

- Adamson, D. T., T. M. McGuire, C. J. Newell, and H. Stroo. 2010. "Sustained Treatment: Implications for Treatment Timescales Associated with Source-Depletion Technologies," *Remediation Journal* **21**(2): 27-50.
- AFCEE(Air Force Center for Engineering and the Environment). 2006. *Final Long-Term Optimization Guide*, vers. 1.2. Brooks City Base, Tex.: Environmental Restoration Division.
- AFCEE. 2007. *Protocol for In Situ Bioremediation of Chlorinated Solvents Using Edible Oil*.
- Allen, T. J., L. Katz, and G. Warner. 2005. "The Evolution of Groundwater Remediation Strategies at Air Force Plant 44, Tucson, Arizona," presented at the 2005 Annual Symposium, Arizona Hydrological Society, Sept. 21-24.
- Archibald, J. A., R. N. Hull, and M. Diamond. 2007. "Potential Importance of Inhalation Exposure for Wildlife Using Screening Level Ecological Risk Assessment," *Human and Ecological Risk Assessment* **13**: 870-83.
- Arizona Department of Environmental Quality. 2009. "Air Force Plant 44 (AFP-44)/Raytheon Project Area." <https://azdeq.gov/superfund/us-air-force-plant-44>
- Armstrong, A. T., R. A. Wymore, D. L. Dettmers, P. S. Lebow, K. L. Harris, and T. Wood. 2004. Annual Performance Report for In Situ Bioremediation Operations November 2002 to October 2003, Test Area North Operable Unit 1-07B. ICP/EXT-04-00122. Idaho Falls, Id.: Idaho National Engineering and Environmental Laboratory.
- Arnold, W. A., and A. L. Roberts. 2000. "Pathways and Kinetics of Chlorinated Ethylene and Chlorinated Acetylene Reaction with Fe(0) Particles," *Environmental Science and Technology* **34**: 1794-805.
- Aziz J. J., M. Ling, H. S. Rifi, C. Newell, and J. R. Gonzales. 2003. "MAROS: A Decision Support System for Optimizing Monitoring Plans," *Groundwater* **41**(3): 355-67.
- Basu, N. B., A. D. Fure, and J. W. Jawitz. 2008. "Simplified Contaminant Source Depletion Models as Analogs for Multiphase Simulators," *Journal of Contaminant Hydrology* **97**: 87- 99.
- Battelle. 1999. *Performance Assessment Site Characterization for the Interagency DNAPL Consortium, Launch Complex 34, Cape Canaveral Air Station, Florida*. Prepared for the U.S. Air Force Research Laboratory, Tyndall Air Force Base, Fla.
- Battelle. 2001. *Seventh Interim Report on the IDC Demonstration at Launch Complex 34, Cape Canaveral Air Station*. Prepared for the Interagency DNAPL Consortium.
- Berkowitz, B. B., J. Bear, and C. Braester. 1988. "Continuum Models for Contaminant Transport in Fractured Porous Formulations," *Water Resources Research* **24**(8): 1225-36.
- Brusseau, M. L., E. L. DiFilippo, J. C. Marble, and M. Oostrom. 2008. "Mass Removal and Mass Flux Reduction Behavior for Idealized Source Zones with Hydraulically Poorly Accessible Immiscible Liquid," *Chemosphere* **71**(8): 1511-21.
- Bryant, D., and S. Haghebaert. 2008. "Full-Scale In Situ Chemical Oxidation Treatment of MGP Sites," pp. 239-47 in *Gasworks Europe: Proceedings of the MGP 2008 Conference*, March 4-6, Dresden, Germany, P. Werner, B. Bilitewski, and N. Hüser, eds.
- Chapelle, F. H., and P. M. Bradley. 1998. "Selecting Remediation Goals by Assessing the Natural Attenuation Capacity of Ground-Water Systems," *Bioremediation Journal* **2**(3-4): 227-38.
- Chapelle, F. H., M. A. Widdowson, J. S. Brauner, E. Mendez III, and C. C. Casey. 2003. *Methodology for Estimating Times of Remediation Associated with Monitored Natural Attenuation*. U.S. Geological Survey Water-Resources Investigation Report 03-4057.
- Chapelle, F. H., M. A. Widdowson, J. S. Brauner, E. Mendez, and C. C. Casey. 2003. Methodology for Estimating Times of Remediation Associated with Monitored Natural Attenuation. U.S. Geological Survey Water-Resources Investigations Report 03-4067.
- Chapelle, F. H., P. M. Bradley, and C. C. Casey. 2005. "Behavior of a Chlorinated Ethene Plume Following Source-Area Treatment with Fenton's Reagent," *Ground Water Monitoring and Remediation* **25**(2): 131-41.
- Chapman, S. W., and B. L. Parker. 2005. "Plume Persistence due to Aquitard Back Diffusion Following Dense Nonaqueous Phase Liquid Source Removal or Isolation," *Water Resources Research* **41**: W12411, doi:10.1029/2005WR004224.
- CChapman, S.W., Parker, B.L., Sale, T.C., Doner, L.A., 2012. Testing high resolution numerical models for analysis of contaminant storage and release from low permeability zones. *Journal of Contaminant Hydrology* **136-137**, 106-116.
- Cherry, J. A. 1997. "Conceptual Models for Chlorinated Solvent Plumes and Their Relevance to Intrinsic Remediation," pp. 31-32 in *Proceedings, Symposium on Natural Attenuation of Chlorinated Organics in Ground Water*. EPA/540/R-97/504. Washington, D.C. U.S. Environmental Protection Agency, Office of Research and Development.
- Chiogna, G., R. Massimo, O. A. Cirpka and P. Grathwohl. 2010. "Modeling Mixing-Controlled Reactive Transport: Importance of Compound Dependent Hydrodynamic and (Hydro)

