

CURRICULUM VITAE

Timothy J. Mayotte, Ph.D., CPG, P.E.

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EDUCATION

Doctor of Philosophy, Environmental Engineering
Michigan State University, 2003
Master of Science, Environmental Engineering
Michigan State University, 1993
Master of Science, Geology (Hydrogeology Program)
Western Michigan University, 1988
Bachelor of Science, Geology (Geophysics Option)
Michigan State University, 1985
Advanced short courses on numerical methods and groundwater hydrodynamics
University of Cincinnati (Dr. Jacob Bear), 1988
Princeton University (Dr. Michael Celia), 1990

EXPERIENCE

Mayotte Design & Engineering, P.C. (2003 – present)
Owner/President
Lansing Community College (2009 - present)
Adjunct Professor – Microbiology, Environmental Sciences, Civil Technology
Montgomery Watson/Harza Engineering (2003)
Principal Engineer, Technology Applications Expert Panel
Northern Technologies, Inc. (under research contract with MSU) (2000 – 2003)
Technical Director - Engineering
Golder Associates (1994 – 2000)
Manager of Michigan Operations, Senior Engineer
Halliburton/Brown & Root (1986 – 1994)
District Manager and Senior Engineer (1990-94)
Lead Engineer, Program Manager, Group Supervisor (1990-94)
Project Manager and Hydrogeologist (1986-1990)

CERTIFICATIONS

Professional Engineer:
Illinois (Lic. No. 062-050511)
Indiana (Lic. No. PE19600532)
Michigan (Lic. No. 41981)
Ohio (Lic. No. E-60381)
Wisconsin (Lic. No. 31738)

Certified Professional Geologist - AIPG CPG No. 9457

AFFILIATIONS

American Society of Civil Engineers (since 1999)
American Society for Microbiology (since 2003)
American Institute of Professional Geologists (since 1994)

TECHNICAL EXPERIENCE

- Routine interpretation of geologic, hydrologic and geophysical data for resource development and environmental remediation projects.
- Design and implementation of biological and physico-chemical treatment technologies for remediating contaminated soil and groundwater.
- Numerical modeling of ground- and surface-water flow and pollutant fate and transport using: *MODFLOW, RT3D, HEC-HMS, HEC-RAS, HydroCAD*
- Geotechnical investigations and soil mechanics testing and analyses.
- Civil engineering design with *AutoCAD Civil 3D*.
- Design of stormwater management and drainage features, including wet and dry ponds.
- Design of wastewater impoundments.
- Dam safety and inspections.
- Brownfield redevelopment planning and assistance.
- Industrial wastewater treatment design and optimization.
- Projects completed in AL, AZ, CA, CO, FL, IA, IL, IN, KS, MA, MI, MS, MO, NJ, NY, OH, OR, PA, TN, TX, UT, VT, VA, WV, WI, WY, Brazil, Canada (BC, ONT), China, Czech Republic, Italy, Mexico.

AWARDS/RECOGNITIONS

- Received the Amoco Detroit District Contractor of the Year Award for services rendered during 1990 and 1991.
- Winner of Best Poster Paper for Environmental Geosciences, *American Association of Petroleum Geologists Bulletin*, v. 78, no. 8, pp. 1331-32, 1994.
- Named to *The Environmental Business Report*, Client Service A-Team in 1997.
- Outstanding Job Performance Award for role as Operations Manager, Golder Associates, 1999.

PUBLICATIONS/PRESENTATIONS

Mayotte, T. J., Redox Gradients, TCE Reductive Dechlorination, and Cr(VI) Detoxification in Bioaugmented Model Aquifer Systems, Ph.D. Thesis, Michigan State University.

Mayotte, T. J., 1988; An investigation of a soil gas sampling technique and its applicability for detecting gaseous PCE and TCA over an unconfined granular aquifer: Abs., Ground Water, v. 26, no. 6, p. 806.

Mayotte, T. J., 1993, A perspective on the benefits of the Subsurface Volatilization and Ventilation System for promoting rapid and cost-effective remediation of volatile organic contamination in the subsurface; presented at the National Ground Water Association 45th Annual Convention and Exposition, Chlorinated Volatile Organic Compounds in Ground Water, Kansas City.

Mayotte, T. J., 1993, Subsurface volatilization and ventilation for VOC contamination, The National Environmental Journal, Vol. 3, No. 6, pp. 36-43.

