

## **Pneumatic Fracturing, Injection and PRB Publications**

Remediation of Chlorinated and Recalcitrant Compounds. The Ninth International Conference. May 2014. *“Pneumatic Fracturing and KMnO<sub>4</sub> Injection to Treat Residual Hydrocarbons in Low Permeability Glacial Till,”* J. Robb, C. Regan, J.R. Fiacco, and D.L. Schnell.

Remediation of Chlorinated and Recalcitrant Compounds. The Ninth International Conference. May 2014. *“Amping Up the Fight for Site Closure: Giving a 1-2 Punch to a TCA/DCE Plume Using EDS-ER Biostimulation and KB-1 Plus Bioaugmentation,”* M.F. Johnson, T. Wells, D.L. Schnell, G.M. Birk, J. Roberts, and J. Sankey.

RE3 Remediation Conference. November 2012. *“Innovative Monitoring Techniques for Fracturing and Injection Activities,”* D.L. Schnell.

Remediation of Chlorinated and Recalcitrant Compounds. The Eight International Conference. May 2012. *“Design, Field Application & Verification of Pneumatically Injected Permeable Reactive Barriers,”* D.L. Schnell.

Soils, Sediments, Water and Energy. The 26<sup>th</sup> Annual International Conference. October 2010, *“Design, Field Application & Verification of Pneumatically Injected Permeable Reactive Barriers,”* D.L. Schnell.

Remediation of Chlorinated and Recalcitrant Compounds. The Seventh International Conference. May 2010. *“Design, Field Application & Verification of Pneumatically Injected Permeable Reactive Barriers,”* D.L. Schnell.

Remediation of Chlorinated and Recalcitrant Compounds. The Seventh International Conference. May 2010. *“Enhancement of Existing Remedial Systems Using Pneumatic Fracturing,”* D.L. Schnell.

Clemson Hydrogeology Symposium. April 2010, *“Design, Field Application & Verification of Pneumatically Injected Permeable Reactive Barriers,”* D.L. Schnell.

Clemson Hydrogeology Symposium. April 2010, *“Innovative Monitoring Techniques for Fracturing and Injection Activities,”* D.L. Schnell.

In-Situ Soil and Groundwater Remediation Conference. Second Biennial Southeastern Conference. February 2010, *“Pneumatic Fracturing for Delivery of Remedial Amendments,”* D.L. Schnell.

AIPG Hydraulic Fracturing Conference. November 2009, *“Pneumatic Fracturing for Enhancement of Existing Remedial Systems,”* D.L. Schnell.

AIPG Hydraulic Fracturing Conference. November 2009, *“Application of Pneumatic Fracturing and Media Injection Adjacent to/within Structures,”* D.L. Schnell.

Contaminated Site Management. The First International Conference. October 2009, *“Permeable Reactive Barrier Construction Using Pneumatic Fracturing and Injection Methods,”* D.L. Schnell.

Contaminated Site Management. The First International Conference. October 2009, *“Pneumatic Fracturing for Enhancement of Existing Remedial Systems,”* D.L. Schnell.

*“Hydraulic Anisotropy Characterization of Pneumatic-Fractured Sediments Using Azimuthal Self Potential Gradient,”* Journal of Contaminant Hydrology, 103, (3-4), pp. 134-44, D. Wishart, L. Slater, D. L. Schnell, and G.C. Herman.

Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater (ORTs-6). The Sixth International Conference. September 2008. *“Innovative Techniques for Monitoring Subsurface Distribution of Fractures or Injected Products,”* D.L. Schnell.

Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater (ORTs-6). The Sixth International Conference. September 2008. *“Non-Invasive Geotechnical Technique for Evaluating Fractures Induced by Pneumatic or Hydraulic Fracturing,”* D. Wishart and D.L. Schnell.

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Remediation of Chlorinated and Recalcitrant Compounds. The Sixth International Conference. May 2008. *"Innovative Monitoring Techniques for Fracturing and Injection Activities,"* D.L. Schnell.

Symposium for the Application of Geophysics to Environmental & Engineering Geophysical Society. SAGEEP 2008. April 2008. *"Azimuthal Self Potential Signatures Associated with Pneumatic Fracturing,"* Environmental and Engineering Geophysical Society, pp. 829-832, D. Wishart, L. Slater, D.L. Schnell, and G. Herman.

Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater (ORTs-5). The Fifth International Conference. September 2007. *"Application of Pneumatic Fracturing and Injection Beneath an Active Industrial Facility,"* D.L. Schnell and C. C. Wright.

Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater (ORTs-5). The Fifth International Conference. September 2007. *"Combination of Technologies for Full Scale Enhanced Dechlorination Remediation,"* J. Orris, J. Mateo, D.L. Schnell, and C. Bickmore.