- Mecham, and J. S. Rothermel. 2006. "Remediation of a TCE Plume Using a Three- Component Strategy," *Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management* 10(2): 116-25.
- de Marsily, G., F. Delay, J Gonçalvès, P. Renard, V. Teles, and S. Violette. 2005. "Dealing with Spatial Heterogeneity," *Hydrogeology Journal* 13: 161-83.
- Dettmers, D. L., T. W. Macbeth, K. S. Sorenson, Jr., L. O. Nelson, K. L. Harris, L. N. Peterson, DiFilippo, E. L., and M. L. Brusseau. 2008. "Relationship Between Mass Flux Reduction and Source Zone Mass Removal: Analysis of Field Data," *Journal of Contaminant Hydrology* 98(1-2): 22-35.
- DOE-ID (U.S. Department of Energy Idaho Operations Office). 1995. Record of Decision for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action. DOE/ID-10139.
- DOE-ID). 2001. Record of Decision Amendment for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action. DOE/ID-10139, rev. 0.
- DOE-ID. 2000. Field Demonstration Report, Test Area North Final Groundwater Remediation, Operable Unit 1-07B. Idaho Falls, Id.: Idaho National Engineering and Environmental Laboratory.
- DOE-ID. 2002a. In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B. DOE/ID-11015, rev. 0.
- DOE-ID. 2002b. ISB Operations and Maintenance Plan for Test Area North, Operable Unit 1-07B. DOE/ID-11012, rev. 0.
- Doran, G. T. 1981. "There's a S.M.A.R.T. Way to Write Management's Goals and Objectives," *Management Review* 70(11): 35-36.
- Eddy-Dilek, C., B. Riha, D. Jackson, and J. Consort. 1998. *DNAPL Source Zone Characterization of Launch Complex 34, Cape Canaveral Air Station, Florida*. Prepared for Interagency DNAPL Consortium by Westinghouse Savannah River Company and MSE Technology Applications, Inc.
- Eggleston, J. R., and S. A. Rojstaczer. 2000. "Can We Predict Subsurface Mass Transport?" *Environmental Science and Technology* 34: 4010-17.
- Einarson, M. D., and D. M. Mackay. 2001. "Predicting Impacts of Groundwater Contamination," *Environmental Science and Technology* 36(3): 66A-73A.
- Emanuel, A. S., and W. J. Milliken. 1997. "Application of Streamtube Techniques to Full-Field Waterflooding Simulation," *Society of Petroleum Engineers, Reservoir Engineering*, August: 211-17.
- CFalta, R.W., Farhat, S.K., Newell, C.J., Lynch, K., 2018. REMChlor-MD Software Tool. Environmental Security Technology Certification Program (ESTCP) Project ER-201426. Farhat, S.K., Newell, C.J., Falta, R., Lynch, K., 2018. REMChlor-MD Users
- Falta, R. W., M. B. Stacy, A. N. M. Ahsanuzzaman, M. Wang, and R. C. Earle. 2006. *REMChlor, Remediation Evaluation Model for Chlorinated Solvents, User's Manual*.
<https://www.epa.gov/water-research/remediation-evaluation-model-chlorinated-solvents-remchlor>
- Falta, R. W., N. Basu, and P. S. Rao. 2005. "Assessing Impacts of Partial Mass Depletion in DNAPL Source Zones: II. Coupling Source Strength Functions to Plume Evolution," *Journal Contaminant Hydrology* 79(1-2): 45-66.
www.ncbi.nlm.nih.gov/pubmed/16061307.
- Finkel, M., R. Liedl, and G. Teutsch. 1998. "Modeling Surfactant-Enhanced Remediation of Polycyclic Aromatic Hydrocarbons," *Environmental Modeling and Software* 14(2-3): 203- 11.
- Freeze, R. A., and J. A. Cherry. 1979. *Groundwater*. Englewood Cliffs, N.J.: Prentice Hall.
- Friis, A. K. 2006. *The Potential for Reductive Dechlorination after Thermal Treatment of TCE Contaminated Aquifers*. Ph.D. thesis, Institute of Environment and Resources, Technical University of Denmark.
- Friis, A. K., H.-J. Albrechtsen, and P. L. Bjerg. 2005. "Redox Processes and Release of Organic Matter after Thermal Treatment of a TCE-Contaminated Aquifer," *Environmental Science and Technology* 39: 5787-95.
- Fripiat, C. C., and A. E. Holeyman. 2008. "A Comparative Review of Upscaling Methods for Solute Transport in Heterogeneous Porous Media," *Journal of Hydrology* 362(1-2): 150-76.
- From Source Zones to Ecosystems, Proceedings of the 2000 Contaminated Site Remediation Conference, C. D. Johnston, ed. Wembley W. A., Australia: Centre for Groundwater Studies.
- G&E Engineering, Inc. 1996. *RCRA RFI Work Plan for Launch Complex 34, Cape Canaveral Air Station, Brevard County, Florida*. Prepared for the National Aeronautics and Space Administration Environmental Program Office.

