

# ***Michael C. Marley, L.E.P.***

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## **President XDD Environmental Stratham, NH**

### **Qualifications**

Mr. Marley is president and co-founder of XDD Environmental in Stratham, NH, and has over 35 years of experience in environmental and civil engineering. Mr. Marley is a nationally-known expert who focuses on strategies for site closure, including the development and application of innovative remediation technologies for contaminated soils and ground water. He has been at the forefront of developing design and application protocols for soil vapor extraction, sparging and in-situ chemical oxidation (ISCO) technologies.

Mr. Marley presents nationally at conferences and workshops on the design and application of vapor extraction, bioventing, sparging/biosparging, chemical oxidation and complimentary innovative technologies (a subset of the conference papers presented is provided in this resume). He has been responsible for the modeling support, review or design of several hundred pilot and full scale remediation systems as well as the completion of numerous bench scale treatability studies. A significant portion of this work has involved presentations to and negotiations with local, state and federal regulatory agencies, and has led to the attainment of regulatory closure status.

Mr. Marley has participated in EPA and state workshops on the development of guidelines for the implementation of vapor extraction and sparging technology and has also provided technical support (modeling and feasibility analysis) and expert witness testimony in remediation related litigations. Mr. Marley was the Principal Investigator for the American Petroleum Institute in the evaluation of member company sparging data and the development of a Sparging Guidance Document, was an Expert Panelist on the project team assembled to develop an Air Sparging management Decision Tool for the DOE and was technical overseer for the recent DOD research projects on biosparging and RF enhanced soil vapor extraction.

More recently, Mr. Marley was selected as one of four reviewers for ongoing DOD research projects on in situ chemical oxidation and thermal remediation. He has been invited to present on the impacts of chemical oxidation on biological transformations and MNA and was the principal investigator on several treatability studies for ISCO of MGP wastes, including an EPRI-funded research study on the field applicability of persulfate for chemical oxidation of MGP residuals (*published in 2007*). He reviews articles for several remediation journals and has written chapters in several monographs and books on in-situ remediation.

Mr. Marley is a Licensed Environmental Professional (L.E.P.) in the state of Connecticut, license number 430.

### **Education**

- Ph.D. Studies\*** Environmental Engineering, University of Connecticut.
- M.S.** Civil / Environmental Engineering, University of Connecticut, 1985.
- B.S.** Civil Engineering, Queens University (Belfast, Northern Ireland), 1978.



\* Completed all course work, general examinations and research work for Ph.D. by 1989 but did not complete dissertation.

### Professional Experience

Total years of related experience: 35

- 1997- present    Co-founded XDD Environmental
- 1988-1997        Co-founded VAPEX (VAPEX acquired by ENVIROGEN in 1991)
- 1978-1988        Ireland and Graduate School

### Recent Conference / Key Note Presentations *(partial listing)*

- Key Note presentation: Advances in Oxidation and Reduction Technologies for Remediation of DNAPL, LNAPL and Other Organic and Inorganic Contaminants (AORT), Atlanta, Georgia, USA, November 13-17, 2016. **“State of the Practice versus State of the Art in Chemical Oxidation / Reduction Technologies”**.
- Invited presentation to faculty and students University of Connecticut, February 2017, **“State of the Practice versus State of the Art in Remediation Technologies”**.
- Platform presentation: Tenth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Palm Springs, Ca May 22-26, 2016. **Application of Alkaline Activated Persulfate to Treat Petroleum Hydrocarbon Contamination beneath the Active Construction of a High-Rise**.
- Seminar approved by State of New York for 1.0 PDH, Course # 20170224, 2017, **“REMEDIATION OPTIONS FOR 1,4 DIOXANE”**.

### Relevant Project Experience *(partial listing)*

- Principal Investigator EPRI funded field demonstration of catalyzed persulfate for in-situ remediation of MGP residuals.
- Principal Investigator on persulfate based in-situ chemical oxidation (ISCO) of MGP residuals: collaborative utility funded research on ISCO technologies for MGP wastes through Ish, Inc.
- Principal Investigator on a number of laboratory treatability studies on the impacts of ISCO on remediation of MGP residuals and the treated residuals impacts to groundwater.
- Expert Panel reviewer for DOD (funded research on in-situ chemical oxidation and Thermal remediation).

