

Paul C. Johnson, Ph.D.
Professor and Dean
Ira A. Fulton Schools of Engineering
P.O. Box 879309
Arizona State University
Tempe AZ 85287-9309
(480) 965-9115 (phone)
paul.c.johnson@asu.edu

Education:

1988 Ph.D. - Princeton University - Chemical Engineering
1984 M.A. - Princeton University - Chemical Engineering
1983 B.S. - University of California, Davis - Chemical Engineering

Faculty Appointments:

2003 – present Professor, Arizona State University
1997 - 2003 Associate Professor, Arizona State University (tenured)
1994 - 1997 Associate Professor, Arizona State University (untenured)

Academic Leadership Positions:

2010 – present Dean - Ira A. Fulton Schools of Engineering
2006 – 2010 Executive Dean - Ira A. Fulton Schools of Engineering
2004 – 2006 Associate Vice President for Research – Arizona State University
2002 – 2004 Associate Dean for Research - Ira A. Fulton School of Engineering
2000 – 2002 Associate Chair for Graduate Programs - Department of Civil and Environmental Engineering

Industry Experience:

1993 - 1994 Senior Research Engineer, Shell Development, Houston
1990 - 1993 Research Engineer, Shell Development, Houston
1987 - 1990 Associate Research Engineer, Shell Development, Houston

Other Professional Appointments:

2003 – 2011 Editor-In-Chief, *Ground Water Monitoring and Remediation*
National Ground Water Association

2010 – 2013 National Research Council Committee on
Future Options of the Nation's Subsurface Remediation Effort

Awards & Honors:

Brown and Caldwell Lifetime Achievement Award in Remediation	2014
AZ Water Association Nathan Burbank	
Environmental Educator of the Year Award	2014
Fulton Schools of Engineering Top 5% Teaching Award	2014
National Ground Water Association Keith E. Anderson Award	2011
Strategic Environmental Research and Development Program (SERDP) Project of the Year	2011
Outstanding Educator: AZ Society of Professional Engineers	2011
2006 AEHS Academic Career Recognition Award	2006
ASCE/CERF Charles Pankow Award for Innovation Finalist	2005
White House Closing the Circle Award Winner	2003

National Pollution Prevention Roundtable Most Valuable Pollution Prevention Project Award	2003
ASCE/CERF Charles Pankow Award for Innovation Finalist	2003
Environmental Security Technology Certification Program (ESTCP) Project of the Year	2002
ASU College of Engineering Teaching Excellence Award	2002
CEAS Alumni SOAR Outstanding Faculty Advisor Award	2002
National Ground Water Association (NGWA) 2001 Outstanding Ground Water Remediation Project Award	2001
ASCE Journal of Environmental Engineering Editor's Award	2001
AWPCA Quentin Mees Research Award (w/C. Bruce)	2000
ASU Parents Association Teacher of the Year Finalist	2000
ASU College of Engineering Teaching Excellence Award	1998
ASCE Student Chapter Best Teacher Award	1996
AWPCA Quentin Mees Research Award	1995
NGWA/API National Conference Best Paper	1994
Shell Oil Company Recognition Award	1990, 1991, 1993, 1994
Princeton University Wallace Memorial Fellowship in Engineering	1986-1987
University of California Stauffer Chemical Scholarship	1983
University of California ARCO Scholarship	1982
American Military Engineers Scholarship	1982
Associate Western Universities DOE Research Fellowship	1981
Phi Kappa Phi - National Honor Society	
Tau Beta Pi - National Engineering Honor Society	
Pi Mu Epsilon - National Mathematics Honor Society	

Brief Overview of Technical Expertise and Recognized Contributions to the Field: the fate and transport of contaminants in the environment with emphasis on challenges associated with the management of contaminated soil and groundwater sites; best known for contributions to the design, monitoring, optimization, and validation of some of the most frequently used remediation technologies (soil vapor extraction, in situ soil heating, in situ air sparging, aerobic biobarriers); lead author of the risk-based corrective action guidance (ASTM RBCA) that forms the basis for many state cleanup programs; modeling and characterizing potential impacts associated with the vapor intrusion to indoor air exposure pathway, including the Johnson and Ettinger analytical and Abreu and Johnson numerical vapor intrusion models used by US Environmental Protection Agency.

Brief Overview of Academic Leadership: 10 years of senior university and college leadership positions. Currently dean of the Ira A. Fulton Schools of Engineering, which is one of the three largest engineering colleges in the United States with almost 17,000 students, more than 300 faculty, about \$90M in external research funding, and operations on two campuses. While dean, the Fulton Schools of Engineering has grown from about 6,000 to almost 17,000 students and successfully competed for its first National Science Foundation Engineering Research Center. It now operates as six theme-based schools, with a strong focus on impact-based scholarship, improving student outcomes, and creating innovative experiential learning opportunities. Student retention, persistence, and graduation rates have all increased significantly and continue to increase. The culture encourages and supports collaborative interdisciplinary projects and programs, entrepreneurial activities, and innovative instructional environments and approaches. As associate vice president for research for Arizona State University, was responsible for university-wide research compliance, research administration, programming of new interdisciplinary science and technology buildings, and managing annual investment of about \$25M in state funds targeted for the start-up of new interdisciplinary research centers.

Patents

1. Salanitro, J.P., P.C. Johnson, S.M. Stearns, P.M. Maner, J.H. Miller, and G.E. Spinnler. 2004. In Situ method and Apparatus for Biodegradation of Alkyl Ethers and Tertiary Butyl Alcohol. U.S. Patent 6,808,632.
2. Salanitro, J.P., P.C. Johnson, S.M. Stearns, P.M. Maner, J.H. Miller, and G.E. Spinnler. 2004. In Situ method and Apparatus for Biodegradation of Alkyl Ethers and Tertiary Butyl Alcohol. U.S. Patent 6,776,910 B2.
3. Salanitro, J.P., P.C. Johnson, S.M. Stearns, P.M. Maner, J.H. Miller, and G.E. Spinnler. 2003. In Situ method and Apparatus for Biodegradation of Alkyl Ethers and Tertiary Butyl Alcohol. U.S. Patent 6,503,395 B1.
4. Marsden, A.R. Jr., D.A. Weingaertner, L.W.R. Dicks, A.L. Otermat, P.C. Johnson. 1997. Enhanced Deep Soil Vapor Extraction Process and Apparatus Utilizing Sheet Metal Pilings. U.S. Patent 5,660,500.
5. Johnson, P.C.. 1993. In Situ Soil Heating Press/Vapor Extraction System. U.S. Patent 5,244,310.
6. Johnson, P.C., D.A. Weingaertner, L.W.R. Dicks, A.L. Otermat, and A.R. Marsden, Jr.. 1993. Enhanced Deep Soil Vapor Extraction Process and Apparatus for Removing Contaminants Trapped in or Below the Water Table. U.S. Patent 5,271,693.
7. Dicks, L.W.R., P.C. Johnson, A.R. Marsden, Jr., D.A. Weingaertner. 1993. Modified Heater for In Situ Soil Heating. U.S. Patent 5,233,164.
8. Marsden, A.R., A.L. Otermat, D.A. Weingaertner, P.C. Johnson, L.W.R. Dicks, H.B. Wilde. 1993. Heater Blanket for In Situ Soil Heating. U.S. Patent 5,221,827.
9. Johnson, P.C. and D.A. Weingaertner. 1993. In Situ Thermal Desorption of Contaminated Surface Soil. U.S. Patent 5,193,934.
10. Johnson, P.C. and D.A. Weingaertner. 1992. In Situ Soil Decontamination Process With Subsurface Vapor Recovery. U.S. Patent 5,169,263.
11. Johnson, P.C., J.D. Colthart, A.L. Otermat, D.A. Weingaertner, C.C. Chou, D.L. Byers, S.M. Stearns, A.R. Marsden Jr., and G.M. Deeley. 1992. Soil Decontamination. U.S. Patent 5,114,497.
12. Johnson, P.C., A.L. Otermat, and C.C. Chou. 1991. In Situ Decontamination of Spills and Landfills by Focused Microwave/Radio Frequency Heating and a Closed-Loop Vapor Flushing and Vacuum Recovery System. U.S. Patent 5,076,727.