- Geosyntec Consultants. 2004. *Assessing the Feasibility of DNAPL Source Zone Remediation: Review of Case Studies*. CR-04-002-ENV. Port Hueneme, Calif.: Naval Facilities Engineering Services Center.
- Gilham, R. W., E. A. Sudicky, J. A. Cherry, and E. O. Frind. 1984. "An Advection-Diffusion Concept for Solute Transport in Heterogeneous Unconsolidated Geological Deposits," *Water Resources Research* **20**(3): 369-78.
- Guilbeault, M. A., B. L. Parker, and J. A. Cherry. 2005. "Mass and Flux Distributions from DNAPL Zones in Sandy Aquifers," *Ground Water* **43**(1): 70-86.
- CHadley, P.W., Newell, C., 2014. The New Potential for Understanding Groundwater Contaminant Transport. *Groundwater* **52**, 174-186.
- Hall, S. H., S. P. Luttrell, and W. E. Cronin. 1991. "A Method for Estimating Effective Porosity and Groundwater Velocity," *Ground Water* **29**(2): 171-74.
- HydroGeoLogic. 1998. *MODFLOW-SURFACT, vers. 3.0: A Comprehensive MODFLOW-Based Flow and Transport Simulator*. Code documentation report. Reston, Va.
- INEEL (Idaho National Engineering and Environmental Laboratory). 2000. Field Evaluation of Enhanced In Situ Bioremediation, Test Area North, Operable Unit 1-07B. INEEL/EXT- 2000-00258. Idaho Falls, Id.: Idaho National Engineering and Environmental Laboratory.
- INEEL. 2003. In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B. INEEL/EXT-02-00779, rev. 2. Idaho Falls, Id.: Idaho National Engineering and Environmental Laboratory.
- Iqbal, J., C. Metosh-Dickey, and R. J. Portier. 2007. "Temperature Effects on Bioremediation of PAHs and PCP- Contaminated South Louisiana Soils: A Laboratory Mesocosm Study," *Journal of Soils and Sediments* **7**(3): 153-58.
- ITRC (Interstate Technology & Regulatory Council). 1999. *Regulatory Guidance for Permeable Reactive Barriers Designed to Remediate Inorganic and Radionuclide Contamination*. PRB-3. Washington, D.C.: Interstate Technology & Regulatory Council, Permeable Reactive Barriers Work Team. www.itrcweb.org.
- ITRC (Interstate Technology & Regulatory Council). 2007. In Situ Bioremediation of Chlorinated Ethene DNAPL Source Zones: Case Studies. BioDNAPL-2. Washington, D.C.: Interstate Technology & Regulatory Council, Bioremediation of DNAPLs Team. www.itrcweb.org.
- ITRC 2005a. *Permeable Reactive Barriers: Lessons Learned/New Directions*. PRB-4. Washington, D.C.: Interstate Technology & Regulatory Council, Permeable Reactive Barriers Team. www.itrcweb.org.
- ITRC 2006b. *Data Management, Analysis, and Visualization Techniques*. RPO-5. Washington, D.C.: Interstate Technology & Regulatory Council, Remediation Process Optimization Team. www.itrcweb.org.
- ITRC 2006d. *Life Cycle Cost Analysis*. RPO-2. Washington, D.C.: Interstate Technology & Regulatory Council, Remediation Process Optimization Team. www.itrcweb.org.
- ITRC 2006e. *Performance-Based Management*. RPO-6. Washington, D.C.: Interstate Technology & Regulatory Council, Remediation Process Optimization Team. www.itrcweb.org.
- ITRC 2006f. *Planning and Promoting Ecological Land Reuse of Remediated Sites*. ECO-2. Interstate Technology & Regulatory Council, Ecological Land Reuse Team. www.itrcweb.org.
- ITRC. 2000a. *Design Guidance for Application of Permeable Reactive Barriers for Groundwater Remediation*. PBW-2. Washington, D.C.: Interstate Technology & Regulatory Council, Permeable Barriers Team. www.itrcweb.org.
- ITRC. 2000b. *Technology Overview for Dense Non-Aqueous Phase Liquids (DNAPLs): Review of Emerging Characterization and Remediation Technologies*. DNAPLs-1. Washington, D.C.: Interstate Technology & Regulatory Council, DNAPLs/Chemical Oxidation Work Team. www.itrcweb.org.
- ITRC. 2003. *Technical and Regulatory Guidance for Surfactant/Cosolvent Flushing of DNAPL Source Zones*. DNAPLs-3. Washington, D.C.: Interstate Technology & Regulatory Council, Dense Nonaqueous Phase Liquids Team. www.itrcweb.org.
- ITRC. 2004a. *Remediation Process Optimization: Identifying Opportunities for Enhanced and More Efficient Site Remediation*. RPO-1. Washington, D.C.: Interstate Technology & Regulatory Council, Remediation Process Optimization Team. www.itrcweb.org.
- ITRC. 2004b. *Strategies for Monitoring the Performance of DNAPL Source Zone Remedies*. DNAPLs-5. Washington, D.C.: Interstate Technology & Regulatory Council, Dense Nonaqueous-Phase Liquids Team. www.itrcweb.org.
- ITRC. 2004c. *Technical and Regulatory Guidance for Using Polyethylene Diffusion Bag Samplers to Monitor Volatile Organic Compounds in Groundwater*. DSP-3. Washington, D.C.: Interstate Technology & Regulatory Council, Diffusion Sampler Team. www.itrcweb.org.