- Principal in design and implementation of innovative chemical oxidation technology application at a number of chlorinated VOC impacted RCRA facilities across the United States.
- Expert Witness on Landfill remediation and development project in Beirut, Lebanon.
- Principal in design and testing of radio frequency enhanced biodegradation of petroleum hydrocarbons at DOD Site, Alaska.
- Expert reviewer of AFCEE air sparging research project, and DOD funded Advanced Applied Technology Demonstration facility projects on Sparging and Radio Frequency enhanced Soil Vapor Extraction.
- Principal on alternative (to pump and treat) natural attenuation/biosparge system design, Superfund Site, New Jersey.
- Design and regulatory management on air sparging trench and anaerobic/aerobic bioremediation groundwater treatment system at Superfund Site in EPA Region I. This system is being considered as an alternate to the existing ROD which consists of a cap, pump and treat system with resulting potential savings of approximately \$20 million.
- Evaluation of immobilization of arsenic and degradation of benzene in groundwater through sparging and anaerobic biodegradation at two Superfund sites in the Northeast and Mid-Atlantic.
- Development/Demonstration of a large scale pure oxygen injection system for in situ biosparging at a Superfund Site in Massachusetts (benzene) and an industrial facility (nitrobenzene) in Texas.
- The invited expert on Sparging for a DOE funded project on the evaluation of remediation technologies for DNAPLS in fine-grained materials.
- Expert Panelist on the project team for the development of an Air Sparging Optimization Decision Tool for DOE.
- Technical Director for Winthrop Landfill Superfund Site SVE/bioventing feasibility, design and implementation.
- Principal Investigator for the American Petroleum Institute on the evaluation of member company's sparging projects and the development of a Sparging Guidance Document.
- Technical support to the PRP committee at the Royal Hardage Superfund Site in Oklahoma. Air flow modeling of potential full scale system layouts supported the premise of not utilizing soil vapor extraction as a remediation strategy at the site.
- Technical Consultant to the PRP Group for the Picillo Farm Superfund site SVE and groundwater remediation project in Coventry, Rhode Island.
- Design of bench scale and field scale treatability testing of vapor extraction, bioventing, sparging, bioremediation, pump and treat and complementary technologies at numerous

Superfund, RCRA, and private sites across the U.S. in soils varying from bedrock through clay and sands.

- Invited to expert panel for review of proposed vapor extraction treatability study at Idaho National Laboratory Waste Disposal site. VOCs in fractured basalts with interbedded sediments.
- Design implementation, and witness testimony on the results of bench scale studies into the fate and transport of chlorinated solvent/oil mixes as surface spills, in support of litigation between the State of Florida and Industrial Facility.
- Invited Technical Expert on one of the largest vapor extraction projects in the U.S., involving the extraction of carbon tetrachloride from stratified sand and clays in a radioactive environment of Plutonium and Americium.
- Design of and support for treatability studies (bench and pilot) for a Superfund site in Maine in support of PRP committee action to overturn a ROD issued for the site in favor of low temperature soil aeration. The rod was overturned in favor of vapor extraction
- Design/implementation of vapor extraction treatability studies on Rocky Mountain Arsenal Basin F solids.
- Design/implementation of Radio Frequency Heating project to assist vapor extraction of fuel oil.

### **Selected Publications, Conference Proceedings and Research**

Marley, M. C., Contributing Author

In Situ Chemical Oxidation for Groundwater Remediation (SERDP ESTCP  
Environmental Remediation Technology) 2011  
Editors: Robert L. Siegrist, Michelle Crimi, Thomas J. Simpkin

Smith, B., Marley, M., and Crawford, S., (2011). "Treatment of DNAPL Source Zone in an Active Manufacturing Facility with Alkaline Activated Persulfate," II Congresso Internacional de Meio Ambiente Subterraneo, San Paulo, Brazil.

Smith, B., Keane, D., and Marley, M (2011) "Design and Operation of a Large Air Sparge and Soil Vapor Extraction System in Shallow Soils at a Landfill Superfund Site," II Congresso Internacional de Meio Ambiente Subterraneo, San Paulo, Brazil.

Smith, B.A., and Marley, M. (2010). "In-Situ Chemical Oxidation (ISCO) Field Application and Monitoring Strategies," The Seventh International Conference on the Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA.