PUBLICATIONS AND PRESENTATIONS

Refereed Archival Journal Papers:

1. Holton, C., Y. Guo, H. Luo, P. Dahlen, K. Gorder, E. Dettenmaier, and P.C. Johnson. 2015. Long-term Evaluation of the Controlled Pressure Method for the Assessment of the Vapor Intrusion Pathway. *Environ. Sci. Technol.* 49 (4), 2091–2098.
2. Hers, I., P. Jourabchi, M.A. Lahvis, P. Dahlen, H. Luo, P.C. Johnson, G.E. DeVaul, and K.U. Mayer. 2014. Evaluation of Seasonal Factors on Petroleum Hydrocarbon Vapor Biodegradation and Intrusion Potential in a Cold Climate. *Ground Water Monitoring and Remediation.* 34 (4). 60-78.
3. Cavanagh, B.A., P.C. Johnson, and E.J. Daniels. 2014. Reduction of Diffusive Emissions from a Dissolved Source in a Lower Permeability Layer by Sodium Persulfate Treatment. *Environ. Sci. Technol.* 48 (24). 14582–14589.
4. McAlary, T., H. Groenevelt, S. Seethapathy, P. Sacco, D. Crump, M. Tuday, B. Schumacher, H. Hayes, P. Johnson, and T. Górecki. 2014. Quantitative passive soil vapor sampling for VOCs- part 2: laboratory experiments. *Environ. Sci.: Processes Impacts.* 16. 491-500.
5. McAlary, T., H. Groenevelt, P. Nicholson, S. Seethapathy, P. Sacco, D. Crump, M. Tuday, H. Hayes, B. Schumacher, P. Johnson, T. Górecki and I. Rivera-Duarte. 2014. Quantitative passive soil vapor sampling for VOCs- part 3: field experiments. *Environ. Sci.: Processes Impacts.* 16. 501-510.
6. Ekre, R., P.C. Johnson, B. Rittmann, and R. Krajmalnik-Brown. 2014. Method for Assessing Source Zone Natural Depletion at Chlorinated Aliphatic Spill Sites. *Ground Water Monitoring and Remediation.* doi: 10.1111/gwmr.12049.
7. Clifton, L.M., P. Dahlen, and P.C. Johnson. 2014. Effect of Dissolved Oxygen Manipulation on Diffusive Emissions from NAPL-Impacted Low Permeability Soil Layers. *Environ. Sci. Technol.* 48, 5127–5135.
8. Holton, C., H. Luo, P. Dahlen, K. Gorder, E. Dettenmaier, and P.C. Johnson. 2013. Temporal Variability of Indoor Air Concentrations under Natural Conditions in a House Overlying a Dilute Chlorinated Solvent Groundwater Plume. *Environ. Sci. Technol.* 47 (23), pp 13347–13354.
9. Luo, H., P.R. Dahlen, P.C. Johnson, T.R. Peargin. 2013. Proof-of-Concept Study of an Aerobic Vapor Migration Barrier Beneath a Building at a Petroleum Hydrocarbon-Impacted Site. *Environ. Sci. Technol.* 47, 1977-1984.
10. Leeson, A., H.F. Stroo, and P.C. Johnson. 2012. Groundwater Remediation Today and Challenges and Opportunities for the Future. *Groundwater.* 51 (2). 175-179.
11. Stroo, H.F., A. Leeson., J.A. Marqusee, P.C. Johnson, C.H. Ward, M.C. Kavanagh, T.C. Sale, C.J. Newell, K.D. Pennell, C.A. LeBron, M. Unger. 2012. Chlorinated Ethene Source Remediation: Lessons Learned. *Environ. Sci. Technol.* 46. 6438–6447.
12. Triplett Kingston, J.T., P.R. Dahlen, P.C. Johnson. 2012. Assessment of Groundwater Quality Improvements and Mass Discharge Reductions at Five In Situ Electrical Resistance Heating Remediation Sites. *Ground Water Monitoring and Remediation.* 32 (3). 41-51. Summer.

13. Kingston, J.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 (4). 64 – 72.
14. Lesser, L.E., P.C. Johnson, G.E. Spinnler, C.L. Bruce, and J.P. Salanitro. 2010. Spatial Variation in MTBE Biodegradation Activity of Aquifer Solids Samples Collected in the Vicinity of a Flow-Through Aerobic Biobarrier. *Ground Water Monitoring and Remediation*. 30 (2). 63 – 72.
15. Johnson, P.C., C.L. Bruce, K.D. Miller. 2010. A Practical Approach to the Design, Monitoring, and Optimization of In Situ MTBE Aerobic Biobarriers. *Ground Water Monitoring and Remediation*. 30 (1). 58-66.
16. Luo, H., P. Dahlen, P.C. Johnson, T. Peargin, and T. Creamer. 2009. Spatial Variability of Soil-Gas Concentrations near and beneath a Building Overlying Shallow Petroleum Hydrocarbon-Impacted Soils. *Ground Water Monitoring and Remediation*. 29 (1). 81-91.
17. Johnson, P.C., R.A. Ettinger, J.P. Kurtz, R. Bryan, and J.E. Kester. 2009. Empirical Assessment of Ground Water-to-Indoor Air Attenuation Factors for the CDOT-MTL Denver Site. *Ground Water Monitoring and Remediation*. 29 (1). 153-159.
18. McAlary, T. and P.C. Johnson. 2009. Vapor Intrusion. *Ground Water Monitoring and Remediation*. 29 (1). Editorial.
19. Lesser, L.E, P. C. Johnson, R. Aravena, G.E. Spinnler, C.L. Bruce, and J.P. Salanitro. 2008. An Evaluation of Compound-Specific Isotope Analyses for Assessing the Biodegradation of MTBE at Port Hueneme, CA. *Environmental Science and Technology*. 42 (17). 6637–6643.
20. Odencrantz, J.E., H. O’Neill, S.J. Steinmacher, J.D. Case, and P.C. Johnson. 2008. Residential Vapor Intrusion Evaluation: Long-Duration Passive Sampling vs. Short-Duration Active Sampling. *Remediation*. Autumn. 49-54.
21. Lundegard, P.D., P.C. Johnson, and P. Dahlen. 2008. Oxygen Transport from the Atmosphere to Soil Gas Beneath a Slab-on-Grade Foundation Overlying Petroleum-Impacted Soil. *Environmental Science and Technology*. 42 (15). 5534–5540.
22. Xu, Y., L.A. Baker, and P.C. Johnson. 2007. Trends in Groundwater Nitrate Contamination in the Phoenix, Arizona, USA Region. *Ground Water Monitoring and Remediation*. 27 (2). 49 – 56.
23. Lundegard, P.D., P.C. Johnson, and Z. Liu. 2006. Source Zone Natural Attenuation at Petroleum Hydrocarbon Spill Sites – I: Site-Specific Assessment Approach. *Ground Water Monitoring and Remediation*. 26 (4). 82 – 92.
24. Johnson, P.C., P.D. Lundegard, and Z. Liu. 2006. Source Zone Natural Attenuation at Petroleum Hydrocarbon Spill Sites – II: Application to Source Zones at a Former Oil Production Field. *Ground Water Monitoring and Remediation*. 26 (4), 93–106
25. Abreu, L. and P.C. Johnson. 2006. Modeling the Effect of Aerobic Biodegradation on Soil Vapor Intrusion into Buildings - Influence of Degradation Rate, Source Concentration, and Depth. *Environmental Science and Technology*. 40 (7). 2304-2315.
26. Abreu, L. and P.C. Johnson. 2005. Effect of Vapor Source-Building Separation and Building Construction on Soil Vapor Intrusion as Studied with a Three-Dimensional Numerical Model. *Environmental Science and Technology*. 39(12). 4550-4561.

27. Johnson, P.C.. 2005. Sensitivity Analysis and Identification of Critical and Non-Critical Parameters for the Johnson and Ettinger Vapor Intrusion Model. *Ground Water Monitoring and Remediation* Winter 2005. 25 (1). 63-78.
28. Vangelas, K., F.H. Chapelle, J. Cummings, P.C. Johnson, K.A. Lovelace, E.K. Nyer, R. Norris. 2005. Monitored Natural Attenuation Forum: A Panel Discussion on the Use of Integrated Mass Flux and MNA Inconsistencies Within Federal and State Agencies. *Remediation*. 16 (1). 141 -152.
29. Lundegard, P.D. and P.C. Johnson. 2004. A Composite Plume Approach for the Analysis of Dissolved Contaminants in Ground Water versus Distance from Source Areas. *Ground Water Monitoring and Remediation*. Summer 2004. 24 (3). 69 - 75.
30. Sigley, J.L., P.C. Johnson, and S.P. Beaudoin. 2003. Use of Nonionic Surfactant to Reduce Sulfuric Acid Mist in the Copper Electrowinning Process. *Hydrometallurgy*. 70 (2003). 1 – 8.
31. Hers, R. Zapf-Gilje, P. C. Johnson, and L. Li. 2002. Evaluation of the Johnson and Ettinger Model for Prediction of Indoor Air Quality. *Ground Water Monitoring and Remediation*. 23 (2). 119 – 133.
32. Amerson, I.L., C.L. Bruce, P.C. Johnson, and R.L. Johnson. 2001. A Multi-Tracer Push-Pull Diagnostic Test for In Situ Air Sparging Systems. *Bioremediation Journal*, 5(4):349-362.
33. Bruce, C.L., I.L. Amerson, R.L. Johnson, and P.C. Johnson. 2001. Use of an SF6-Based Diagnostic Tool for Assessing Air Distributions and Oxygen Transfer Rates during IAS Operation. *Bioremediation Journal*, 5(4):337-347.
34. Johnson, P.C., A. Leeson, R.L. Johnson, C.M. Vogel, R.E. Hinchee, M. Marley, T. Peargin, C.L. Bruce, I.L. Amerson, C.T. Coonfare, and R.D. Gillespie. 2001. A Practical Approach for the Selection, Pilot Testing, Design, and Monitoring of In Situ Air Sparging/Biosparging Systems. *Bioremediation Journal*, 5(4):267-281.
35. Johnson, P.C., R.L. Johnson, C.L. Bruce, and A. Leeson. 2001. Advances in In Situ Air Sparging/Biosparging. *Bioremediation Journal*, 5(4):251-266.
36. Johnson, R.L., P.C. Johnson, T.L. Johnson, and A. Leeson. 2001. Helium Tracer Tests for Assessing Contaminant Vapor Recovery and Air Distribution During In Situ Air Sparging. *Bioremediation Journal*, 5(4):321-336.
37. Johnson, R.L., P.C. Johnson, T.L. Johnson, N.R. Thomson, and A. Leeson. 2001. Diagnosis of In Situ Air Sparging Performance Using Transient Groundwater Pressure Changes During Startup and Shutdown. *Bioremediation Journal*, 5(4):299-320.
38. Johnson, R.L., P.C. Johnson, I.L. Amerson, T.L. Johnson, C.L. Bruce, A. Leeson, and C.M. Vogel. 2001. Diagnostic Tools for Integrated In Situ Air Sparging Pilot Tests. *Bioremediation Journal*, 5(4):283-298.
39. Abranovic, D., P. C. Johnson, R. J. Charbeneau, and T. Hemstreet. 2000. A Graphical Approach for Determining Dilution-Attenuation Factors: Basic Theory and Approach for Submerged Sources. *Groundwater Monitoring and Remediation*.
40. Salanitro, J. P., P. C. Johnson, G. E. Spinnler, P. M. Maner, H. L. Wisniewski and C. L. Bruce. 2000. Field-Scale Demonstration of Enhanced MTBE Bioremediation through Aquifer Bioaugmentation and Oxygenation. *Environmental Science and Technology*. 34(19). 4152-4162

