Dr. Daniel Hunkeler

- Professor, Centre of Hydrogeology and Geothermics, Université de Neuchâtel
- Daniel.Hunkeler@unine.ch

Research Projects Completed

- Tracking reactive processes in low permeability sediments and their effect on contaminant longevity in aquifers using compound-specific isotope analysis (2020)
- Diagnostic Tools to Assess In Situ Remediation System Performance (2018)
- Assessment of micropollutant degradation using multi-element compound-specific isotope analysis (2016)
- Effect of diffusive/dispersive processes on stable isotope ratios of organic contaminants in aquifer systems (2014)
- Isotope fractionation of volatile organic contaminants in porous media under unsaturated conditions: Mechanisms and applications (2011)
- Demonstrating a natural origin of chloroform in groundwater using stable isotope analysis (2010)

Selected Papers

Zimmermann, J., Halloran, L.J.S. and Hunkeler, D. (2020) Tracking chlorinated contaminants in the subsurface using compound-specific chlorine isotope analysis: A review of principles, current challenges and applications. *Chemosphere* 244.

Murray, A.M., Ottosen, C.B., Maillard, J., Holliger, C., Johansen, A., Brabaek, L., Kristensen, I.L., Zimmermann, J., Hunkeler, D. and Broholm, M.M. (2019) Chlorinated ethene plume evolution after source thermal remediation: Determination of degradation rates and mechanisms. *Journal of Contaminant Hydrology* 227.

Ponsin, V., Torrento, C., Lihl, C., Elsner, M. and Hunkeler, D. (2019) Compound-specific chlorine isotope analysis of the herbicides atrazine, acetochlor, and metolachlor. *Analytical Chemistry* 91(22), 14290-14298.

Wanner, P. and Hunkeler, D. (2019a) Moelcular dynamics simulations of carbon and chlorine isotopologue fractionation of chlorohydrocarbons during diffusion in liquid water. *Environmental Science & Technology Letter* 6 (11), 681-685..

Wanner, P. and Hunkeler, D. (2019b) Isotope fractionation due to aqueous phase diffusion - What do diffusion models and experiments tell? - A review. *Chemosphere* 219, 1032-1043.

Torrento, C., Bakkour, R., Glauser, G., Melsbach, A., Ponsin, V., Hofstetter, T.B., Elsner, M. and Hunkeler, D. (2019) Solid-phase extraction method for stable isotope analysis of pesticides from large volume environmental water samples. *Analyst* 144(9), 2898-2908.

Halloran, L.J.S., Brunner, P. and Hunkeler, D. (2019) COMPEST, a PEST-COMSOL interface for inverse multiphysics modelling: Development and application to isotopic fractionation of groundwater contaminants. *Computers & Geosciences* 126, 107-119.

Wei, Y.X., Thomson, N.R., Aravena, R., Marchesi, M., Barker, J.F., Madsen, E.L., Kolhatkar, R., Buscheck, T., Hunkeler, D. and DeRito, C.M. (2018) Infiltration of Sulfate to Enhance Sulfate-Reducing Biodegradation of Petroleum Hydrocarbons. *Ground Water Monitoring and Remediation* 38(4), 73-87.

Wanner, P., Parker, B.L. and Hunkeler, D. (2018) Assessing the effect of chlorinated hydrocarbon degradation in aquitards on plume persistence due to back-diffusion. *Science of the Total Environment* 633, 1602-1612.

Rodriguez-Fernandez, D., Torrento, C., Palau, J., Marchesi, M., Soler, A., Hunkeler, D., Domenech, C. and Rosell, M. (2018a) Unravelling long-term source removal effects and chlorinated methanes natural attenuation processes by C and Cl stable isotopic patterns at a complex field site. *Science of the Total Environment* 645, 286-296.

Rodriguez-Fernandez, D., Torrento, C., Guivernau, M., Vinas, M., Hunkeler, D., Soler, A., Domenech, C. and Rosell, M. (2018b) Vitamin B-12 effects on chlorinated methanes-degrading microcosms: Dual isotope and metabolically active microbial populations assessment. *Science of the Total Environment* 621, 1615-1625.

Rodriguez-Fernandez, D., Heckel, B., Torrento, C., Meyer, A., Elsner, M., Hunkeler, D., Soler, A., Rosell, M. and Domenech, C. (2018c) Dual element (C-Cl) isotope approach to distinguish abiotic reactions of chlorinated methanes by Fe(0) and by Fe(II) on iron minerals at neutral and alkaline pH. *Chemosphere* 206, 447-456.

Hunkeler, D. and Buscheck, T. (2018) Special Issue: Diagnostic Tools to Assess In Situ Remediation System Performance. *Ground Water Monitoring and Remediation* 38(4), 13-14.

Bouchard, D., Marchesi, M., Madsen, E.L., DeRito, C.M., Thomson, N.R., Aravena, R., Barker, J.F., Buscheck, T., Kolhatkar, R., Daniels, E.J. and Hunkeler, D. (2018a) Diagnostic tools to assess mass removal processes during pulsed air sparging of a petroleum hydrocarbon source zone. *Ground Water Monitoring and Remediation* 38(4), 29-44.

Bouchard, D., Hunkeler, D., Madsen, E.L., Buscheck, T., Daniels, E., Kolhatkar, R., DeRito, C.M., Aravena, R. and Thomson, N. (2018b) Application of diagnostic tools to evaluate remediation performance at petroleum hydrocarbon-Impacted sites. *Ground Water Monitoring and Remediation* 38(4), 88-98.

Badin, A., Braun, F., Halloran, L.J.S., Maillard, J. and Hunkeler, D. (2018) Modelling of C/Cl isotopic behaviour during chloroethene biotic reductive dechlorination: Capabilities and limitations of simplified and comprehensive models. *Plos One* 13(8).

Wanner, P., Parker, B.L., Chapman, S.W., Aravena, R. and Hunkeler, D. (2017) Does sorption influence isotope ratios of chlorinated hydrocarbons under field conditions? *Applied Geochemistry* 84, 348-359.