Marley, M, Parikh, J., and Smith, B.A. (2010). "Drivers for Successful Application of In-Situ Chemical Oxidation (ISCO) at MGP Sites," *Poster Presentation*, EPRI MGP 2010 Symposium, San Antonio, TX.

- Marley, M, Parikh, J., and Smith, B.A. (2009). "ISCO Application of Activated Persulfate on MGP Residuals," Illinois Manufactured Gas Plant Forum, Bloomington, IL.
- Marley, M, Parikh, J., and Smith, B.A. (2009). "Drivers for Successful Application of ISCO at Former MGP Sites," Illinois Manufactured Gas Plant Forum, Bloomington, IL.
- Smith, B.A., Marley, M.C., and Walsh, M. (2008). "ISCO Decision Tree: Managing Expectations and Costs," The Sixth International Conference on the Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA.
- Marley, M. C. , Parikh, J. M. , Smith, B. S. and A. J. Coleman, (2007). "In-Situ Chemical Oxidation (ISCO) for MGP sites: Technology Development, Applied Results and Guidance developed from an EPRI Field Demonstration Project using Activated Persulfate." Presented at the *EPRI MGP 2007 Symposium* in Atlanta, GA, January 2007.
- Marley, M. C. , Parikh, J. M., Smith, B. S., and A. J. Coleman, (2006). "In-Situ Chemical Oxidation (ISCO) at MGP sites: Technology Development and Applied Results from EPRI Field Demonstration Project." Presented at the *Natural Gas Technologies (NGT) 2006 Conference* in Orlando, FL, December 2006.
- Marley, M. C., Parikh, J. M., Murarka, I. P., Killian, P. and Dr. Clifford J. Bruell, (2005). "An Evaluation of In Situ Chemical Oxidation (ISCO) Using persulfate for MGP Impacted Soils." Presented at *GTI / Natural Gas Technologies 2005 Conference and Exhibition*, Orlando, Florida.
- Marley , M. C. and K L. Sperry, (2004). "State of the Practice in ISCO – Focus on Critical issues and Technology Application," *2004 Oxidation Reduction Technologies Conference*, San Diego, CA, October 2004.
- Marley, M. C., Cliff, B. L., Bruell, C. J., Killian, P., and Chenju Liang, University of Massachusetts – Lowell, (2004). "In SITU Chemical Oxidation (ISCO) for MGP Impacted Soils and Ground Water". Presented at of *The Fourth International Conference on Remediation of Chlorinated and Recalcitrant Compounds*, Monterey, California, May 2004.
- Liang, C., C.J. Bruell, M.C. Marley and K.L. Sperry, (2003). "Iron Catalyzed Oxidation of Trichloroethylene (TCE) by Persulfate and Persulfate-Thiosulfate Redox Couple," *Chemosphere*.
- Liang, C., C.J. Bruell, M.C. Marley and K.L. Sperry, (2003). "In Situ Chemical Oxidation of Trichloroethylene (TCE) by Modified Iron Catalyzed Persulfate," *Chemosphere*.
- Kelley, K.L., M.C. Marley and K.L. Sperry, (2003). "Chapter 11: In Situ Chemical Oxidation," *MTBE Remediation Handbook*, Eds. *E.E Moyer and P.T. Kosteki*, American Scientific Publishers, Amherst, Massachusetts, pp: 223-239.
- Liang, C., C.J. Bruell, M.C. Marley and K.L. Sperry, (2003). "Thermally Activated Persulfate Oxidation of Trichloroethylene (TCE) and 1,1,1-Trichloroethane (TCA) in Aqueous Systems and Soil Slurries," *Soil & Sediment Contamination*, 12(2): 207-228.