- ITRC. 2005b. *Technical and Regulatory Guidance for In Situ Chemical Oxidation of Contaminated Soil and Groundwater*, 2nd ed. ISCO-2. Washington, D.C.: Interstate Technology & Regulatory Council, In Situ Chemical Oxidation Team. www.itrcweb.org.
- ITRC. 2006a. *Above Ground Treatment Technologies*. RPO-4. Washington, D.C.: Interstate Technology & Regulatory Council, Remediation Process Optimization Team. www.itrcweb.org.
- ITRC. 2006c. *Exit Strategy—Seeing the Forest beyond the Trees*. RPO-3. Washington, D.C.: Interstate Technology & Regulatory Council, Remediation Process Optimization Team. www.itrcweb.org.
- ITRC. 2007a. *Improving Environmental Site Remediation Through Performance-Based Environmental Management*. RPO-7. Washington, D.C.: Interstate Technology & Regulatory Council, Remediation Process Optimization Team. www.itrcweb.org.
- ITRC. 2007b. *Protocol for Use of Five Passive Samplers to Sample for a Variety of Contaminants in Groundwater*. DSP-5. Washington, D.C.: Interstate Technology & Regulatory Council, Diffusion/Passive Sampler Team. www.itrcweb.org.
- ITRC. 2007c. *Vapor Intrusion Pathway: A Practical Guideline*. VI-1. Washington, D.C.: Interstate Technology & Regulatory Council, Vapor Intrusion Team. www.itrcweb.org.
- ITRC. 2007d. *Vapor Intrusion Pathway: Investigative Approaches for Typical Scenarios (A Supplement to VI-1)*. VI-1A. Washington, D.C.: Interstate Technology & Regulatory Council, Vapor Intrusion Team. www.itrcweb.org.
- ITRC. 2008a. *Enhanced Attenuation: Chlorinated Organics*. EACO-1. Washington, D.C.: Interstate Technology & Regulatory Council, Enhanced Attenuation: Chlorinated Organics Team. www.itrcweb.org.
- ITRC. 2008b. *In Situ Bioremediation of Chlorinated Ethene: DNAPL Source Zones*. BioDNAPL-3. Washington, D.C.: Interstate Technology & Regulatory Council, Bioremediation of DNAPLs Team. www.itrcweb.org.
- ITRC. 2010a. *Mining Waste Treatment Technology Selection* website. MW-1. Interstate Technology & Regulatory Council, Mining Waste Team. www.itrcweb.org.
- ITRC. 2010b. *Use and Measurement of Mass Flux and Mass Discharge*. MASSFLUX-1. Washington, D.C.: Interstate Technology & Regulatory Council, Integrated DNAPL Site Strategy Team. www.itrcweb.org.
- ITRC. 2011a. *Development of Performance Specifications for Solidification/Stabilization*. SS-1. Interstate Technology & Regulatory Council, Solidification/Stabilization Team. www.itrcweb.org.
- ITRC. 2011b. *Incorporating Bioavailability Considerations into the Evaluation of Contaminated Sediment Sites* website. CS-1. Interstate Technology & Regulatory Council, Contaminated Sediments-Bioavailability Team. www.itrcweb.org.
- ITRC. 2011c. *Permeable Reactive Barrier: Technology Update*. PRB-5. Washington, D.C.: Interstate Technology & Regulatory Council, PRB: Technology Update Team. www.itrcweb.org.
- Jawitz, J. W., M. D. Annable, G. G. Demmy, S. Berglund, P. S. C. Rao. 2005. "Groundwater Contaminant Flux Reduction Resulting from Nonaqueous Phase Liquid Mass Reduction," *Water Resources Research* **41**: W10408.
- Johnson, R. L., P. G. Tratnyek, and R. O. Johnson. 2009. "Persulfate Persistence under Thermal Activation Conditions," *Environmental Science and Technology* **42**(24): 9350-56.
- Kamath R., D. T. Adamson, C. J. Newell, K. M. Vangelas, and B. B. Looney. 2009. *Enhanced Attenuation Technologies: Passive Soil Vapor Extraction*. SRNL-STI-2009-00571. Aiken, S.C.: Savannah River National Laboratory. www.osti.gov.
- Kavanaugh, M. C., P. S. C. Rao, L. Abriola, J. Cherry, G. Destouni, R. Falta, D. Major, J. Mercer, C. Newell, T. Sale, S. Shoemaker, R. Siegrist, G. Teutsch, and K. Udell. 2003. *The DNAPL Remediation Challenge: Is There a Case for Source Depletion?* EPA/600/R-03/143.
- Kingston, J. L. T., P. R. Dahlen, and P. C. Johnson. 2010. "State-of-the-Practice Review of In Situ Thermal Technologies," *Ground Water Monitoring and Remediation* **30**: 64-72, doi:10.1111/j.1745-6592.2010.01305.x.
- Konikow, L. F. 2011. "The Secret to Successful Solute-Transport Modeling," *Ground Water* **49**(2): 144-59.
- Krembs, F. J. 2008. *Critical Analysis of the Field-Scale Application of In Situ Chemical Oxidation for the Remediation of Contaminated Groundwater*. Thesis submitted to the Colorado School of Mines, Golden, Colo.
- Krembs, F. J., R. L. Siegrist, M. L. Crimi, R. F. Furrer, and B. G. Petri. 2010. "ISCO for Groundwater Remediation: Analysis of Field Applications and Performance," *Groundwater Monitoring and Remediation* **30**(4): 42-53, doi:10.1111/j.1745-6592.2010.01312.x.
- Kueper, B. H., and K. Davie 2009. *Assessment and Delineation of DNAPL Source Zones at Hazardous Waste Sites*. EPA/600/R-09/119. Cincinnati: USEPA National Risk Assessment Research Laboratory.
- LeBlanc, D. R., S. P. Garabedian, K. M. Hess, L. W. Gelhar, R. W. Quadri, K. G. Stollenwerk, and W. W. Wood. 1991. "Large-Scale Natural Gradient Tracer Test in Sand and Gravel, Cape Cod, Massachusetts: Experimental Design and