41. Johnson, P.C., A. Das, and C. Bruce. 1999. Effect of Flowrate Changes and Pulsing on the Treatment of Source Zones by In Situ Air Sparging. *Environmental Science and Technology*. 33 (10). 1726-1731.
42. Johnson, P.C., R.L. Johnson, and M.W. Kemblowski. 1999. Assessing the Significance of Vapor Migration to Enclosed-Spaces on a Site-Specific Basis. *Journal of Soil Contamination*. 8 (3). 389 - 421.
43. Johnson, P.C., C. Bruce. R.L. Johnson, and M.W. Kemblowski. 1998. In Situ Measurement of Effective Vapor-Phase Porous Medium Diffusion Coefficients. *Environmental Science and Technology*. 32. 3405-3409.
44. Johnson, P.C.. 1998. An Assessment of the Contributions of Volatilization and Biodegradation to In Situ Air Sparging Performance. *Environmental Science and Technology*. 32 (2). 276-281.
45. Fox, P., L. Wang. P.C. Johnson, S. Houston, W.N. Houston, and P. Brown. 1998. Chlorination for control of biological activity during direct recharge of tertiary effluent. *Water Science and Technology*, 38 (6) 1998, 55-62.
46. Rutherford, K..W., D.H. Bass, W., W. McPhee, P.C. Johnson. 1997. Estimation of Oxygen Mass Transfer Coefficients During Air Sparging. *Bioremediation*. 4 (1). 153-158.
47. Johnson, P.C., R.L. Johnson, C. Neaville, E.E. Hansen, S.M. Stearns, and I.J. Dortch. 1997. An Assessment of Conventional In Situ Air Sparging Tests. *Ground Water*. 35 (5). 765 - 774.
48. Rutherford, K.W. and P.C. Johnson. 1996. Effects of Process Control Changes on Aquifer Oxygenation Rates During In Situ Air Sparging in Homogeneous Aquifers. *Ground Water Monitoring and Remediation*. 16 (4). 132 - 141.
49. Johnson, P. C. and R. A. Ettinger. 1994. Some Considerations for the Design of In Situ Vapor Extraction Systems: Radius of Influence -vs- Radius of Remediation. *Ground Water Monitoring and Remediation*. 14 (3). 123 - 128.
50. Johnson, R.L., P.C. Johnson, D.B. McWhorter, R. Hinchee, and I. Goodman. 1993. An Overview of In Situ Air Sparging. *Ground Water Monitoring and Remediation*. 13 (4). 127 - 135.
51. Benson, D.A., D. Huntley, and P.C. Johnson. 1993. Modeling Vapor Extraction and General Transport in the Presence of NAPL Mixtures and Nonideal Conditions. *Groundwater*. 31 (3). 437 - 445.
52. Johnson, P.C. and R.A. Ettinger. 1991. Heuristic Model for the Intrusion Rate of Contaminant Vapors Into Buildings. *Environ. Sci. Technol.*. 25(8). 1445-1452.
53. Johnson, P.C., C.C. Stanley, M.W. Kemblowski, D.L. Byers, and J.D. Colthart. 1990. A Practical Approach to the Design, Operation, and Monitoring of In Situ Soil-Venting Systems. *Ground Water Monit. Rev.*. 10 (2). 159 - 178.

54. Johnson, P.C., M. W. Kemblowski, and J. D. Colthart. 1990. Quantitative Analysis for the Cleanup of Hydrocarbon-Contaminated Soils by In Situ Soil Venting. *Ground Water*. 3 (28):413-429.
55. Johnson, P.C., P. Nott, and R. Jackson. 1990. Friction-Collisional Equations of Motion for Particulate Flows and Their Application to Chutes. *J. Fluid Mech.*. 210. 501-535.
56. Johnson, P.C. and R. Jackson. 1987. Friction-Collisional Constitutive Relations for Granular Materials, with Application to Plane Shearing. *J. Fluid Mech.*. 176. 67-93.
57. Lagunas-Solar, M.J. Avila, and P.C. Johnson P.C.. 1987. Targetry and Radiochemical Methods for the Simultaneous Cyclotron Production of No-Carrier-Added Radiopharmaceutical Quality ^{100}Pd , ^{97}Ru , and ^{101m}Rh . *Int. J. Applied Radiat. Isot.* 38(2). 151-157.
58. Johnson P.C., M.C. Lagunas-Solar, and M.J. Avila. 1984. The Indirect Production of No-Carrier-Added ^{57}Co via the $^{59}\text{Co}(p,3n)^{57}\text{Ni}\rightarrow^{57}\text{Co}$ Reaction. *Int. J. Applied Radiat. Isot.* 35(5). 371-376.
59. Lagunas-Solar, M.J. Avila, and P.C. Johnson P.C.. 1984. Cyclotron Production of ^{101m}Rh via Proton-Induced Reactions on ^{103}Rh Targets. *Int. J. Applied Radiat. Isot.* 35(8). 743-748.
60. Lagunas-Solar, M.C., M.J. Avila, N.J. Navarro, and P.C. Johnson. 1983. Cyclotron Production of No-Carrier-Added ^{97}Ru by Proton Bombardment of ^{103}Rh Targets. *Int. J. Applied Radiat. Isot.* 34(6). 915-922.

Other Peer-Reviewed Reviewed Publications:

1. National Research Council. 2013. Future Options for Management in the Nation's Subsurface Remediation Effort. Committee on Future Options for Management in the Nation's Subsurface Remediation Effort.
2. Clifton, L. and P.C. Johnson. 2012. In Situ Chemical Oxidation at Petroleum Impacted Sites: An Empirical Analysis of In Situ Chemical Oxidation Projects Conducted from 2001 to 2010. Petroleum Environmental Research Forum Project 2009-01.
3. Cavanagh, B. and P.C. Johnson. 2012. Evaluation of Field-Practicable Diagnostic Tools for Determining Oxidant Distribution at Peroxide/Ozone Treatment Sites. Petroleum Environmental Research Forum Project 2009-01.
4. Johnson R.L. and P.C. Johnson. 2012. *In Situ* Sparging for the Delivery of Gases in the Subsurface. In Kitanidis, P.K. and P.L. McCarty eds, *Delivery and Mixing in the Subsurface: Processes and Principles for In Situ Remediation*. SERDP/ESTCP Remediation Technology Monograph Series. Springer Science+Business Media, LLC, New York, NY, USA, Volume 4, 193-216, DOI: 10.1007/978-1-4614-2239-6_8.
5. Johnson, P.C., R.L. Johnson, C.L. Bruce CL. 2010. *In Situ* Air Sparging for the Treatment of Dissolved Hydrocarbon Groundwater Plumes. In Stroo HF, Ward CH, eds, *In Situ* Remediation of Chlorinated Solvent Plumes, Vol 2, SERDP/ESTCP Remediation Technology Monograph Series.

Springer Science+Business Media, LLC, New York, NY, USA, 455-480.