- Marley, M.C., B.L. Cliff, C.J. Bruell, P. Killian and C. Liang, (2003). "In Situ Chemical Oxidation (ISCO) for MGP Impacted Soils and Ground Water," *NGWA Remediation Conference: Site Closure and Cost of Cleanup*, New Orleans, Louisiana, November 13-14, 2003.
- Marley, M.C., B.L. Cliff, K.L. Sperry and J.M. Parikh, (2003). "An Evaluation of In Situ Chemical Oxidation (ISCO) for MGP Impacted Soils and Ground Water," *The 19th Annual International Conference on Contaminated Soils, Sediments and Water*, Amherst, Massachusetts, October 21-24, 2003. (Platform Presentation; Full Paper)
- Marley, M., J.M. Parikh, E.X. Droste, A.M. Lee, P.M. Dinardo, B.A. Woody, P. Chheda and G. Hoag, (2003). "Enhanced Reductive Dechlorination Resulting From A Chemical Oxidation Pilot Test," Presented at *In Situ and On-Site Bioremediation Conference*, Orlando, Florida, June 2-5. (Platform Presentation; Full Paper)
- Cookson, J.T., K.L. Sperry, C.M. Stanley, O.J. Uppal and M.C. Marley, (2003). "Technology Status of In-Situ Degradation of UXO Constituents by Chemical Oxidation," Presented at *Tri-Services Symposium*, Charlotte, North Carolina, March 25-28, 2003. (Poster Presentation; Abstract)
- Uppal, O.J., M.C. Marley and K.L. Sperry, (2002). "Significance Of Chemical Oxidant Stability In Mass Transfer And Mass Transport Limiting In Situ Chemical Oxidation Applications," Presented at *The Second International Conference on Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater*, Toronto, Ontario, Canada, November 17-21, 2002. (Platform Presentation; Abstract)
- Cookson, J.T., K.L. Sperry, O.J. Uppal, and M.C. Marley, (2002). "In Situ Chemical Oxidation of Energetic Compounds," Presented at *The Second International Conference on Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater*, Toronto, Ontario, Canada, November 17-21, 2002. (Platform Presentation; Full Paper)
- Liang, C., C.J. Bruell, M.C. Marley and K.L. Sperry, (2002). "Laboratory Evaluation of Iron Catalyzed Persulfate Oxidation Of Trichloroethylene," Presented at *The 18th Annual International Conference on Contaminated Soils, Sediments and Water*, Amherst, Massachusetts, October 21-24, 2002. (Poster Presentation)
- Liang, C., C.J. Bruell, M.C. Marley and K.L. Sperry, (2002). "Treatability Study of In Situ Remediation of Trichloroethylene (TCE) Contamination by Persulfate Oxidation," Presented at *The First Cross-Strait Soil and Groundwater Remediation Conference*, Taipei, Taiwan, September 4-6, 2002. (Platform Presentation)
- Kelley, K.L., M.C. Marley and K.L. Sperry, (2002). "In Situ Chemical Oxidation (ISCO) of MTBE," Presented at *2002 Joint CSCE/ASCE International Conference on Environmental Engineering*, Niagara Falls, Ontario, Canada, July 2002. (Platform Presentation)
- Sperry, K.L, C.M. Stanley, M.C. Marley, C.J. Bruell, C. Liang, (2002). "Iron Catalyzed Persulfate Oxidation of Chlorinated Solvents," Presented at *The Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds*, Monterey, California, May 20-23. (Poster Presentation; Full Paper)



