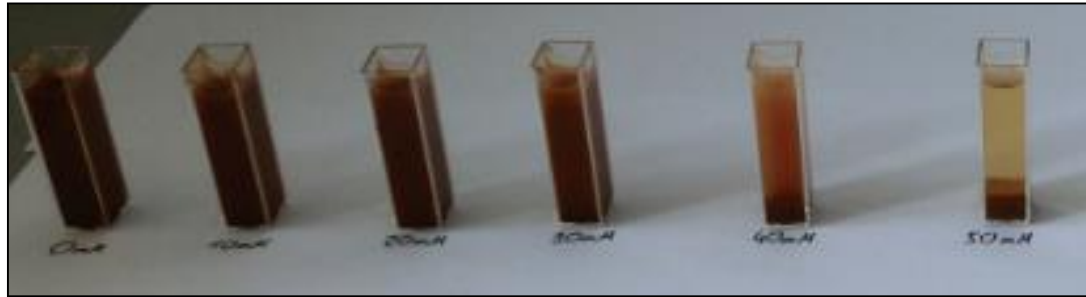
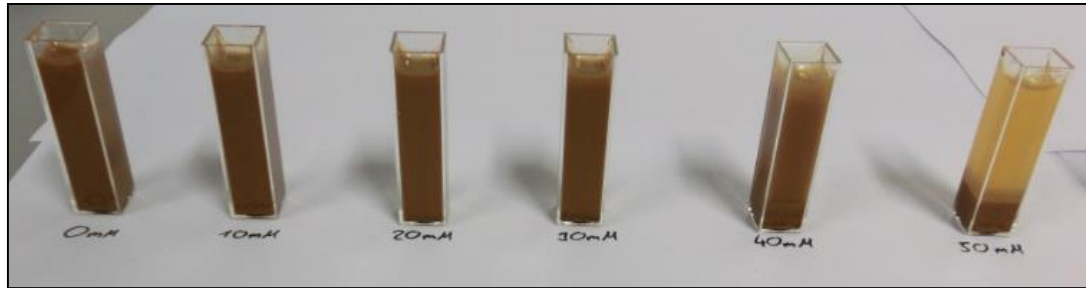
Condensation, Activated Carbon, Thermal Oxidizer, ...