Characterization of Fractured Rock: Characterization & Remediation (CFR-1). The First International Conference. September 2007. *"Borehole Geophysical Techniques for Evaluation of Contaminant Pathways & Remedial Design,"* J. Orris, S. McQuown, and D.L. Schnell.

Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater (ORTs-5). The Fifth International Conference. September 2007. *"Effective Pilot Studies for Combination of Remedial Technologies,"* J. Orris, J. Mateo, D.L. Schnell, and C. Bickmore.

Remediation Technologies Development Forum Permeable Reactive Barriers Action Team Meeting. October 2006. *"Full Scale EZVI Implementation for DNAPL Remediation,"* D.L. Schnell.

Dense Non-Aqueous Phase Liquids for In-Situ Treatment of Soil and Groundwater (DNAPL-1). The First International Conference. September 2006. *"Pneumatic Fracturing/Injection Delivery for Enhanced Dechlorination,"* D.L. Schnell, J. Orris, J. Mateo, and C. Bickmore.

Dense Non-Aqueous Phase Liquids for In-Situ Treatment of Soil and Groundwater (DNAPL-1). The First International Conference. September 2006. *"In-Situ DNAPL Remediation: Full Scale EZVI Implementation,"* H. Faircloth, J. Greg Booth, P. Jin, D.L. Schnell, J. Quinn, D. Johansen, and J. Matthews.

Remediation of Chlorinated and Recalcitrant Compounds. The Fifth International Conference. May 2006. *"Pneumatic Fracturing/Injection Delivery for Enhanced Dechlorination,"* D.L. Schnell, J. Mateo, J. Orris, and C. Bickmore.

Remediation of Chlorinated and Recalcitrant Compounds. The Fifth International Conference. May 2006. *"Pneumatic Fracturing and Media Injection Adjacent To/Within Structures and Utilities,"* D.L. Schnell.

Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater (ORTs-4). The Fourth International Conference. October 2005. *"Application of Pneumatic Fracturing and Media Injection Adjacent To/Within Structures,"* D.L. Schnell.

Challenges in Site Remediation: Proper Site Characterization, Technology Selection and Testing and Performance Monitoring (CSR-1). The First International Conference. October 2005. *"Application of Pneumatic Fracturing and Media Injection in Fractured Bedrock,"* D.L. Schnell.

Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater (ORTs-3). The Third International Conference. October 2004. *"Pneumatic Injection of Emulsified Zero Valent Iron for DNAPL Treatment,"* D.L. Schnell.

## Pneumatic Fracturing, Injection and PRB Publications

Installation of Dispersed Iron Permeable Reactive Treatment Zones Using Pneumatic Injection. Chlorinated Solvent and DNAPL Remediation: Innovative Strategies for Subsurface Cleanup. 2003. S.M. Henry and S.D. Warner, Eds.; Oxford University Press: American Chemical Society, Washington, D.C., pp. 236-258, D.L. Schnell and J. Mack.

Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater (ORTs-2). The Second International Conference. November 2002. "*Installation of a Permeable Reactive Treatment Zone in a Fractured Bedrock Aquifer*," D.L. Schnell.

Remediation of Chlorinated and Recalcitrant Compounds. The Third International Conference. May 2002. "*Installation of Permeable Reactive Barriers Using Pneumatic Fracturing*," D.L. Schnell.

International Containment & Remediation Technology Conference and Exhibition. June 2001. "*Installation of PRBs Using Pneumatic Injection*," D.L. Schnell.

Division of Environmental Chemistry. 221st ACS National Meeting. April 2001. "*Installation of Permeable Reactive Barriers Using Pneumatic Fracturing*," D.L. Schnell.

"*In Situ Technology Tackles Tainted Groundwater*," Pollution Engineering, June 2000, pp. 49-50. D. L. Schnell.  
"*Extended Radius Wells at McGuire AFB*," Soil & Groundwater Cleanup, October/November 1999, pp. 18-20, D.L. Schnell.

IBC Environmental Technology Symposium for Subsurface Barrier Technology. February 1999. "*Pneumatic Injection of Iron to Treat Chlorinated Solvents*," D.L. Schnell.

ASCE Environmental Geotechnology and Global Sustainable Development. The Fourth International Symposium. August 1998. "*Pneumatic Injection of Iron to Treat Chlorinated Solvents*," D.L. Schnell, T. Boland, J.R. Schuring, C. Parks.

A Development of a GIS for Environmental Assessment Incorporating Known Potential Environmental Hazards and Remote Sensing, ASTM STP 1279, V.H. Singhroy, D.D. Nebert, and A.I. Johnson, Eds., American Society of Testing and Materials, 1996, pp. 101-106. D.L. Shaffer, M.J.S. Roth, and R. Ruggles.

Application of a Geographic Information System to Evaluate Environmental Hazards, Proceedings, First Congress of Computing in Civil Engineering, ASCE, New York, New York, 1994, pp. 265-272. M.J.S. Roth, D.L. Shaffer, and R. Ruggles.