- Observed Tracer Movement," *Water Resources Research* **27**(5): 895–910.
- Lebrón C., D. Major, and B. Kueper. 2008. *DNAPL Technology Evaluation Screening Tool (DNAPL TEST)*, vers. Beta1.0 2008-02-15. Developed by Geosyntec Consultants, Naval Facilities Engineering Service Center, Queen's University, and University of Edinburgh for
- Lenormand, R. 1995. "A Stream Tube Model for Miscible Flow: Part I," *Transport in Porous Media* **18**(3): 245–61, doi:10.1007/BF00616934.
- Lenormand, R., and B. Wang. 1995. "A Stream Tube Model for Miscible Flow: Part II," *Transport in Porous Media* **18**(3): 263–82, doi:10.1007/BF00616935.
- Liang, H., R. Falta, C. Newell, S. Farhat, S. Rao, and N. Basu. 2010. *Decision and Management Tools for DNAPL Sites: Optimization of Chlorinated Solvent Source and Plume Remediation Considering Uncertainty* (draft final report). ESTCP Project ER-0704.
- Macbeth, T. W., D. E. Cummings, S. Spring, L. M. Petzke, and K. S. Sorenson, Jr. 2004. "Molecular Characterization of a Dechlorinating Community Resulting from In Situ Biostimulation in a TCE-Contaminated Deep Fractured Basalt Aquifer and Comparison to a Derivative Laboratory Culture," *Applied and Environmental Microbiology* **70**(12): 7329–41.
- Macbeth, T. W., L. O. Nelson, J. S. Rothermel, R. A. Wymore, and K. S. Sorenson. 2006. "Evaluation of Whey for Bioremediation of Trichloroethene Source Zones," *Bioremediation Journal* **10**(3): 115–28.
- Macbeth, T. W., L. O. Nelson, J. S. Rothermel, R. A. Wymore, and K. S. Sorenson. 2006. "Evaluation of Whey for Bioremediation of Trichloroethene Source Zones," *Bioremediation Journal* **10**(3): 115–28.
- CMa, J., McHugh, T., Beckley, L., Lahvis, M., DeVaul, G., Jiang, L., 2020. Vapor Intrusion Investigations and Decision-Making. D. 1991. *Multimedia Environmental Models: The Fugacity Approach*. Chelsea, Mich.: Lewis.
- Mackay, D. M., D. L. Freyberg, P. V. Roberts, and J. A. Cherry. 1986. "A Natural Gradient Experiment on Solute Transport in a Sand Aquifer: 1. Approach and Overview of Tracer Movement," *Water Resources Research* **22**(13): 2017–29.
- CM.A. Seyedabbasi, M. Vanderkooy, M. McMaster, G. Wealthall, T.C. Sale, C.J. Newell (2014) 14-Compartment Model Toolkit, prepared for the Strategic
- Martin, J. P., K. S. Sorenson, Jr., and L. N. Peterson. 2001. "Favoring Efficient In Situ TCE Dechlorination through Amendment Injection Strategy," pp. 265–72 in *Anaerobic Degradation of Chlorinated Solvents*, V. Magar, D. Fennell, J. L. Morse, B. Alleman, and A. Leeson, eds. Columbus, Ohio: Battelle Press.
- McGuire, T. M., C. J. Newell, B. B. Looney, K. M. Vangelas, and C. H. Sink. 2004. "Historical Analysis of Monitored Natural Attenuation: A Survey of 191 Chlorinated Solvent Sites and 45 Solvent Plumes," *Remediation* **15**(1): 99–112.
- McGuire, T. M., J. M. McDade, and C. J. Newell. 2006. "Performance of DNAPL Source Depletion Technologies at 59 Chlorinated Solvent-Impact Sites," *Ground Water Monitoring and Remediation* **26**(1): 73–84.
- CMcGuire, T., Adamson, D., Newell, C., Kulkarni, P., 2016. Performance and Costs for In-Situ Remediation at 235 Sites. Environmental Security Technology and Certification Program ER-201120
- Mechanical Transverse Dispersion," presented at the 18th International Conference on Water Resources, Barcelona.
- Mercado, A., and E. Halvey. 1966. "Determination of the Average Porosity and Permeability of a Stratified Aquifer with the Aid of Radioactive Tracers," *Water Resources Research* **2**(3): 525–31.
- NAVFAC (Naval Facilities Engineering Command). 2004. *Guidance for Optimizing Remedy Evaluation, Selection, and Design: User's Guide*. UG-2060-ENV. Columbus, Ohio: Battelle.
- NAVFAC. 2007. *DNAPL Management Overview*. Port Hueneme, Calif.
- NAVFAC. 2008. *Groundwater Risk Management Handbook*.
<https://frtr.gov/matrix/documents/Monitored-Natural-Attenuation/2008-Groundwater-Risk-Management-Handbook.pdf>
- NAVFAC. 2010a. *Department of the Navy Guidance for Planning and Optimizing Monitoring Strategies*. User Guide UG-2081-ENV, rev.1.
<https://frtr.gov/matrix/documents/Monitored-Natural-Attenuation/2010-Guidance-for-Planning-and-Optimization-of-Remedial-Strategies.pdf>.
- NAVFAC. 2010b. *Guidance for Optimizing Remedy Evaluation, Selection, and Design*. Final User's Guide UG-2087-ENV.
<https://clu-in.org/download/combinedremedies/DNAPL-EV-UG-2087-2010.pdf>.
- Newell, C. J., I. Cowie, T. M. McGuire, and W. McNab. 2006. "Multi-Year Temporal Changes in Chlorinated Solvent Concentrations at 23 MNA Sites," *Journal of Environmental Engineering* **132**(6): 653–63.