6. McAlary, T., R.A. Ettinger, P.C. Johnson, B. Eklund, H. Hayes, D.B. Chadwick, I. Rivera-Duarte. 2009. Review of Best Practices, Knowledge and Data Gaps, and Research Opportunities for the U.S. Department of Navy Vapor Intrusion Focus Areas. Technical Report 1982. May. SPAWAR Systems Center Pacific.
7. Hay-Wilson, L., P. C. Johnson, and J. Rocco. 2005. Collecting and Interpreting Soil Gas Samples from the Vadose Zone: A Practical Strategy for Assessing the Subsurface-Vapor-to-Indoor-Air Migration Pathway at Petroleum Hydrocarbon Sites. American Petroleum Institute. Publication Number 4741. November.
8. McAlary, T., R.A. Ettinger, and P.C. Johnson. 2005. Reference Handbook for Site-Specific Assessment of Subsurface Vapor Intrusion to Indoor Air. EPRI Technical Report 1008492. Palo Alto, CA.
9. Johnson, P.C., K. Miller, and C. L. Bruce. 2004. A Practical Approach to the Design, Monitoring, and Optimization of In Situ MTBE Aerobic Biobarriers. <http://docs.serdp-estcp.org/viewfile.cfm?Doc=CU0013%2DTR%2D01%2Epdf>.
10. Johnson, P.C., K. Miller, and C. L. Bruce. 2004. In Situ Bioremediation of MTBE in Groundwater – Final Technical Report. <http://docs.serdp-estcp.org/viewfile.cfm?Doc=CU%2D0013%2DFR%2D01%2Epdf>.
11. Johnson, P.C., K. Miller, and C. L. Bruce. 2004. In Situ Bioremediation of MTBE in Groundwater – Cost and Performance Report. <http://www.estcp.org/documents/techdocs/CU-0013.pdf>.
12. Johnson, P.C., P.D. Lundegard, J. Catts, D. Eley, K. Schroeder, E. Nichols, David Peterson. 2004. Dissolved Total Petroleum Hydrocarbons (TPH) Groundwater Plume Stability at the Former Guadalupe Oil Field.
13. Johnson, P.C., P.D. Lundegard, J. Catts, K. DiSimone, D. Eley, K. Schroeder. 2003. Source Zone Natural Attenuation Field Measurements, Data Interpretation, and Data Reduction at the Former Guadalupe Oil Field (Version 2.1). Ratified December 18.
14. Roggemans, S., C.L. Bruce, and P.C. Johnson. 2002. Vadose Zone Natural Attenuation of Hydrocarbon Vapors: An Empirical Assessment of Soil Gas Vertical Profile Data. American Petroleum Institute Technical Report.
15. Spinnler, G.E., P.C. Johnson, K. Miller. 2002. Bioaugmentation Field Testing for MTBE Treatment. USEPA Ground Water Currents. October. Issue 41.
16. Johnson, P.C.. 2002. Sensitivity Analysis and Identification of Critical and Non-Critical Parameters for the Johnson and Ettinger (1991) Vapor Intrusion Model. American Petroleum Institute Technical Report.
17. Johnson, P.C., R.A. Ettinger, J. Kurtz, R. Bryan, and J.E. Kester. 2001. Empirical Assessment of Subsurface Vapor –to- Indoor Air Attenuation Factors and Comparison with Theory for the CDOT-MTL Denver Site. American Petroleum Institute Technical Report.

18. Johnson, P.C., M. W. Kemblowski, and R.L. Johnson. 1998. Assessing the Significance of Subsurface Contaminant Migration to Enclosed Spaces: Site-Specific Alternatives to Generic Estimates. American Petroleum Institute Publication No. 4674. December.
19. Johnson, P.C., D. Abranovic, R.J. Charbeneau, and T. Hemstreet. 1997. Technical Background Document for the Graphical Approach for Determining Site-Specific Dilution-Attenuation Factors (DAFs). American Petroleum Institute Publication 4659.
20. Johnson, P.C., D. Abranovic, R.J. Charbeneau, and T. Hemstreet. 1997. User's Guide for the Graphical Approach for Determining Site-Specific Dilution-Attenuation Factors (DAFs). American Petroleum Institute Publication 4659.
21. American Society for Testing and Materials. 1997. Standard Guide for Risk-Based Corrective Action (RBCA) at Chemical Release Sites.
22. Johnson, P.C.. 1997. Application of Risk-Based Corrective Action at a Petroleum Release Site. United States Environmental Protection Agency.
23. American Society for Testing and Materials (P.C. Johnson lead author). 1995. Standard Guide for Risk-Based Corrective Action (RBCA) at Petroleum Release Sites. E1739-95 (updated and modified version of ASTM ES-38 below).
24. American Society for Testing and Materials (P.C. Johnson lead author). 1994. Emergency Guide for Risk-Based Corrective Action (RBCA) at Petroleum Release Sites. ES-38.

Books, Book Chapters, Monographs, and Dissertations:

1. E.J. Suchomel, M.C. Kavenaugh, J.W. Mercer, P.C. Johnson. 2014 The Source Zone Remediation Challenge. In Chlorinated Source Zone Remediation (SERDP-ESTCP Environmental Remediation Technology Volume 7), edited by. B.H. Keuper, H.F. Stroo, C.M. Vogel, and C.H. Ward. ISBN: 978-1-4614-6921-6.
2. J.L. Triplett Kingston, P.C. Johnson, B.H. Kueper, K.G. Mumford. 2014. In Situ Treatment of Chlorinated Source Zones. In Chlorinated Source Zone Remediation (SERDP-ESTCP Environmental Remediation Technology Volume 7), edited by. B.H. Keuper, H.F. Stroo, C.M. Vogel, and C.H. Ward. ISBN: 978-1-4614-6921-6.
3. C.J. Newell, B.H. Kueper, J.T. Wilson, P.C. Johnson. 2014. Natural Attenuation of Chlorinated Source Zones. In Chlorinated Source Zone Remediation (SERDP-ESTCP Environmental Remediation Technology Volume 7), edited by. B.H. Keuper, H.F. Stroo, C.M. Vogel, and C.H. Ward. ISBN: 978-1-4614-6921-6.
4. National Research Council. 2013. Future Options for Management in the Nation's Subsurface Remediation Effort. Committee on Future Options for Management in the Nation's Subsurface Remediation Effort.
5. Bruce, C.L., J.P. Salanitro, P.C. Johnson, and G.E. Spinnler. 2013. Bioaugmentation for MTBE Remediation. In Stroo, H.F., A. Leeson, C.H. Ward, and W.R. Amber (eds) *Bioaugmentation for Groundwater Remediation*. SERDP/ESTCP Remediation Technology Monograph Series. Springer Science+Business Media, LLC, New York, NY, USA, Volume 3. ISBN 9781461441151.

6. Johnson, R.L. and P.C. Johnson. 2012. In Situ Sparging for Delivery of Gases in the Subsurface. In *Delivery and Mixing in the Subsurface: Processes and Design Principles for In Situ Remediation*. P. K. Kitanidis and P.L. McCarty (eds). Science+Business Media, LLC, New York, NY, USA. ISBN 978-1-4614-2238-9.
7. Johnson P.C., R.L. Johnson, C.L. Bruce CL. 2010. *In Situ Air Sparging for the Treatment of Dissolved Hydrocarbon Groundwater Plumes*. In Stroo HF, Ward CH, eds, *In Situ Remediation of Chlorinated Solvent Plumes, Vol 2, SERDP/ESTCP Remediation Technology Monograph Series*. Springer Science+Business Media, LLC, New York, NY, USA, In Press.
8. Reeves, T., J. Miller, P.C. Johnson. 2000. *Modular Remediation Testing System*. Edited by K. Balshaw-Biddle, C.L Oubre, C.H. Ward. Lewis Publishers. ISBN 1-56670-468-5.
9. Johnson, P.C. 2000. Chapter 14: Aquifer Restoration via In Situ Air Sparging. In *Standard Handbook of Environmental Science, Health, and Technology* (J. Lehr, ed.). McGraw-Hill.
10. Johnson, P.C.. 1999. Chapter 23: Hydraulic Design for Groundwater Contamination. *Hydraulic Design* (L. Mays, ed.). McGraw-Hill. 23.1 – 23.68.
11. Dablow, J.F., J.A. Pearce, P.C. Johnson. 1998. Steam and Electro-Heating Remediation of Tight Soils. Ann Arbor Press.
12. Johnson, P. C. and R. A. Ettinger. 1997. Some Considerations for the Design of In Situ Vapor Extraction Systems: Radius of Influence -vs- Radius of Remediation. *Subsurface Restoration* (C.H. Ward, J.A. Cherry, M.R. Scalf, editors). Ann Arbor Press. 209 - 216.
13. Hincsee, R.L., R.N. Miller, and P.C. Johnson. 1995. In Situ Aeration: Air Sparging, Bioventing, and Related Remediation Processes. Battelle Press. ISBN 1-57477-003-9.
14. Johnson, P.C., G.E. Hoag, R.H. Hincsee, R.A. Brown, and A.L. Baehr. 1994. Innovative Site Remediation Technology: Vapor Extraction-Based Technologies (Soil Vapor Extraction, Bioventing, Air Sparging, and Thermally-Enhanced Soil Vapor Extraction). USEPA/AAEE WASTECH Monograph. ISBN 1-883767-08-3.
15. Johnson, P.C. and A.J. Stabenau. 1991. HyperVentilate - A Software Guidance System Created for Vapor Extraction Applications - Users Manual. USEPA 600/R-93/028.
16. Johnson, P.C., R.L. Johnson, C. Neville, E.E. Hansen, S.M. Stearns, and I.J. Dortch. 1995. Do Conventional Practices Indicate In Situ Air Sparging Performance?. In *In Situ Aeration: Air Sparging, Bioventing, and Related Remediation Processes* (Hincsee, Miller, Johnson, eds.). Battelle Press. 1 - 20.
17. Bedient P.B. and P.C. Johnson. 1992. Soil Vapor Extraction Systems. Groundwater Remediation. Charbeneau, R.J., P.B. Bedient, and R.C. Loehr Eds.. Technomic Publishing Inc.. 143-160.
18. Johnson, P.C., C.C. Stanley, D.L. Byers, D.A. Benson, and M.A. Acton. 1991. Soil Venting at a California Site: Field Data Reconciled with Theory. *Hydrocarbon Contaminated Soils and*

Groundwater: Analysis, Fate, Environmental and Public Health Effects, Remediation, Vol I." P.T. Kostecki and E.J. Calabrese (eds.). Lewis Publishers. 253 - 282.