Mayotte, T. J., The SVVS - SITE demonstration, Seminar on Cost Effective In Situ Restoration of Soil and Groundwater, SVVS, Brown & Root Environmental, November 1993, Southfield, MI.

Mayotte, T. J., An application of a practical column method for assessing bioaugmentation potentials in VOC-contaminated aquifers, Michigan Groundwater Professionals Winter Forum, January 1994, Western Michigan University, Kalamazoo.

Mayotte, T. J., 1994, An evaluation of aquifer bioaugmentation with *Pseudomonas* sp. strain KC to remediate carbon tetrachloride, Geological Society of America, 27th Annual North-Central Section Meeting, Abs. with Prog., Western Michigan University, Kalamazoo.

Mayotte, T. J., 1994, Bioenhancement for rapid and cost-effective remediation of multi-phase subsurface contamination; presented at the Geological Society of America, 27th Annual North-Central Section Meeting, Western Michigan University, Kalamazoo.

Mayotte, T. J., 1994, The Schoolcraft Site - the discovery and remediation of multiple groundwater contamination problems in a rural village; Field Trips Guidebook, Geological Society of America, 27th Annual North-Central Section Meeting, pp. 19-28, Western Michigan University, Kalamazoo.

Mayotte, T. J. and S. B. Thompson, 1994, Controlled vapor circulation in subsurface materials to enhance the bioremediation of organic contaminants, Proceedings, USEPA Fifth Forum on Innovative Hazardous Waste Treatment Technologies, Domestic & International, Chicago.

Dybas, M. J., T. J. Mayotte, and C. S. Criddle, 1994, Use of alkaline niche adjustments to enable colonization and remediation of carbon tetrachloride-contaminated aquifer materials, Proceedings, American Society of Microbiology Annual Meeting, Las Vegas.

Mayotte, T. J., 1994, A bioenhancement process for rapid remediation of multi-phase subsurface contamination, American Association of Petroleum Geologists Bulletin, v. 78, no. 8, pp. 1331-32. *Winner of Best Poster Paper award - Environmental Geosciences.*

Dybas, M. J., T. J. Mayotte, and C. S. Criddle, 1994, Alkaline niche adjustment for remediation of non-sterile environments contaminated with carbon tetrachloride, American Association of Petroleum Geologists Bulletin, v. 78, no. 8, pp. 1328-29.

Dybas, M. J., G. Tatara, W. Knoll, T. J. Mayotte, C. S. Criddle, 1995, Niche adjustment for bioaugmentation with *Pseudomonas sp.* strain KC, Bioaugmentation for Site Remediation, R. E. Hinchee, A. Leeson, and L. Semprini (Eds.), Battelle Press, Columbus, OH, pp. 77-84.

Introduction to Air Sparging and Soil Vapor Extraction System Design, short course module of Western Michigan University's Summer Hydrogeology Field Camps, 1995 - 97.

Mayotte, T. J., 1995, The bioenhancement procedure, ECON Magazine, October 1995.

Mayotte, T. J., M. J. Dybas, C. S. Criddle, 1996, Bench-scale evaluation of bioaugmentation to remediate carbon tetrachloride-contaminated aquifer materials, Ground Water, v. 34, no. 2, pp. 358-368.

Mayotte, T. J., 1996, Bioaugmentation of aquifer materials for treatment of chlorinated solvents, presented at the 18th Annual Solid and Hazardous Waste Management Conference, Louisiana Department of Environmental Quality, Lafayette, LA.

Mayotte, T. J., M. J. Dybas, and C. S. Criddle, 1996, Aquifer bioaugmentation with *Pseudomonas sp.* strain KC to remediate carbon tetrachloride - a bench study, Proceedings, Air & Waste Management Association's 89th Annual Meeting & Exhibition, Nashville, TN, June 1996.

Dybas, M. J., S. Bezborodinikov, T. Voice, D. C. Wiggert, S. Davies, J. Tiedje, C. S. Criddle, O. Kawka, M. Barcelona, and T. J. Mayotte, 1997, Evaluation of bioaugmentation to remediate an aquifer contaminated with carbon tetrachloride, Fifth International Symposium on In Situ and On-Site Bioremediation, Batelle, Columbus, OH.

Mayotte, T. J., Brownfield Site Rehabilitation, Midland Mortgage Corporation's Seminar on Architectural Standards, Clearwater, Florida, January 1997.