- Bruell, C. J., C. Liang, M.C. Marley, and K.L. Sperry, (2001). "Thermally Activated Persulfate Oxidation Of Trichloroethylene (TCE) and 1,1,1-Trichloroethane (TCA): A Kinetic Study," Presented at *The 17th Annual International Conference on Contaminated Soils, Sediments and Water*, Amherst, Massachusetts, October 2001. (Platform Presentation)
- Parikh, J.M., M.C. Marley, A.M. Lee, D.P. Keane and E. Droste, (2001). "Observed Enhanced Bioremediation Processes During and After Field Scale Testing of In-Situ Chemical Oxidation using Persulfate and Permanganate," Presented at *The First International Conference on Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater*, Niagara Falls, Ontario, Canada, June 25-29, 2001. (Platform Presentation)
- Bruell, C.J., C. Liang, M.C. Marley, and K.L. Sperry, (2001). "Kinetics of Thermally Activated Persulfate Oxidation of Trichloroethylene (TCE) and 1,1,1-Trichloroethane (TCA)," Presented at *The First International Conference on Oxidation and Reduction Technologies for In-Situ Treatment of Soil and Groundwater*, Niagara Falls, Ontario, Canada, June 25-29, 2001. (Platform Presentation)
- Marley, M.C., (2001). "Energetic Processes for the In Situ Oxidation and Reduction of Contaminants in Soil and Groundwater," *First International Conference on Oxidation and Reduction Technologies for In Situ Treatment*. Niagara Falls, June 2001.
- Marley, M.C., (2001). "Kinetics of Thermally Activated Persulfate Oxidation of TCE and TCA." *First International Conference on Oxidation and Reduction Technologies for In Situ Treatment*. Niagara Falls, June 2001.
- Marley, M.C., with Droste, E. et. al., (1999). "Demonstration of Enhanced Biodegradation by Radio Frequency Heating," *Fifth International Symposium In Situ and Onsite Bioremediation*, San Diego, April 1999.
- Marley, M.C., C. Lizotte et. al., (1999). "Demonstration of a Sequential Anaerobic/Aerobic In Situ Treatment System at a Superfund Site," with *Fifth International Symposium In Situ and Onsite Bioremediation*, San Diego, April 1999.
- Marley, M.C., Lizotte, C.C., Polonsky, J.D., (1996). "Expanding Sparging Technology through Oxygen Injection," *First International Symposium on In Situ Air Sparging for Site Remediation Proceedings*, Las Vegas, October 1996.
- Marley, M.C., and Hall, R.L., (1996) "Control of Arsenic in Ground Water using Sparging Technologies," Presented at *HazWaste World/SUPERFUND XVII*, Washington, DC., Oct. 15-17.
- Marley, M.C., Bruell, C.J., (1995). "In Situ Air Sparging: Evaluation of Petroleum Industry Sites and Considerations for Applicability, Design and Operation," *API Publication 4609*, American Petroleum Institute, Washington, D.C., April 1995.
- Marley, M.C., Bruell, C.J., Hopkins, H.H., (1995). "Air Sparging Technology: A Practice Update," *In Situ and On-Site Bioreclamation: The Third International Symposium Proceedings*, Battelle, San Diego, CA, April 1995

- Bruell, C.J., Marley, M.S., Hopkins, H. H., (1995). "American Petroleum Institute In Situ Air Sparging Database," *Proceedings of the Tenth Annual Conference: Hydrocarbon Contaminated Soils-Analysis, Site Assessment, Fate, Environmental and Human Risk Assessment, Remediation and Regulation*, University of Massachusetts, Amherst, Massachusetts, October 23-26, 1995 (Submitted to *Journal of Soil Contamination*).
- Marley, M.C., Li, F., Cody, R., and Droste, E., (1994). "The Design of an In Situ Air Sparging Trench," *National Groundwater Association/American Petroleum Institute (NGWA/API) Conference*, Houston, TX, November 1994.
- Marley, M.C., Cody, R., Begley, J.F., Krone, L.J., (1994). "A Bioventing Success Story," *NGWA Focus Conference on Eastern Regional Ground Water Issues*, Burlington, VT, October 3-5, 1994.
- Marley, M.C., Droste, E., and Cody, R., (1994). "Mechanisms that Govern the Successful Application of Sparging Technologies," *87th Annual Meeting of the Air and Waste Management Association*, Ohio, June 1994.
- Marley, M.C. and Li, F., (1993). "Air Sparging an efficient groundwater and Soils Remediation Technology," *2nd International Symposium In-situ and On-site Bioremediation Conference*, San Diego, CA, April 1993.
- Marley, M.C., (1993). "Enhancing Site Remediation through Radio Frequency Heating," *AICHe Annual Meeting*, St. Louis, MO, November 1993.
- Marley, M.C. , Li, F., and Magee, S. (1992). "The Application of Models in the Design of Air Sparging Systems," *Superfund '92 Conference*, December 1992.
- Marley, M.C., Hazebrouck, D.J. and Walsh, M.T., (1992). "The Application of In Situ Air Sparging as an Innovative Soils and Ground Water Remediation Technology," *Ground Water Monitoring Review*, Spring 1992, vol. 12, no. 2, pp 137-145.
- Marley, M.C., (1992). "Evaluation of Vadose Zone Air Flow Pathways Utilizing Tracer Gases and the Subsequent Implications in System Design and Costs," *National Research and Development Conference on the Control of Hazardous Materials*, San Francisco, CA, Feb., 1992.
- Marley, M.C., (1991). "Remediating TCE-Contaminated Soils: A Case Study of a Focused RI/FS and Vacuum Extraction Treatability Study," *Proceedings from the Fifth National Outdoor Action Conference*, NWWA, Las Vegas, NV, May 1991.
- Marley, M.C., (1991). "Development and Application of a Three-Dimensional Air Flow Model in the Design of a Vapor Extraction System," *Proceedings of the National Research and Development Conference on the Control of Hazardous Materials*, Anaheim, CA, February 1991.
- Marley, M.C., (1991). "Air Sparging in Conjunction with Vapor Extraction for Source Removal at VOC Spill Sites," *Proceedings from the Fifth National Outdoor Action Conference*, NWWA, Las Vegas, NV, May 1991.



