

Problem: Groundwater used for drinking water production threatened by the presence of COCs

Aim of the study: Understand the transfer and degradation mechanisms of the chlorinated solvents in the well fields

How: 3 years monitoring (quality & compound-specific carbon isotope analysis) in 27 wells – Here presentation of the PZ56 results (dark circle in Fig.1)

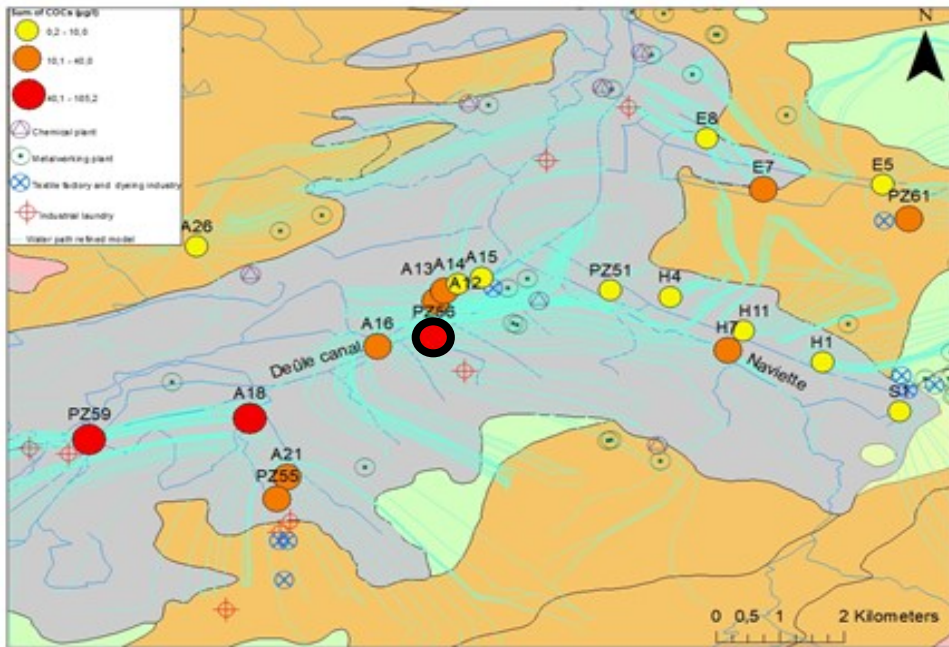


Fig.1: Chlorinated solvents pollution in the well fields

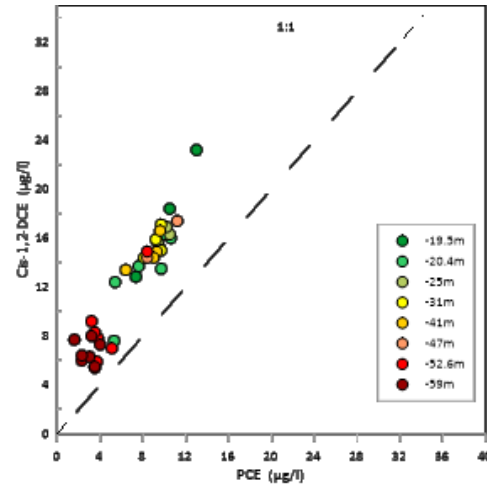


Fig.2: Cis-1,2-DCE vs PCE concentrations along PZ56 depth

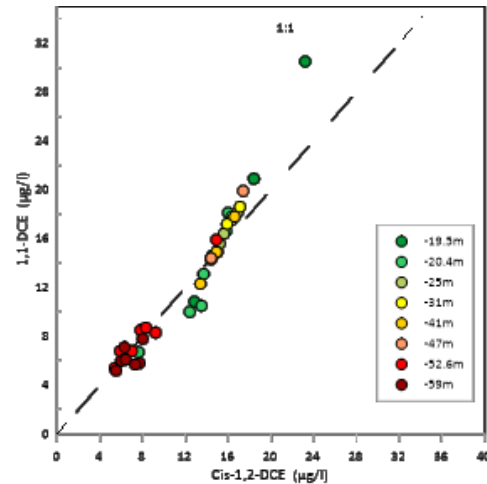


Fig.3: 1,1-DCE vs Cis-1,2-DCE concentrations along PZ56 depth

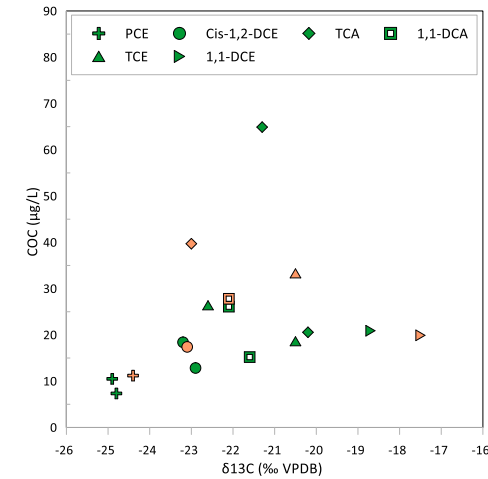


Fig.4: Total COC concentrations vs stable carbon isotope ratio $\delta^{13}C$ (‰ VPDB) along PZ56 depth. In green: -19.5m and in orange: -47m.

Results:

- High COCs concentrations downstream industrial laundries and dyeing industries (red and orange circles, Fig.1)
- Decrease of COC concentration along the well depth
- Degradation sequences along the well depth (Fig.2 & 3) in PZ56
- ^{13}C enrichment along the water column (Fig.4)

Conclusion:

Decrease of COC concentrations under reductive dechlorination (in anaerobic conditions, reduction reaction where COC is the final electron acceptor)