19. Rixey, W.G., P.C. Johnson, G.M. Deeley, D.L. Byers, and I.J. Dortch. 1991. Mechanisms for the Removal of Residual Hydrocarbons for Soils by Water, Solvent, and Surfactant Flushing. In Petroleum Contaminated Soils Volume 4 (P.T. Kostecki and E.J. Calabrese Eds.). Lewis Publishers.
20. Johnson, P.C., Hertz, M.B. and D.L. Byers. 1990. Estimates for Hydrocarbon Vapor Emissions Resulting from Service Station Remediations and Buried Gasoline-Contaminated Soils. In Petroleum Contaminated Soils Volume 3 (P.T. Kostecki and E.J. Calabrese Eds.). Lewis Publishers. 295-326.
21. Johnson, P.C.. 1987. Frictional-Collisional Relationships for Particulate Flows and Their Application to Plane Shear Flows. Ph.D. Thesis. Department of Chemical Engineering. Princeton University

Invited Presentations/Papers:

1. Johnson, P.C., C. Holton, Y. Guo, P. Dahlen, H. Luo, K. Gorder, E. Dettenmaier, and R. Hinchee. 2015. Diagnosing Vapor Intrusion Occurrence, Impact, and Contributing Pathways. USEPA Workshop. March 23. San Diego, CA.
2. Johnson, P.C., C. Holton, Y. Guo, P. Dahlen, H. Luo, K. Gorder, E. Dettenmaier, and R. Hinchee. 2015. Diagnosing Vapor Intrusion Occurrence and Contributing Pathways. Remediation Technology Summit (REM Tec). March 2- 4. Westminster, CO.
3. Johnson P.C. and T. McHugh. 2014. Key Advances in Vapor Intrusion Assessments at Contaminated Sites. SERDP & ESTCP Webinar Series. October 30.
4. Johnson, P.C.. 2014. Vapor Intrusion: Lessons-Learned from Four Years of Intensive Monitoring of a House Over a Dilute Chlorinated Solvent Plume. Groundwater Resources Association of California. GRACast Web Seminar Series on Vapor Intrusion, Part 2. June 25.
5. Johnson P.C. and J. T. Kingston. 2014. In Situ Thermal Remediation: Experiences and Opportunities. Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds. May 19 - 22. Monterey, CA.
6. Johnson, P.C., C. Holton, Y. Guo, P. Dahlen, K. Gorder, E. Dettenmaier. 2014. Lessons-learned from four years of intensive monitoring of a house over a dilute chlorinated hydrocarbon plume. USEPA Workshop on Long Term Stewardship of Vapor Intrusion Experiences. The 24th Annual International Conference on Soil, Water, Energy and Air. San Diego, CA. March 18.
7. Johnson, P.C., Holton, C., H. Luo, Y. Guo, P. Dahlen, K. Gorder, E. Dettenmaier,. Multi-Year Monitoring of a House Over a Dilute CHC Plume: Implications for Pathway Assessment Using Indoor Air Sampling and Forced Under-Pressurization Tests. USEPA Workshop on Addressing Regulatory Challenges in Vapor Intrusion: A State of the Science Update Focusing on Chlorinated

- VOCs 2013. The 23rd Annual International Conference on Soil, Water, Energy and Air. San Diego, CA. March 18-21.
8. Holton, C., H. Luo, Y. Guo, P. Dahlen, K. Gorder, E. Dettenmaier, P. C. Johnson. Evaluation of Selected Environmental Factors at a Vapor Intrusion Study Site. 2013. The 23rd Annual International Conference on Soil, Water, Energy and Air. San Diego, CA. March 18-21.
 9. Johnson, P.C., H. Luo, C. Holton, Y. Guo, P. Dahlen, K. Gorder, E. Dettenmaier, 2012. Vapor Intrusion Above a Dilute CHC Plume: Lessons-Learned from Two Years of Monitoring. USEPA Workshop on Addressing Regulatory Challenges in Vapor Intrusion: A State of the Science Update Focusing on Chlorinated VOCs. AEHS 22nd Annual Meeting and West Coast Conference on Soils, Sediments, Water. San Diego, CA. March 19-22.
 10. Luo, H., C. Holton, Y. Guo, P. C. Johnson. 2012. Field and modeling studies of indoor air source effects on subslab soil gas concentrations. The 22nd annual international Conference on Soil, Water, Energy and Air. San Diego, CA. March 19-22.
 11. Holton, C., H. Luo, Y. Guo, P. Dahlen, K. Gorder, E. Dettenmaier, P. C. Johnson. Differences in Temporal Signatures in Groundwater, Soil Gas, and Indoor Air Data and Implications for Pathway Assessment. 2012. The 9th International Conference on Remediation of Chlorinated and Recalcitrant Compounds. Monterey, CA, May 21-24.
 12. Holton, C., H. Luo, Y. Guo, K. Gorder, E. Dettenmaier, P. C. Johnson. Long-term and short-term variation of indoor air concentrations at a vapor intrusion study site. 2012. The 22nd Annual International Conference on Soil, Water, Energy and Air. San Diego, CA. March 19-22.
 13. Johnson, P.C., P. Dahlen, H. Luo, C. Holton, K. Gorder, E. Dettenmaier. 2011. Temporal Changes in VI Behavior: Considerations for Pathway Assessment. U. Washington/USEPA Superfund Research Center. June 15. Seattle, WA.
 14. Johnson, P.C., P. Dahlen, H. Luo, C. Holton, K. Gorder, E. Dettenmaier. 2011. Temporal Changes in VI Behavior: Considerations for Pathway Assessment. 21st Annual Training Program – National Association of Remedial Program Managers. May 16-20. Kansas City, MO.
 15. Johnson, P.C. and E. Nichols. 2011. Session Keynote: Measurement and Control of Subsurface Contaminant Discharge and Its Use in Decision-Making. RemTEC Summit. May 16-19. Chicago, IL.
 16. Kavanaugh, M., K. Pennell, Johnson, P.C., and Anna Willett. 2011. Panel Discussion - Future of Subsurface Remediation Efforts in the United States: Barriers to Success. RemTEC Summit. May 16-19. Chicago, IL.
 17. Johnson, P.C. 2011. Soil and Groundwater Remediation: Issues, Advances, and Challenges. Engineers Club of the West Valley. April. Sun City, AZ.
 18. Johnson, P.C., P. Dahlen, H. Luo, C. Holton. 2011. Temporal Changes in VI Behavior: Considerations for Pathway Assessment. USEPA Workshop on Addressing Regulatory Challenges

in Vapor Intrusion: A State of the Science Update Focusing on Chlorinated VOCs. AEHS 21st Annual Meeting and West Coast Conference on Soils, Sediments, Water. San Diego, CA.

19. Johnson, P.C. 2010. Session Keynote: Vapor Intrusion Pathway Assessment: State of the Practice and Opportunities for v3.0. SERDP/ESTCP Partners Conference. December, 2010.
20. Johnson, P.C., P. Dahlen, H. Luo, C. Holton, K. Gorder, E. Dettenmaier. 2011. Integrated Field-scale, Lab-scale, and Modeling Studies for Improving Our Ability to Assess the Groundwater to Indoor Air Pathway. SERDP Technical Exchange Meeting on Vapor Intrusion. August 16 - 17. Salt Lake City, UT.
21. Johnson, P.C. 2010. Vapor Intrusion Pathway Assessment: Challenges, Developments, and Ongoing Research. Air Force Restoration and Technology Transfer Workshop. April 6 – 8, 2010.
22. Johnson, P.C. 2009. Subsurface Vapor to Indoor Air Pathway: Consideration of Multiple Lines of Evidence in Pathway Assessment. CA Department of Toxic Substances Control (DTSC), Asilomar, CA. November.
23. Johnson, P.C. 2008. Aeration-Based Remediation Technologies. Remediation Technology Symposium. CA Department of Toxic Substances Control (DTSC). Sacramento. May 14 – 16.
24. Johnson, P.C., J. Triplett-Kingston, P. Dahlen, E. Foote, S. and Williams. 2008. Critical Evaluation of In Situ Thermal Treatment Technologies for DNAPL Source Zone Treatment. 2008 AFCEE Technology Transfer Workshop. March 25-28, 2008.
25. Johnson, P.C. 2008. The Path to More Confident and Cost-Effective Vapor Intrusion Pathway Assessment. 18th Annual AEHS Meeting and International Conference on Soils, Sediments & Water. San Diego. March 10 - 13.
26. Johnson, P.C. and R.A. Ettinger. 2008. An Empirical Analysis of Data From the Colorado DoT Materials Laboratory Testing Site, Denver CO. 18th Annual AEHS Meeting and International Conference on Soils, Sediments & Water. San Diego. March 10 - 13.
27. Johnson, P.C., 2007. Vapor Intrusion – Conceptualizing and Dealing with Spatial and Temporal Variability. Air and Waste Management Association: Vapor Intrusion – A Rapidly Developing Environmental Challenge. November 13 – 15, 2007.
28. Dahlen, P. and P.C. Johnson. 2007. Field Comparison of Oxygen Delivery Technologies. University Consortium for Field-Focused Groundwater Contamination Research. April 17 – 19. Ontario, Canada.
29. Triplett-Kingston, J., and P.C. Johnson. 2007. Empirical Assessment of Thermal Technology Performance. April 17 – 19. Ontario, Canada.
30. Johnson, P.C.. 2007. Vapor Intrusion Field Studies and Modeling. April 17 – 19. Ontario, Canada.