- NRC (National Research Council). 1997. *Barrier Technologies for Environmental Management*.
- NRC. 2005. *Contaminants in the Subsurface: Source Zone Assessment and Remediation*. Committee on Source Removal of Contaminants in the Subsurface. Washington, D.C.: National Academies Press.
- Olson, M., and T. Sale. 2009. "In Situ Remediation of Chlorinated Solvent Source Zones via ZVI-Clay Soil Mixing," poster presented at SERDP/ESTCP Partners Conference, Washington, D.C.
- Pall Aeropower. 2009a. *Site Assessment Report and Addendum—Former Pall Aeropower Site, 6301 49th Street North, Pinellas Park, Fl. F.A.C. Facility ID No. OGC#01-2016. FDEP Project No. 270049, Vol. 1. Text, Figures, and Tables*. Project No. G04155.
- Pall Aeropower. 2009b. *Groundwater Assessment, Treatment, and Monitoring Report, Former Pall Aeropower Site, 6301 49th Street North, Pinellas Park, Fl. Project # G04155*.
- Pall Aeropower. 2010. *Chronological Summary of Interim Source Removal Actions*, Table 15.
- Pankow, J. F., and J. A. Cherry. 1996. *Dense Chlorinated Solvents and other DNAPLs in Groundwater*. Portland, Ore.: Waterloo Press.
- Parker, B. L., R. W. Gillham, and J. A. Cherry. 1994. "Diffusive Disappearance of Immiscible- Phase Organic Liquids in Fractured Geologic Media," *Ground Water* **32**(5): 805-20.
- Parker, B. L., S. W. Chapman, and M. A. Guilbeault. 2008. "Plume Persistence Caused by Back Diffusion from Thin Clay Layers in a Sand Aquifer Following TCE Source Zone Hydraulic Isolation," *Journal of Contaminant Hydrology* **102**(1-2): 86-104, doi:10.1016/j.jconhyd.2008.07.003.
- Parkhurst, D. L., and C. A. J. Appelo. 1999. *User's Guide to PHREEQC (vers. 2): A Computer Program for Speciation, Reaction-Path, 1D-Transport, and Inverse Geochemical Calculations*. USGS Water Resource Investigative Report 99-4259.
- Payne, F. C., J. A. Quinnan, and S. T. Potter. 2008. *Remediation Hydraulics*. Boca Raton, Fla.: CRC Press.
- Pennell, K., F. Loffler, J. Constanza, K. Fletcher, N. Ramaswamy, G. Otano, and J. Callaghan. 2009. *Investigation of Chemical Reactivity, Mass Recovery, and Biological Activity During Thermal Treatment of DNAPL Source Zones*. SERDP Project ER-1419. <http://docs.serdp-estcp.org/index.cfm>.
- Puls, R., M. Olson, and T. Sale. 2006. "ZVI-Clay Soil Mixing Treats DNAPL Source Area at 35- Foot Depth," *Technology News and Trends* website. www.clu-in.org/products/newsltrs/tnandt/view.cfm?issue=0206.cfm#2.
- Rahm, B. G., S. Chauhan, V. F. Holmes, T. W. Macbeth, K. S. Sorenson, Jr., and L. Alvarez- Cohen. 2005. "Molecular Characterization of Microbial Populations at Two Sites with Differing Reductive Dechlorination Abilities," *Biodegradation* **17**(6): 523-34.
- Reynolds, D. A., and B. H. Kueper. 2001. "Multiphase Flow and Transport in Fractured Clay/ Sand Sequences," *Journal of Contaminant Hydrology* **51**(1-2): 41-62.
- Rivett, M. O., S. Feenstra, and J. A. Cherry. 2001. "A Controlled Field Experiment on Groundwater Contamination by a Multicomponent DNAPL: Creation of the Emplaced- Source and Overview of Dissolved Plume Development," *Journal of Contaminant Hydrology* **49**(1-2): 111-49.
- Roberts, A. L., L. A. Totten, W. A. Arnold, D. R. Burris, and T. J. Campbell. 1996. "Reductive Elimination of Chlorinated Ethylenes by Zero-Valent Metals," *Environmental Science and Technology* **30**: 2654-59.
- Ryan, S. 2010. *Dense Nonaqueous Phase Liquid Cleanup: Accomplishments at Twelve NPL Sites*. Prepared for U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Technology Innovation and Field Services Division. www.clu-in.org/download/studentpapers/Serena-Ryan-dnapl-npl.pdf.
- Ryan, S. 2010. *Dense Nonaqueous Phase Liquid Cleanup: Accomplishments at Twelve NPL Sites*. Prepared for U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Technology Innovation and Field Services Division. www.clu-in.org/download/studentpapers/Serena-Ryan-dnapl-npl.pdf.
- Sale, T. C., and C. Newell. 2011. *Guide for Selecting Remedies for Subsurface Releases of Chlorinated Solvents*. ESTCP Project ER-200530.
- Sale, T. C., and D. B. McWhorter. 2001. "Steady State Mass Transfer from Single-Component Dense Nonaqueous Phase Liquid in Uniform Flow Fields," *Water Resources Research* **37**(2): 393-404.
<https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2000WR900236>
- Sale, T. C., C. Newell, H. Stroo, R. Hinchee, and P. Johnson. 2008. *Frequently Asked Questions Regarding Management of Chlorinated Solvents In Soils and Groundwater*. Environmental Security Technology Certification Program.
- CSERDP/ESTCP (Strategic Environmental Research and Development Program/Environmental Security Technology