Dybas, M. J., M. Barcelona, S. Bezborodnikov, S. Davies, L. Forney, O. Kawka, T. Mayotte, L. Sepúlveda-Torres, K. Smalla, M. Sneathen, J. Tiedje, T. Voice, D. Wiggert, M. Witt, C. Criddle, 1997, Pilot-scale evaluation of bioaugmentation for in-situ remediation of a carbon tetrachloride-contaminated aquifer, Environmental Science & Technology, v. 32, no 22, pp. 3598-3611.

Mayotte, T. J., Aquifer bioaugmentation with *Pseudomonas sp.* strain KC to remediate carbon tetrachloride - a bench study, Golder Associate's Natural Attenuation Seminar, Princeton, New Jersey, April, 1998.

Hyndman, D. W., M. J. Dybas, A. Chan, L. Forney, R. Heine, T. Mayotte, M. S. Phanikumar, G. Tatara, J. Tiedje, T. Voice, R. Wallace, D. Wiggert, X. Zhao, and C. S. Criddle, 2000, Hydraulic characterization and design of a full-scale biocurtain, Ground Water, v. 38, no. 3. pp. 462-474.

Mayotte, T. J., 2000, Subsurface contamination at dry cleaning facilities: site characterization and remediation, Illinois Dry-Cleaning Association Bi-Annual Conference, Chicago, IL.

Kim, H., L. Dybas, T. J. Mayotte, S. Hashsham, and M. J. Dybas, 2001, Effects of several electron donors on dehalogenation in anaerobic soil microcosms, The Second International Conference on Remediation of Chlorinated and Recalcitrant Compounds, San Diego, California.

Dybas, M. J., D. W. Hyndman, M. S. Phanikumar, R. Heine, T. J. Mayotte, G. Tatara, T. Voice, D. Wiggert, J. Tiedje, R. Wallace, X. Zhao, and C. S. Criddle, 2002, The Schoolcraft Bioaugmentation Project: Efficient Long-Term Remediation in a Heterogeneous Aquifer, National Ground Water Association Annual Meeting, Las Vegas, NV.

Mayotte, T. J. and M. J. Dybas, 2003, Redox Gradients and TCE Dehalogenation in a Bioaugmentation Treatment Zone, Seventh International Symposium on In Situ and On-Site Bioremediation, Orlando, Florida.

Mayotte, T. J. and M. J. Dybas, 2004, Redox Gradients, TCE Reductive Dechlorination, and Cr(VI) Detoxification in Bioaugmented Model Aquifer Systems, Third International Conference on Oxidation and Reduction Technologies, San Diego.

Mayotte, T. J., D. M. Capone, 2004, In Situ Redox Manipulation and Fixation of Cr(VI) in Vadose Zone Soils, Third International Conference on Oxidation and Reduction Technologies, San Diego.

COMPLETED ACADEMIC RESEARCH/TECHNOLOGY DEVELOPMENT

1. Evaluation of geochemical, contaminant transformation, and genetic data collected from soil and groundwater samples to determine the mechanisms and rates of natural attenuation in aquifer systems contaminated with chlorinated solvents.
2. Laboratory-based enrichment of microbial cultures capable of the complete dechlorination (halorespiration) of PCE and TCE using native microflora extracted from aquifer materials.
3. Design of hydraulic delivery strategies to promote even distribution of microbial enrichment cultures into aquifer materials.
4. Genetic fingerprinting of microbial strains that express dehalogenation activity and auxiliary members of enrichment cultures.
5. Geochemical and genetic tracking of the fate and activity of dehalogenators and auxiliary members within impacted aquifer materials following inoculation with dehalogenating enrichment cultures.
6. Biological and geochemical manipulation of the oxidation-reduction potential of aquifer systems to promote beneficial biotransformation and complexation/fixation processes for the in-situ remediation of certain organic pollutants and toxic metals, respectively.
7. Extraction of DNA from soil and/or groundwater and polymerase chain reaction (PCR)-based analyses of variable regions of the gene that codes a portion of ribosomal RNA unique to microbial strains capable of reductively dechlorinating chlorinated solvents by halorespiration.
8. Detection and quantification of community members that often serve an essential mutualistic role with halorespirors to facilitate dechlorination of compounds such as PCE and TCE.
9. Non-specific profiling of the community structure within dehalogenating enrichment cultures and correlative examination of the structure of post-inoculation aquifer microbial communities to evaluate the performance of in-situ bioaugmentation strategies.
10. Bench-scale evaluation and full-scale design of in-situ redox manipulation (chemical) strategies to remediate hexavalent chromium (Cr^{6+}) in unsaturated soils and oxidized groundwater.