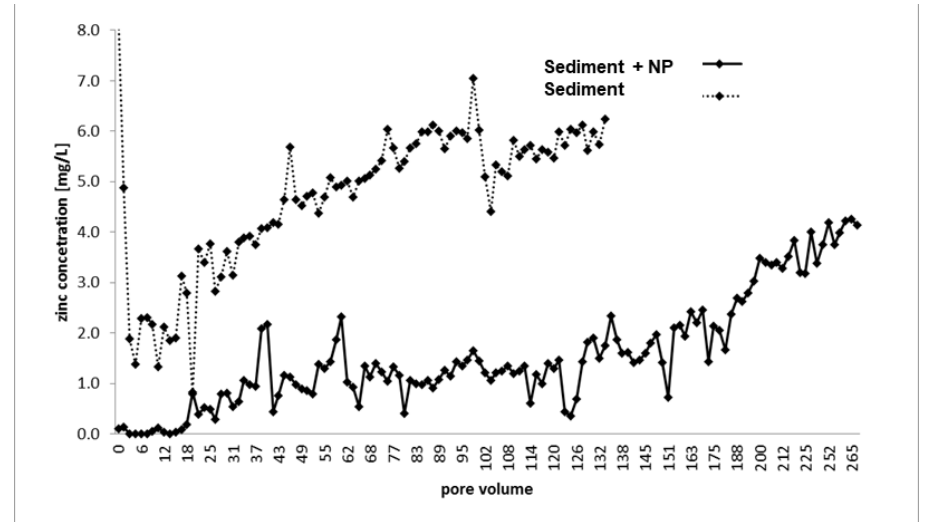
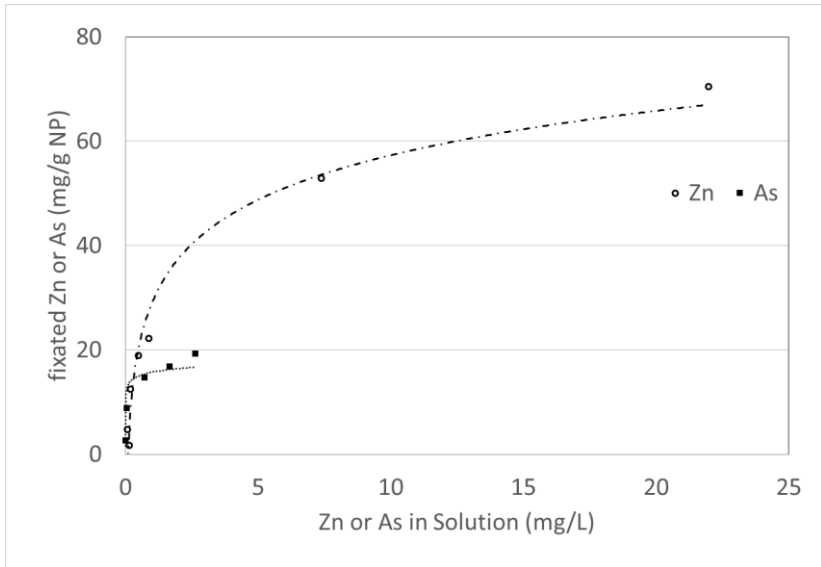
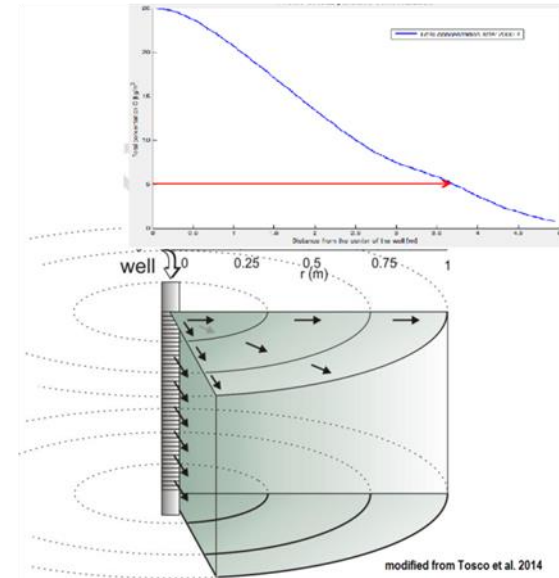
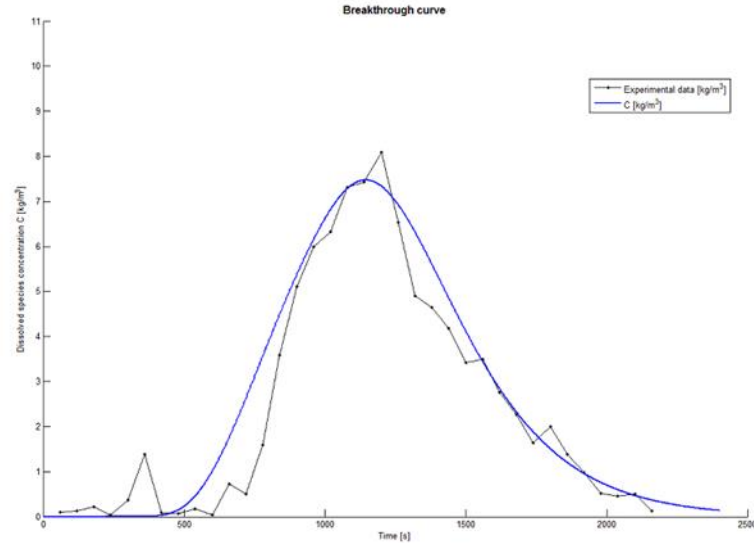