- Certification Program). 2010. *Measurement and Use of Mass Discharge and Mass Flux at Contaminated Sites*. On-demand video. www.serdp-estcp.org/Tools-and-Training/Environmental-Restoration/Monitoring-and-Characterization/Mass-Flux-On-Demand-Video.
- Shoemaker, W. B., E. L. Kuniansky, S. Birk, S. Bauer, and E. D. Swain. 2008. *Documentation of a Conduit Flow Process (CFP) for MODFLOW-2005*. U.S. Geological Survey Techniques and Methods, Book 6, Chapter A24.
- Simunek, J., M. Sejna, and M. T. van Genuchten. 1999. *The Hydrus-2D Software Package for Simulating Two-Dimensional Movement of Water, Heat, and Multiple Solutes in Variably Saturated Media*, vers. 2.0. IGWMC-TPS-53. Golden, Colo.: Colorado School of Mines, International Ground Water Modeling Center.
- Song, D. L., M. E. Conrad, K. S. Sorenson, Jr., and L. Alvarez-Cohen. 2002. "Stable Carbon Isotope Fractionation during Enhanced In Situ Bioremediation of Trichloroethene," *Environmental Science and Technology* 36(10): 2262-68.
- Sorenson, K. S., Jr. 2000. Intrinsic and Enhanced In Situ Biodegradation of Trichloroethene in a Deep, Fractured Basalt Aquifer. Ph.D. dissertation, University of Idaho.
- Sorenson, K. S., Jr., 2002. "Enhanced Bioremediation for Treatment of Chlorinated Solvent Residual Source Areas," pp. 119-31 in *Innovative Strategies for the Remediation of Chlorinated Solvents and DNAPLs in the Subsurface*, S. M. Henry and S. D. Warner, eds. ACS Symposium Series 837. Washington, D.C.: American Chemical Society Books.
- Sorenson, K. S., Jr., L. N. Peterson, and R. L. Ely. 2000. "Enhanced In Situ Bioremediation of a TCE Source Area in Deep, Fractured Rock," pp. 621-28 in *Contaminated Site Remediation*:
- Sowers, G. F. 1981. "Rock Permeability or Hydraulic Conductivity: An Overview," pp 65-83 in *Permeability and Groundwater Contaminant Transport*, T. F. Zimmie and C. O. Riggs, eds. ASTM STP 746. Philadelphia: American Society for Testing and Materials.
- Stephens, D. B., K.-C. Hsu, M. A. Prieksat, M. D. Ankeny, N. Blandford, T. L. Roth, J. A. Kelsey, and J. R. Whitworth. 1998. "Comparison of Estimated and Calculated Effective Porosity," *Hydrogeology Journal* 6: 156-65.
- Stroo, H. F., M. Unger, C. H. Ward, M. C. Kavanaugh, and B. P. Smith. 2003. "Remediating Chlorinated Solvents," *Environmental Science and Technology* 37(11): 224A-30A.
- Stroo, H., and C. H. Ward. 2010. *In Situ Remediation of Chlorinated Solvent Plumes*. New York: Springer.
- Sudicky, E. A. 1986. "A Natural Gradient Experiment on Solute Transport in a Sand Aquifer: Spatial Variability of Hydraulic Conductivity and Its Role in the Dispersion Process," *Water Resources Research* 22: 2069-82.
- Theis, C. V. 1967. "Aquifers and Models," p. 138 in *Proceedings, Symposium on Groundwater Hydrology*, American Water Resources Association.
- TN&A (T N & Associates, Inc.). 2004. *Final Feasibility Study Report, Pemaco Superfund Site, 5050 E. Slauson Blvd., Maywood, CA*. [http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/93f5ba4e2205be958825727b006e6276/\\$FILE/Pemaco%20Feasibility%20Study.pdf](http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/93f5ba4e2205be958825727b006e6276/$FILE/Pemaco%20Feasibility%20Study.pdf)
- TN&A. 2008. *Annual Operations Report for 2007, Pemaco Superfund Site, Maywood, California*.
- TN&A. 2009. *Electrical Resistance Heating Summary Report, Pemaco Superfund Site, Maywood, California*. [https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/7e5c873676b1315c882576ce0003839d/\\$FILE/Pemaco%20ROD%2001_2005.pdf](https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/7e5c873676b1315c882576ce0003839d/$FILE/Pemaco%20ROD%2001_2005.pdf)
- Truex, M. J., J. M. Gillie, J. G. Powers, and K. P. Lynch. 2009. "Assessment of In Situ Thermal Treatment for Chlorinated Organic Source Zones," *Remediation Journal* 19(2): 7-17.
- Truex, M. J., T. W. Macbeth, V. R. Vermeul, B. G. Fritz, D. P. Mendoza, R. D. Mackley, T. W. Wietsma, G. Sandberg, T. Powers, E. Pitre, M. Michalsen, S. J. Ballock-Dixon, L. Zhong, and M. Oostrom. 2011. "Demonstration of Combined Zero-Valent Iron and Electrical Resistance Heating for In Situ Trichloroethene Remediation," *Environmental Science and Technology* 45: 5346-51.
- U.S. Army Engineer Research and Development Center Contract Report, Vicksburg, Miss. U.S. DOD Environmental Security Technology Certification Program Project ER-0424.
- USACE (U.S. Army Corps of Engineers). 1999a. *Engineering and Design: Multiphase Extraction*. EM 1110-1-4010. https://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-1-4010.pdf.
- CUSACE (U.S. Army Corps of Engineers). 2001. Superfund Five-Year Review Report, Gold Coast Oil Company, Inc., Miami, Dade County Florida. <https://sempub.epa.gov/work/04/10498229.pdf>
- USACE (U.S. Army Corps of Engineers). 2007. *In Situ Thermal Remediation (Electrical Resistance Heating), East Gate Disposal Yard, Ft. Lewis, Washington*.

- USACE. 1999b. *U.S. Army Corps of Engineers Remediation System Checklist*.
www.environmental.usace.army.mil/pdf/Genres.pdf.
- USACE. 2008. *Safety and Health Requirements Manual*. EM 385-1-1. [www.pennagc.com/EM-385-1-1/EM385-1-1FINAL\[1\].pdf](http://www.pennagc.com/EM-385-1-1/EM385-1-1FINAL[1].pdf).
- USEPA (U.S. Environmental Protection Agency). 1998. Cost and Performance Summary Report—Gold Coast Soil Superfund Site, Miami, Florida. www.frtr.gov
- USEPA (U.S. Environmental Protection Agency). 1998. *Evaluation of Subsurface Engineered Barriers at Waste Sites*. EPA/542/R-98/005.
- USEPA (U.S. Environmental Protection Agency). 1998. *Pump and Treat of Contaminated Groundwater at the Western Processing Superfund Site, Kent, Washington*. http://costperformance.org/pdf/Western_Processing.pdf.
- USEPA (U.S. Environmental Protection Agency). 2004. DNAPL Remediation: Selected Projects Approaching Regulatory Closure. EPA/542/R-04/016.
- USEPA (U.S. Environmental Protection Agency). 2005. "Expedited Site Characterization of Mixed Chlorinated Solvents and Petroleum Dense Non-Aqueous Phase Liquid (DNAPL) Using Multiple investigative Techniques in Conjunction with Mobile and Fixed Labs at Fort Lewis Logistics Center, Fort Lewis WA." www.triadcentral.org/user/includes/dsp_profile.cfm?Project_ID=13#SiteInfo.
- CUSEPA (U.S. Environmental Protection Agency). 2005. *Record of Decision, Pemaco Superfund Site, Maywood, California*.
- USEPA (U.S. Environmental Protection Agency). 2009. *Amendment #2 to the Record of Decision for the Commencement Bay-South Tacoma Channel Superfund Site, Operable Unit 1, Well 12A, Tacoma, Washington*. Region 10, Seattle. <https://semspub.epa.gov/work/10/500010097.pdf>
- USEPA (U.S. Environmental Protection Agency). 2009. *Sequential In Situ Chem/Ox and ERD Treatment of Groundwater Destroys CVOCS*. Technology Innovation and Field Services Division. www.cluin.org/products/newsltrs/tnandt/view.cfm?issue=1209.cfm.
- USEPA. 1999. *Groundwater Cleanup: Overview of Operating Experience of 28 Sites*. EPA/542/R-99/006. www.epa.gov/tio/download/remed/ovopex.pdf.
- USEPA. 2002. *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils*. EPA/530/F-02/052. Washington, D.C.: Office of Solid Waste and Emergency Response.
- USEPA. 2004. *Performance Monitoring of MNA Remedies for VOCs in Groundwater*. EPA/600/R-04/027. Washington, D.C.: Office of Research and Development. <https://semspub.epa.gov/work/05/249629.pdf>
- USEPA. 2005a. *Roadmap to Long-Term Monitoring Optimization*. EPA/542/R-05/003. www.cluin.org/download/char/542-r-05-003.pdf.
- USEPA. 2005b. *Uniform Federal Policy for Quality Assurance Project Plans: Evaluating Assessing, and Documenting Environmental Data Collection and Use Programs*. EPA/505/B-04/900A. www.epa.gov/sites/default/files/documents/ufp_qapp_v1_0305.pdf
- USEPA. 2006. *Guidance on Systematic Planning Using the Data Quality Objectives Process: EPA QA/G4*. EPA/240/B-06/001. www.epa.gov/sites/production/files/2015-06/documents/g4-final.pdf
- USEPA. 2007. *Third Five-Year Review Report for Fort Lewis CERCLA Sites, Pierce County, Washington*. <https://semspub.epa.gov/work/HQ/179608.pdf>
- USEPA. 2008. *A Guide for Assessing Biodegradation and Source Identification of Organic Ground Water Contaminants Using Compound Specific Isotope Analysis (CSIA)*. EPA/600/R-08/148. https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=202171
- USEPA. 2008. *Fourth Five-Year Review Report for Western Processing Superfund Site*. <https://semspub.epa.gov/work/10/1280288.pdf>
- USEPA. 2009a. *DNAPL Remediation: Selected Projects Where Regulatory Closure Goals Have Been Achieved*. EPA/542/R-09/008. www.clu-in.org/download/remed/542r09008.pdf.
- USEPA. 2009b. *Statistical Analysis of Groundwater Monitoring Date at RCRA Facilities: UnifiedcGuidance*. EPA/530/R-09/007. www.epa.gov/osw/hazard/correctiveaction/resources/guidance/sitechar/gwstats/unified-guid.pdf.
- USEPA. 2010. "Fort Lewis Logistics Center, Washington, EPA ID# WA7210090067." <http://yosemite.epa.gov/r10/nplpad.nsf/epaid/wa7210090067>.
- USEPA. 2010. *First Five-Year Review Report for Pemaco Superfund Site, Maywood California*. SDMS DOCID# 1123240.