- Marley, M.C., Walsh, M.T., and Nangeroni, P.E., (1990). "Case Study on the Application of Air Sparging as a Complimentary Technology to Vapor Extraction at a Gasoline Spill Site in Rhode Island," *Proceedings of HMC Great Lakes 90 Conference*, Cleveland, OH, September 1990 and *Air and Waste Management International Specialty Conference*, Boston, MA, November 1990.
- Marley, M.C., Richter, S.D., Cody, R.J., and Cliff, B.L., (1990). "Modeling for *In-situ* Evaluation of Soil Properties and Vapor Extraction System Design," *Proceedings of Petroleum Hydrocarbons and Organic Chemicals in Ground Water Conference*, NWWA/API, Houston, TX, November 1990.
- Marley, M.C., Cliff, B., Nangeroni, P.E., and Polonsky, J.D., (1990). "Air Flow Modeling for In-Situ Evaluation of Soil Properties and Engineered Vapor Extraction System Design," *Fourth National Outdoor Action Conference*, NWWA, Las Vegas, NV, May 14-17, 1990.
- Marley, M.C., Baehr, A.L., and Hult, M.F., (1990). "Evaluation of Air-Permeability in the Unsaturated Zone using Pneumatic Pump Tests: 1. Theoretical Considerations."
- Hoag, G.E., Marley, M.C., Cliff, B. and Nangeroni, P.E., (1989). "Soil Vapor Extraction Research Developments," *Petroleum Contaminated Soils*, Lewis Publishers, September 1989.
- Marley, M.C., Richter, S.D., Cliff, B. and Nangeroni, P.E., (1989). "Design of Soil Vapor Extraction Systems – A Scientific Approach," Presented at *Soil Vapor Extraction Technology Workshop*, U.S. E.P.A.; Edison, New Jersey, June 28-29, 1989.
- Baehr, A.L., Hoag, G.E., and Marley, M.C., (1989). "Removing Volatile Contaminants from the Unsaturated Zone by Inducing Air Phase Transport," *Journal of Contaminant Hydrology*, February 1989.
- Baehr, A.L., Hoag, G.E., and Marley, M.C., (1987). "*In-situ* Recovery of Hydrocarbon Contaminated Soil Utilizing the Induced Soil Venting Process," *VTT Symposium on Non-Waste Technology*, Espo, Finland.
- Hoag, G.E., Baehr, A.L. and Marley, M.C., (1987). "Induced Soil Venting of Hydrocarbon Contaminated Soil," *Workshop on Hazardous Materials/Waste Management*; United Nations Industrial Development Organization; Vienna, Austria, June 1987. Also in: *Recent Advances in the Management of Hazardous and Toxic Wastes in the Process Industries*, International Congress, Vienna, Austria, March 1987.
- Hoag, G.E., Baehr, A.L. and Marley, M.C., (1986). "Gasoline Recovery from Soil Using the Induced Soil Venting System," Presented at *Soil Science Society of America Annual Meeting*, Nov. 30 - Dec. 5, 1986.
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- Hoag, G.E., and Marley, M.C., (1986). "Soil Venting of Gasoline Contaminated Soils," *American Society of Civil Engineers*, Environmental Engineering Division; 1986.

- Marley, M.C., (1985). "Quantitative and Qualitative Analysis of Gasoline Fractions Stripped by Air from the Unsaturated Zone," Masters' Thesis; University of Connecticut; 1985.
- Bruell, C.J., Hoag, G.E., and Marley, M.C., (1985). "A Study of the Mechanisms Controlling Gasoline Hydrocarbon Partitioning and Transport in Groundwater Systems," *Technical Completion Report*; United States Department of the Interior, Report Number 3707-06, Volume II; October 1985.
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