31. Johnson, P.C.. 2007. Subsurface Vapor to Indoor Air Pathway Assessment: Lessons-Learned and Challenges for the Future. Keynote Presentation at the 6th State of Washington Hydrology Symposium. May 1 – 3.
32. Johnson, P.C.. 2006. Field Studies of Oxygen and Hydrocarbon Vapor Transport Beneath and Around Buildings Located Over NAPL Sources. 16th Annual AEHS Meeting and International Conference on Soils, Sediments & Water. San Diego. March.
33. Johnson, P.C. 2005. Vapor Intrusion – Lessons Learned Through Numerical Simulation. 15th Annual AEHS Meeting and International Conference on Soils, Sediments & Water. San Diego. March.
34. Johnson, P.C. and L. D. V. Abreu. 2004. Advances in the Modeling of Vapor Migration to Buildings. Annual International Conference on Soils, Sediments & Water. University of Massachusetts. October.
35. Johnson, P.C. and L. D. V. Abreu. 2004. Advances in the Modeling of Vapor Migration to Buildings. Annual International Conference on Soils, Sediments & Water. University of Massachusetts. October.
36. Johnson, P.C.. 2002. Confusion and Delusion in the World of Vapor Intrusion. Keynote Speech – First Annual Midwestern States Risk Assessment Symposium. July 16 – 17. Indianapolis, Indiana.
37. Johnson, P.C.. 2002. Arizona Groundwater Study – Preliminary Results. Fourth Annual Underground Storage Tank Program Conference, Arizona Department of Environmental Quality. June 5. Phoenix, AZ.
38. Johnson, P.C.. 2001. Assessing Risks From Vapor Migration To Enclosed Spaces. Pennsylvania Department of Environmental Protection Annual Conference. June 7. Harrisburg, PA.
39. Johnson P. C.. 2000. Advances in Vapour Intrusion Modelling for Risk-Based Decision Making. 2000 Contaminated Site Remediation Conference. December 4 – 8. Melbourne Australia
40. Johnson, P.C.. 2000. A Retrospective Look to the Future of LUST Issues. Third Annual Underground Storage Tank Program Conference, Arizona Department of Environmental Quality. September 29. Phoenix, AZ.
41. Johnson, P.C. and R.A. Ettinger. 2000. Progress Towards Gaining a Better Understanding of Subsurface Vapor Migration. RCRA: Visions for the Future Conference. USEPA. August 15 –18. Washington, D.C..
42. Johnson, P.C. and R.A. Ettinger. 2000. An Empirical Analysis of Data From the Colorado DoT Materials Laboratory Testing Site, Denver CO. RCRA: Visions for the Future Conference. USEPA. August 15 –18. Washington, D.C..
43. Johnson, P.C., C. Bruce, J. P. Salanitro, G. E. Spinnler. 2000. MTBE Biobarrier Studies at Port Hueneme, CA. 2000 National LUST Conference – U.S. Environmental Protection Agency. March. Portland, OR.

44. Johnson, P.C. and J.P. Salanitro. 1999. MTBE Bioremediation. New Jersey Department of Environmental Protection. August 17, 1999. Trenton, NJ.
45. Ward, C.H., P.C. Johnson, and J.B. Hughes. 1999. Plenary Lecture: Enhanced BioAttenuation for Subsurface Remediation. In Situ and On Site Bioremediation – Fifth International Symposium. April 19-22, 1999. San Diego, CA.
46. Johnson, P.C. 1998. An Introduction to Natural Attenuation. First National Stakeholders Forum on Monitored Natural Attenuation. San Francisco. August 31 – September 1. (voted best presentation by attendees)
47. Johnson, P.C.. 1997. Keynote Lecture: Vadose Zone Natural Attenuation - Issues, Modeling Challenges, and Critical Measurements. NGWA Petroleum Hydrocarbons and Organic Chemicals in Groundwater: Prevention, Detection, and Restoration. November 12 - 14. Houston. (voted best presentation by attendees)
48. Johnson, P.C. and R.L. Johnson. 1997. Plenary Lecture: It Looks Good on Paper and You've Paid a Bunch, But is Your Remediation System out to Lunch? The Fourth International Symposium - In Situ and On-Site Bioremediation. April 28 - May 1, 1997. New Orleans, LA.
49. Johnson, P.C.. 1997. Keynote Lecture: US Field and Research Experiences with In Situ Air Sparging. ATV Danish National Groundwater Conference. March 11 - 12. Billund, Denmark.
50. Johnson, P.C.. 1997. Conventional and Innovative In Situ Air Sparging Pilot Test Procedures. ATV Danish National Groundwater Conference. March 11 - 12. Billund, Denmark.
51. Johnson, P.C.. 1996. Risk-Based Corrective Action. Santa Fe Pacific Pipeline Partnership. Los Angeles. August 23.
52. Johnson, P.C.. 1996. Risk-Based Corrective Action Training. USEPA/OUST/ADEQ. Phoenix Arizona. August 15 - 16.
53. Johnson, P.C.. 1996. An Engineer's Introduction to Bioremediation. First Arizona Soil Remediation Conference. Phoenix. May 3.
54. Johnson, P.C.. 1996. Soil Vapor Extraction - Mass Transfer Effects. First Arizona Soil Remediation Conference. Phoenix. May 3.
55. Johnson, P.C.. 1996. Risk-Based Corrective Action for Tribal Lands. USEPA/OUST. Denver Colorado. March 25 - 29.
56. Johnson, P.C.. 1996. Risk-Based Corrective Action. USEPA/OUST and State of Colorado. Denver Colorado. March 19 - 22.
57. Johnson, P.C.. 1995. Risk-Based Corrective Action Demonstration Project. USEPA/OUST and West Virginia Department of Environmental Quality. September 28 - 29.

58. Johnson, P.C.. 1995. Hydrocarbon Removal - How Much is Enough? USEPA OUST Strategic Research Planning Meeting. Las Vegas. September 20 - 21.
59. Johnson, P.C.. 1995. Risk-Based Corrective Action for UST Sites. Arizona Department of Environmental Quality. Phoenix. September 18.
60. Johnson, P.C.. 1995. Research Needs for the Remediation of DNAPL Sites. USAF Research Planning Meeting. Tallahassee. August.
61. Johnson, P.C.. 1995. Modeling Biodegradation in Groundwater - Analytical Models. API Biodegradation Modelling Workshop. Dallas. May 8 - 9.
62. Johnson, P.C.. 1995. In Situ Remediation Technologies. Arizona Water Pollution Control Association. Phoenix. March 17.
63. Johnson, P.C.. 1995. Risk-Based Corrective Action. South Dakota Dept. of Environmental Quality. March 8.
64. Johnson, P.C.. 1995. Aeration-based Remediation Technologies. ARCO Research. Los Angeles. February 7.
65. Johnson, P.C.. 1994. Considerations for the Design and Optimization of Soil Vapor Extraction Systems. Invited presentation at the 1994 API/NGWA Conference: Petroleum Hydrocarbons and Organic Chemicals in Groundwater. Houston.
66. Johnson, P.C., R.L. Johnson, C. Neville, and E.E. Hansen. 1994. Performance Monitoring and Pilot Testing of In Situ Air Sparging Systems. Invited Presentation at the AGWSE National Education Program. October 9-12. Las Vegas, Nevada.
67. Johnson, P.C.. 1994. Pilot Testing of In Situ Air Sparging Systems. Invited Presentation at the Annual Air Force Center for Environmental Excellence (AFCEE) Conference. San Antonio.
68. Johnson, P.C. and D. Mohr. 1994. Soil Vapor Extraction, Bioventing, and Air Sparging. Invited presentation at the 1st USEPA Strategic Technology Evaluation Workshop. February.
69. Johnson, P.C.. 1993. Risk-Based Corrective Action: Developments and Opportunities. Presented at the 14th Annual Society of Toxicology and Chemistry Meeting. November 14-18. Houston, TX.

National Conference Proceedings Reviewed Papers, Abstracts, and Presentations:

1. Holton, C., Y. Guo, P. Dahlen, H. Luo, and P.C. Johnson. 2014. Field Study of Indoor Air Source Impacts on Soil Gas Concentrations Beneath a Vapor Intrusion Study Site. Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds. May 19 - 22. Monterey, CA.