<https://semspub.epa.gov/work/09/1123240.pdf>

USEPA. In press. *Environmental Cleanup Best Management Practices: Effective Use of the Life Cycle Conceptual Site Model*. EPA/542/F-11/011.

USEPA. n.d. "Commencement Bay-South Tacoma Channel," Region 10 Web page.

<http://yosemite.epa.gov/r10/cleanup.nsf/4c5259381f6b967d88256b5800611592/d3c814fe6394c2ba882565220048abb2!OpenDocument#Site%20History>.

USEPA. n.d. "Dense Nonaqueous Phase Liquids (DNAPLs): Treatment Trains."

[www.clu-in.org/contaminantfocus/default.focus/sec/Dense_Nonaqueous_Phase_Liquids_\(DNAPLs\)/c](http://www.clu-in.org/contaminantfocus/default.focus/sec/Dense_Nonaqueous_Phase_Liquids_(DNAPLs)/c)

USEPA. n.d. "Pemaco." Region 9: Superfund.

<http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/cad980737092?OpenDocument>

CUSEPA, 2015. Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air.

<https://www.epa.gov/vaporintrusion/technical-guide-assessing-and-mitigating-vapor-intrusion-pathway-subsurface-vapor>.

CUSEPA, 2019. Screening Level Implementation of the Johnson and Ettinger Vapor Intrusion Model – Reverse Calculation of Target Media Concentrations. https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/JnE_lite.html

USGS (U.S. Geological Survey). n.d. "Multidisciplinary Characterization of Contaminant Transport in Fractured Rock, Mirror Lake, New Hampshire." http://toxics.usgs.gov/sites/mirror_page.html.

van Genuchten, M. T. 1985. "A General Approach for Modeling Solute Transport in Structured Soils," *Memoires International Association of Hydrology* **17**(2): 513-526.

Warren, J. E., and P. J. Root. 1963. "The Behavior of Naturally Fractured Reservoirs," *Society of Petroleum Engineers Journal* **3**: 245-55. Washington, D.C.: National Academies Press.

Wiedemeier, T. H., H. S. Rifai, C. J. Newell, and J. W. Wilson. 1999. *Natural Attenuation of Fuels and Chlorinated Solvents*. New York: Wiley.

Wilson, J. L., S. H. Conrad, W. R. Mason, W. Peplinski, and E. Hafgan. 1990. *Laboratory Investigations of Residual Liquid Organics from Spills, Leaks, and the Disposal of Hazardous Wastes in Groundwater*. EPA/600/6-90/004.

Wood, T., R. Wymore, J. P. Martin, K. S. Sorenson, Jr., and D. B. Blackwelder. 2003. "Alternate Electron Donor Evaluation for Enhanced In Situ Bioremediation, INEEL," in Proceedings of the 8th International In Situ and On-Site Bioremediation Symposium. Columbus, Ohio: Battelle Press.

Wymore, R. A., J. M. Bukowski, and K. S. Sorenson, Jr. 2000. Site Conceptual Model: 1998 and 1999 Activities, Data Analysis, and Interpretation for Test Area North Operable Unit 1-07B. INEEL/EXT-2000-00188. Idaho Falls, Id.: Idaho National Engineering and Environmental Laboratory.

Zheng, C., and G. D. Bennett. 1995. *Applied Contaminant Transport Modeling: Theory and Practice*. New York: Wiley.

Zheng, C., and P. P. Wang. 1999. *MT3DMS, A Modular Three-Dimensional Multi-Species Transport Model for Simulation of Advection, Dispersion and Chemical Reactions of Contaminants in Groundwater Systems: Documentation and User's Guide*. SERDP-99-1.