CoIFerroX

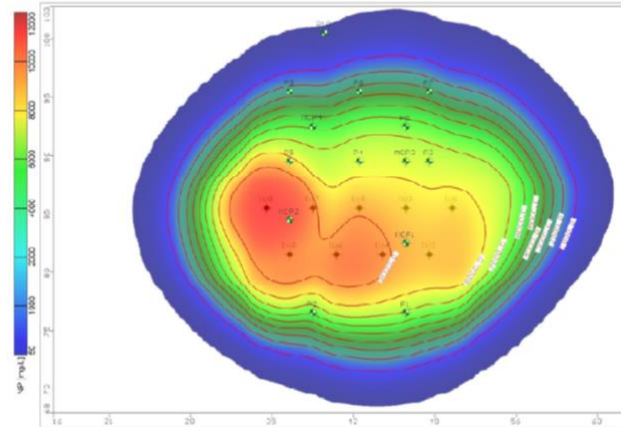




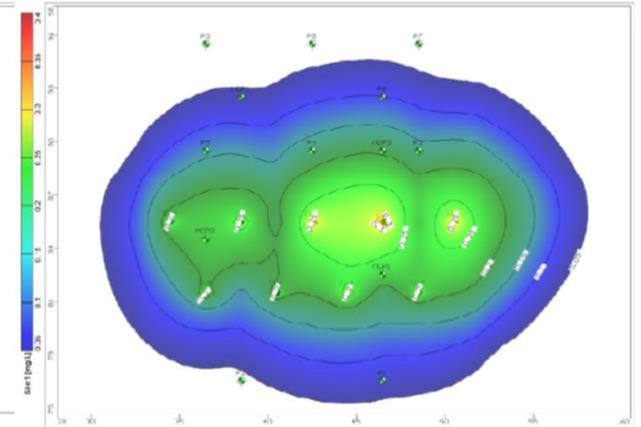


End of Injection 5°Day

Liquid phase concentration of goethite particles

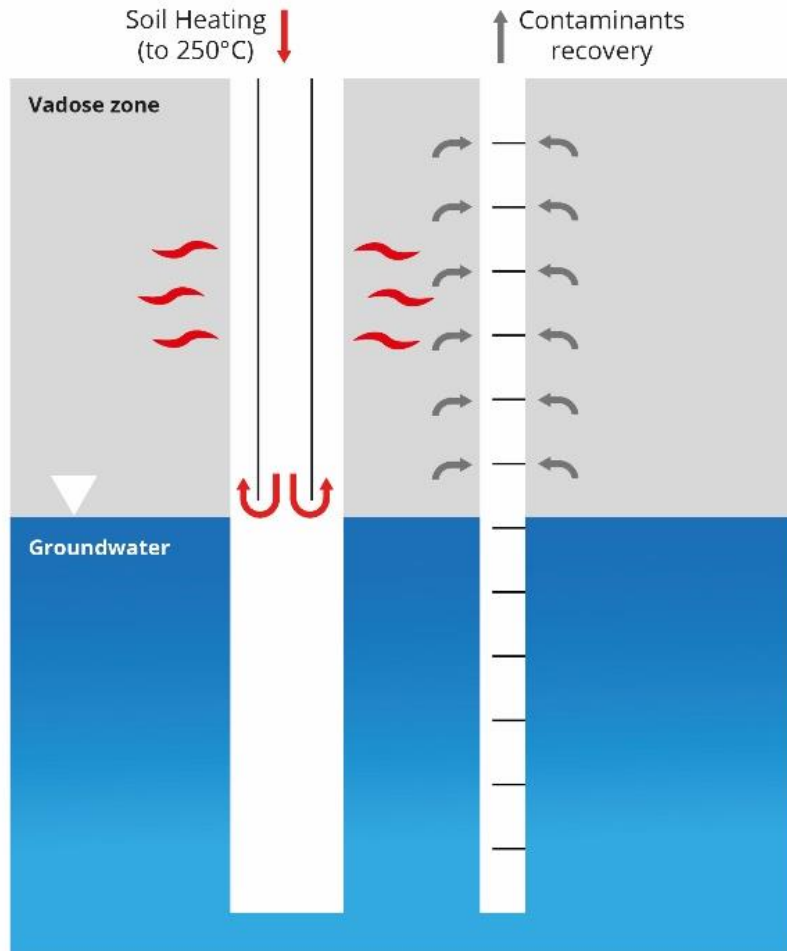


Retained concentration of goethite particles



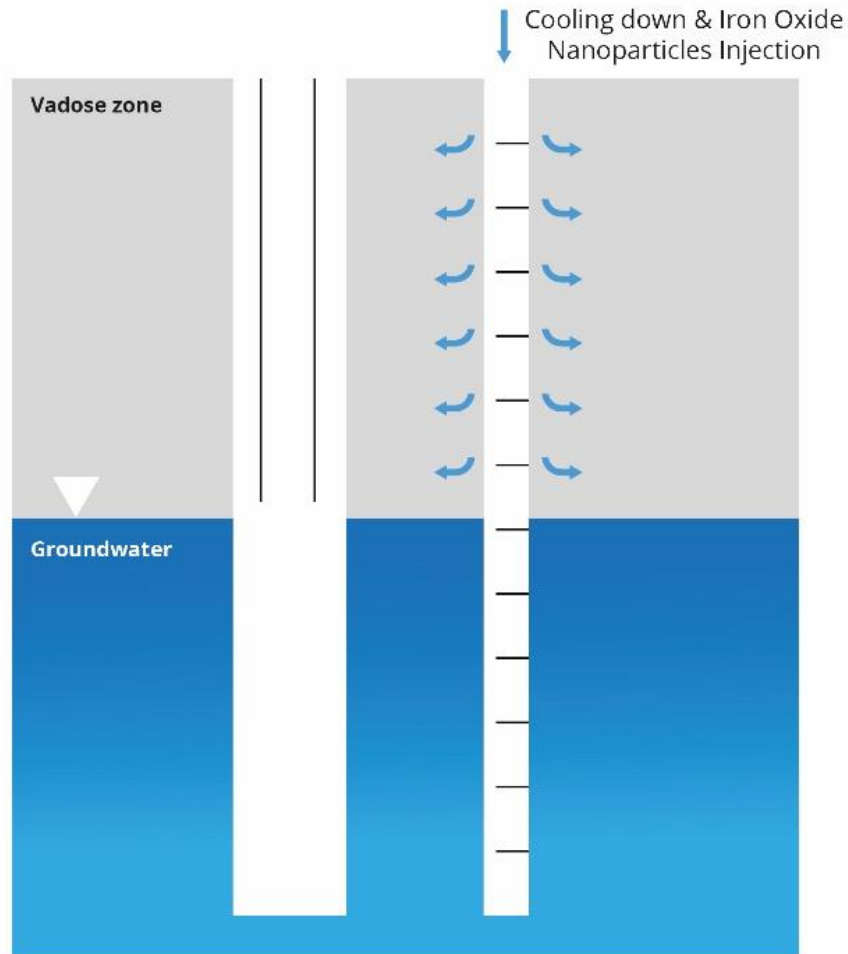


# Technologies Combination



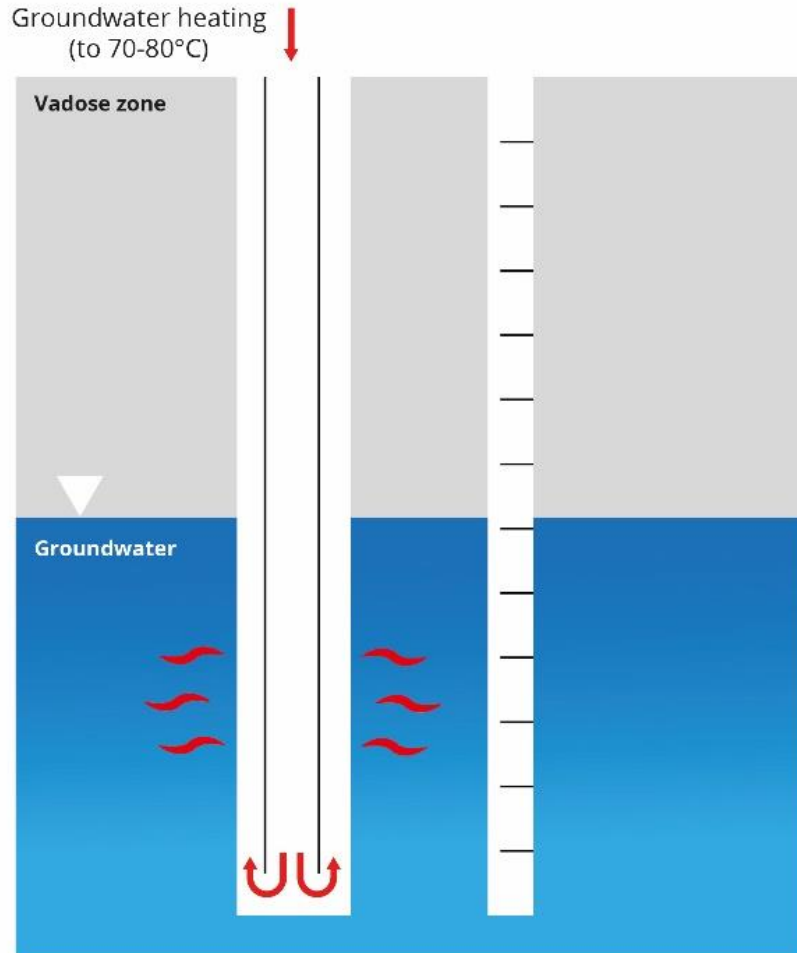
## 1. ISTD – Vadose Heating

- Soil heated up to 250°C
- Organic pollutants desorption and extraction