2. Luo, H., C. Holton, Y. Guo, P. C. Johnson. 2012. Field and modeling studies of indoor air source effects on subslab soil gas concentrations. The 22nd annual international Conference on Soil, Water, Energy and Air. San Diego, CA. March 19-22.
3. Holton, C., H. Luo, Y. Guo, K. Gorder, E. Dettenmaier, P. C. Johnson. Long-term and short-term variation of indoor air concentrations at a vapor intrusion study site. 2012. The 22nd Annual International Conference on Soil, Water, Energy and Air. San Diego, CA. March 19-22.
4. Escobar, E., P.C. Johnson, H. Luo, and P. Dahlen. 2012. Measurement and Modeling of the Transport and Biodegradation of Petroleum Hydrocarbon Vapors in a Experimental Soil Column. The 22nd Annual International Conference on Soil, Water, Energy and Air. San Diego, CA. March 19-22.
5. Luo, H., C. Holton, P. Dahlen, and P.C. Johnson. 2011. Field and Modeling Studies of Temporal Variability of Sub-Slab Soil Gas and Indoor Air Concentrations at a House Overlying a Chlorinated Compound-Impacted Groundwater Plume. Bioremediation and Sustainable Environmental Technologies. Reno, NV. June 27-30, 2011.
6. Escobar, E., P. Dahlen, and P.C. Johnson. 2011. Biodegradation of Petroleum Hydrocarbon Vapor Components in the Subsurface: A Laboratory Soil Column Study. Bioremediation and Sustainable Environmental Technologies. Reno, NV. June 27-30, 2011.
7. Escobar, E., P. Dahlen, P. C. Johnson. 2011. Transport and Biodegradation of Petroleum Hydrocarbon Vapor Components in the Subsurface – A Soil Column Study. USEPA Workshop on Addressing Regulatory Challenges in Vapor Intrusion: A State of the Science Update Focusing on Chlorinated VOCs. AEHS 21st Annual Meeting and West Coast Conference on Soils, Sediments, Water. San Diego, CA.
8. H. Luo and P. C. Johnson. 2011. Incorporating Barometric Pressure and Wind Effects into Vapor Intrusion Simulations. USEPA Workshop on Addressing Regulatory Challenges in Vapor Intrusion: A State of the Science Update Focusing on Chlorinated VOCs. AEHS 21st Annual Meeting and West Coast Conference on Soils, Sediments, Water. San Diego, CA.
9. Luo, H., P. Dahlen, T. Peargin, P.C. Johnson. 2010. Proof-of-Concept Study of an Engineering Bio-Attenuation Barrier Beneath a Building at a Petroleum Hydrocarbon-Impacted Site. Remediation of Chlorinated Solvents and Recalcitrant Compounds. May 24- 27. Monterey, CA.
10. P.Lundegard, P., P. Johnson, and P. Dahlen. 2008. Oxygen Transport from the Atmosphere to Soil Gas Beneath a Slab-on-Grade Foundation Overlying Petroleum-Impacted Soil. 18th Annual AEHS Meeting and International Conference on Soils, Sediments & Water. San Diego. March 10 - 13.
11. Spinnler, G.E., P.C. Johnson, L. Lesser, C.L. Bruce, R. Aravena, J.P. Salanitro, R.L. Johnson. 2003, MTBE and TBA Biodegradation Assessment Under Natural and Engineered Conditions Using Compound-Specific Carbon Isotope Analysis at Port Hueneme, CA. NGWA/API Petroleum Hydrocarbons and Organic Chemicals in Groundwater. August 20- 22. Costa Mesa, CA.
12. Johnson, P.C. and L. Abreu. 2003. Learning Through the Simulation of Vapor Intrusion Scenarios. NGWA/API Petroleum Hydrocarbons and Other Organic Chemicals in Groundwater. August 20 – 22. Costa Mesa, CA.

13. Johnson, P.C., P. Dahlen, E. Henry, and M. Matsumura. 2003. It's Not About Plume Lengths – The Arizona Groundwater Study. NGWA/API Petroleum Hydrocarbons and Other Organic Chemicals in Groundwater. August 20 – 22. Costa Mesa, CA.
14. P.C. Johnson, and K. Miller. 2002. Large-Scale Mixed MTBE-BTEX Plume Containment at Port Hueneme, CA, Using A Combination of Biostimulation and Bioaugmentation. Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds. Monterey, CA. May 20 – 23.
15. Bruce, C.L. and P.C. Johnson. 2001. Effect of Chemical Properties on IAS Treatment: An Evaluation of Field and Lab Data Comparing MTBE vs. BTEX Removal. API/NGWA Conference: Petroleum Hydrocarbons and Organic Chemicals in Groundwater. Houston, TX. November 14 – 16.
16. Johnson, P. C.. 2001. Gaining a Better Understanding of the Johnson and Ettinger Model Through Sensitivity Analysis. API/NGWA Conference: Petroleum Hydrocarbons and Organic Chemicals in Groundwater. Houston, TX. November 14 – 16.
17. Spinnler, G.E., J.P. Salanitro, and P.C. Johnson. 2001. MTBE Remediation at Retail Gas Stations by Bioaugmentation. API/NGWA Conference: Petroleum Hydrocarbons and Organic Chemicals in Groundwater. Houston, TX. November 14 – 16.
18. Salanitro, J.P., P.C. Johnson, C.L. Bruce, Spinnler, G.E., P.M. Maner, D.L. Tharpe, H.L. Wisniewski. 2001. In Situ Bioremediation of MTBE Using Biobarriers of Single or Mixed Cultures. In Situ and On-Site Bioremediation – The Sixth International Symposium. San Diego. June 4 - 7.
19. Spinnler, G.E., P.M. Maner, J.P. Salanitro and P.C. Johnson. 2001. Demonstration of the BioRemedy Process for MTBE Remediation at Retail Gasoline Stations. In Situ and On-Site Bioremediation – The Sixth International Symposium. San Diego. June 4 - 7.
20. Johnson, P.C. and R.A. Ettinger. 2000. Progress Towards Gaining a Better Understanding of Subsurface Vapor Migration. RCRA: Visions for the Future Conference. USEPA. August 15 –18. Washington, D.C..
21. Johnson, P.C. and R.A. Ettinger. 2000. An Empirical Analysis of Data From the Colorado DoT Materials Laboratory Testing Site, Denver CO. RCRA: Visions for the Future Conference. USEPA. August 15 –18. Washington, D.C..
22. Kemblowski, M.W. and P.C. Johnson. 2000. Environmental Monitoring, Modeling, and Management and Bayesian Belief Networks. Envirosoft. June. Bilbao, Spain.
23. Arulantham, R., P. C. Johnson, and M. W. Kemblowski. 2000. Identifying Low-Risk MTBE-Impacted Sites. Pacific Focus Ground Water Conference. February 17 – 18. San Francisco, CA.
24. Salanitro, J.P., P.C. Johnson, G.E. Spinnler, C.C. Neaville, P.M. Maner, S.M. Stearns, C.L. Bruce. 1999. Demonstration of the Enhanced MTBE Bioremediation (EMB) IN Situ Process. In Situ and On Site Bioremediation – Fifth International Symposium. April 19-22, 1999. San Diego, CA.

25. Bruce, C.L., I.L. Amerson, P.C. Johnson, R.L. Johnson. 1999. Diagnostic Tools for Quantifying Oxygen Mass Transfer Rates. In Situ and On Site Bioremediation – Fifth International Symposium. April 19-22, 1999. San Diego, CA.
26. Bruce, C.L., P.C. Johnson, and R.L. Johnson 1998. Methyl Tert-Butyl Ether Removal by In Situ Air Sparging in Physical Model Studies. The First International Conference on Remediation of Chlorinated and Recalcitrant Compounds. May 18-21. Monterey, CA.
27. Johnson, P.C., A. Das, R.L. Johnson, C. Bruce, A. Leeson, D. McWhorter, and R.E. Hinchee. 1997. Removal of Immiscible-Phase Hydrocarbons - Effects of Process Control Changes, Chemical Properties, and Distribution. In Situ and On-Site Bioremediation: The Fourth International Symposium. April 28 - May 1, 1997. New Orleans.
28. Johnson, R.L., P.C. Johnson, A. Leeson, C.M. Vogel. 1997. Air Distribution During In Situ Air Sparging: Tracer and Geophysical Measurements. In Situ and On-Site Bioremediation: The Fourth International Symposium. April 28 - May 1, 1997. New Orleans.
29. Rutherford, K.W., D. Bass, W. McPhee, and P.C. Johnson. 1997. Estimation of Oxygen Mass Transfer Coefficients During In Situ Air Sparging. In Situ and On-Site Bioremediation: The Fourth International Symposium. April 28 - May 1, 1997. New Orleans.
30. Johnson, R.L., P.C. Johnson, A. Leeson, C.M. Vogel. 1997. Air Distribution During In Situ Air Sparging: Tracer and Geophysical Measurements. The Fourth International Symposium - In Situ and On-Site Bioremediation. April 28 - May 1, 1997. New Orleans, LA.
31. Johnson, P.C., A. Das, R.L. Johnson, A. Leeson, D. McWhorter, R. Hinchee, and C.M. Vogel. 1997. Effects of IAS Process Changes on the Removal of Immiscible-Phase Hydrocarbons. The Fourth International Symposium - In Situ and On-Site Bioremediation. April 28 - May 1, 1997. New Orleans, LA.
32. Rutherford, K.W., D. Bass, W. McPhee, and P. C. Johnson. 1997. Estimating Oxygen Mass Transfer Coefficients During Air Sparging. The Fourth International Symposium - In Situ and On-Site Bioremediation. April 28 - May 1, 1997. New Orleans, LA.
33. Westerhoff, P., L. Baker, P. Fox, P. Johnson, and S. Houston. 1997. A Low-Cost Strategy to Treating and Reuse Wastewater in Nogales, AZ. AWRA Long Beach '97. October 19-23.
34. Johnson, P.C., K. Balshaw-Biddle, T. Reeves, and C. Bruce. 1997. In Situ Air Sparging Studies Using the AATDF ECRS Large-Scale Physical Model. AATDF Conference. Rice University. February.
35. Johnson, P.C., R.L. Johnson, C. Neaville, and E.E. Hansen. 1995. Short-Term Pilot Tests - Reliable Indicators of Long-Term In Situ Air Sparging Performance? In Situ and On-Site Bioreclamation Conference - 3rd International Symposium. San Diego. April 24-27.