## 2. ColFerroX Injection – Vadose Zone

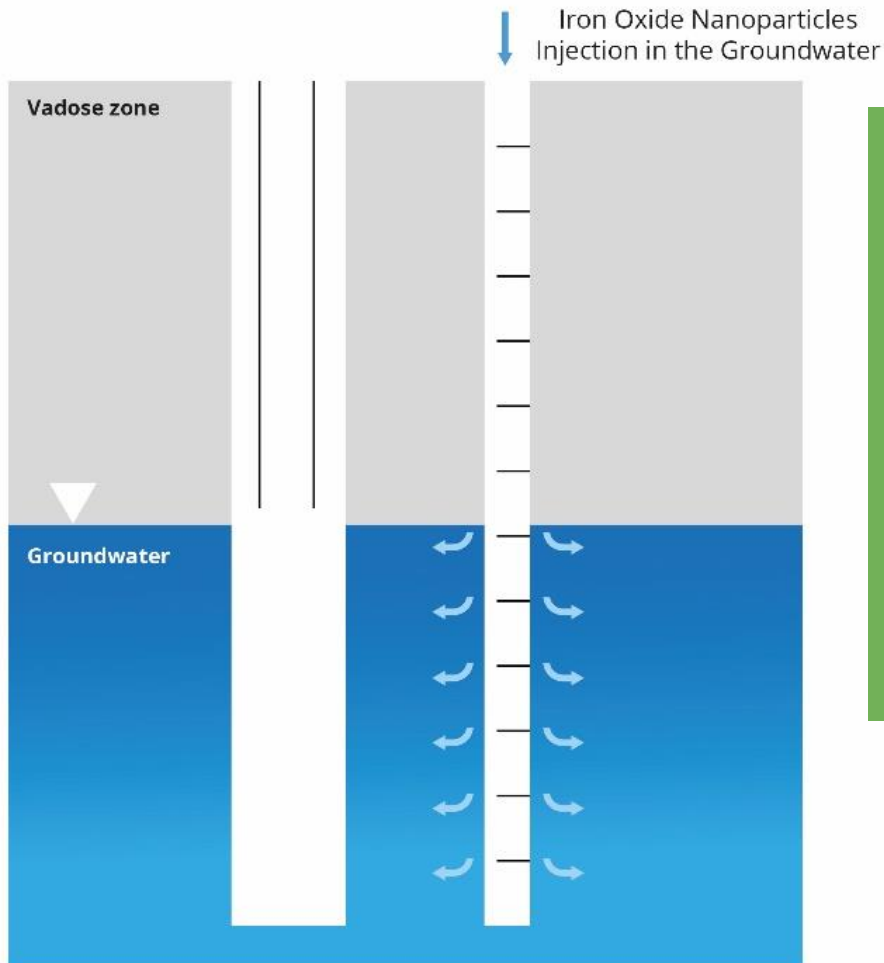
- Heavy Metals stabilization



## 3. Groundwater Heating

- Up to 70-80°C
- Vaporize organic contaminants in groundwater
- Mobilize organic free-phase pollutants
- Increasing ColFerroX particles mobility (for step 4)





## 4. ColFerroX Injection - Groundwater

- *In Situ* adsorption barrier for Heavy Metals
- Cooling down aquifer



# Conclusions: An innovative process

## Contaminants targeted

- Organics
- Heavy Metals



## What's next ?

- Lab tests
  - Field testing
- ⇒ Define the optimum scenario

## Main Benefits

- Cocktails of pollutants
- Saturated + Vadose zone
- *In Situ*: No excavation, no transportation
- Adaptable: soil permeability, treatment depth, ...
- Social aspects: no dust emission, no noise





REMTECH  
**Europe**

**ColFerroX**

Thank you for your attention!

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