36. Johnson, R. L., N. R. Thomson, and P. C. Johnson. 1995. Does Sustained Groundwater Circulation Occur During In Situ Air Sparging. In Situ and On-Site Bioreclamation Conference - 3rd International Symposium. San Diego. April 24-27.
37. Rutherford, K. and P.C. Johnson. 1995. Interfacial Mass Transfer During In Situ Air Sparging - Effects of Process Changes and Lithology. API/NGWA Conference: Petroleum Hydrocarbons and Organic Chemicals in Groundwater. Houston, TX. November.
38. Johnson, P.C., R.L. Johnson, C. Neville, and E.E. Hansen. 1995. Short-Term Pilot Tests - Reliable Indicators of Long-Term In Situ Air Sparging Performance? AWPCA Annual Conference - Quentin Mees Award. Phoenix. May.
39. Wheelless, W., S. Hicken, C. Beitler, J. Rowe, M.A. Robbins, R.E. Hinchee, P.C. Johnson, R.L. Johnson, and D.B. McWhorter. 1995. In Situ Air Sparging - Technology Demonstration for Remediating Groundwater Contaminated with Dissolved-Phase Constituents at Hill Air Force Base. API/NGWA Conference: Petroleum Hydrocarbons and Organic Chemicals in Groundwater. Houston, TX. November.
40. Johnson, P.C., Rounds, D., and C.C. Stanley. 1994. Risk-Based Corrective Action (RBCA) at Petroleum Release Sites. API/NGWA Conference: Petroleum Hydrocarbons and Organic Chemicals in Groundwater. Houston, TX. November.
41. Neville, C., P.C. Johnson, and R.L. Johnson. 1994. Evaluation of Air Sparging Technology at a Gasoline UST Site. AEHS Petroleum Contaminated Soils Conference. Long Beach, CA.
42. Sabadell, G.P., J.B. Gustafson, P.C. Johnson, E.R. Cruz, L.W.R. Dicks and C.C. Wang. 1993. Evaluation of Soil Vapor Extraction System Design and Operation Utilizing Tracer Tests. Presented at the CSCE-ASCE National Conference on Environmental Engineering. July.
43. Johnson, P.C. and C.C. Stanley. 1993. An Integrated Exposure/Risk-Based Corrective Action Approach for Underground Storage Tank Sites. Presented at the 86th Annual Meeting and Exhibition of the Air & Waste Management Association. Denver, Colorado.
44. Stanley, C.C., P.C. Johnson, R.K. Wenzlau, J.L. Rous, J.F. Vargas, and J.L. Peterson. 1992. An Exposure/Risk-Based Corrective Action Approach for UST Sites. Proceedings of Petroleum Hydrocarbons and Organic Chemicals in Groundwater. Houston, TX. November.
45. Johnson, P.C., M.W. Kemblowski, and J.D. Colthart. 1988. Practical Screening Models for Soil Venting Applications. Proceedings; Petroleum Hydrocarbons and Organic Chemicals in Ground Water Conference, National Water Well Association, American Petroleum Institute; Houston, TX.

Sponsored Research - External Grants and Gifts:

1. P.C. Johnson (PI) and P. Dahlen. The VI Diagnosis Toolkit for Assessing Vapor Intrusion Pathways and Mitigating Impacts in Neighborhoods Overlying Dissolved Chlorinated Solvent Plumes. ESTCP. \$1,100,000. 5/1/2015 – 4/30/2018.
2. P.C. Johnson (PI), P. Dahlen, Br. Rittmann, P. Westerhoff, and others: Heavy Hydrocarbon Soil Remediation Group Consortium. Chevron. \$2,000,000. October 2012 – December 2014.
3. P.C. Johnson (PI), Remediation and Monitoring at Petroleum Impacted Sites. ExxonMobil. Through the University Consortium for Field-Focused Groundwater Remediation Research. \$150,000. 2011-2014.
4. P.C. Johnson (PI) and P. Dahlen. Improving Our Understanding of Dissolved Groundwater Plume Sources at Petroleum-Impacted Sites Through Physical Model, Mathematical Model, and Field-Site Studies. Chevron. \$500,000. 9/1/2010 – 12/31/2013.
5. P.C. Johnson (PI), and P. Dahlen. Integrated Field-Scale, Lab-Scale, and Modeling Studies for Improving Our Ability to Assess the Groundwater to Indoor Air Pathway at Chlorinated Solvent Impacted Sites. SERDP. \$1,256,000. 10/1/2009 – 6/30/2014.
6. P.C. Johnson (PI), and P. Dahlen. Chemical Oxidation Technologies. Johnson. Shell Global Solutions. \$120,000. 12/1/08 – 6/31/11.
7. P.C. Johnson (PI), B. Rittmann, and R. Krajmalnik-Brown. Assessment of the Natural Attenuation of NAPL Source Zones and Post-Treatment NAPL Source Zone Residuals. ESTCP. \$899,424. 4/1/07 – 6/30/13.
8. P.C. Johnson (PI), Capillary Properties of Soils and Residual Fluid Levels. American Petroleum Institute. \$50,000. 1/1/2010 – 12/31/2010.
9. P.C. Johnson (PI). Field Study of Vapor Intrusion of Petroleum Hydrocarbon Vapors. Chevron. \$40,000. 1/1/08 – 1/1/09
10. P.C. Johnson (PI). Vapor Migration Studies. Chevron. \$80,000. 1/1/06 – 12/31/07.
11. P.C. Johnson (PI). Oxygen Delivery Technologies. Shell Global Solutions. \$20,000. 1/1/07 – 12/31/07.
12. P.C. Johnson (PI). Critical Evaluation of State-of-the-Art In Situ Thermal Treatment Technologies for DNAPL Source Zone Treatment. Battelle (from ESTCP). \$325,000. 2/1/05 – 9/31/07.
13. P.C. Johnson (PI). Computer Simulation Of Subsurface Hydrocarbon Vapor Migration In The Vicinity Of Homes And Buildings. Arco/Atlantic Richfield. \$30,000. 9/1/05 – 8/31/06.
14. A. Razdan (PI) and P.C. Johnson. East Valley Water Forum Simulations. East Valley Water Forum. \$117,500. 9/1/05 – 9/1/06.

15. P.C. Johnson (PI). Bench-Scale Evaluation Of Long-Term Biosparging Effect On Ground Water Quality In Diluent Source Areas At The Guadalupe Restoration Project. Unocal. \$57,860. 6/14/04 – 6/1/06.
16. P.C. Johnson (PI). Field Evaluation of Oxygen Delivery Technologies. Shell Global Solutions. \$50,000. 1/1/05 – 5/31/06.
17. P.C. Johnson (PI). Modeling of Vapor Intrusion of Petroleum Hydrocarbon Vapors. Chevron. \$30,000. 1/1/05 – 12/31/06.
18. P.C. Johnson (PI). Numerical Modeling of Vapor Intrusion of Petroleum Hydrocarbon Vapors. British Petroleum. \$20,000. 1/1/04 – 1/31/05.
19. P.C. Johnson (PI). Mobil Foundation Gift. \$10,000. 1/1/04 – 1/31/04.
20. P.C. Johnson (PI). Innovative Technologies for Assessing and Treating Impacted Aquifers. U.S. Navy. \$275,000. 10/1/02 – 9/30/04.
21. M. Anderson-Rowland (PI) and P.C. Johnson. Collaborative Interdisciplinary Research Community /Maricopa Engineering Transition Scholars (CIRC/METS). National Science Foundation. \$400,000. 7/1/03 – 6/30/07.
22. P.C. Johnson (PI). Predicting Groundwater Quality Downgradient of Permeable Reaction Barriers. U.S. Navy. \$200,000. 10/1/03 – 5/30/06.
23. P.C. Johnson (PI). Release of Regulated Substances to Arizona Ground Water – Supplemental Data Collection. Arizona Department of Environmental Quality. 7/1/2002 – 12/31/2002. \$150,000. XCT9312.
24. P.C. Johnson (PI). Release of Regulated Substances to Arizona Ground Water. Arizona Department of Environmental Quality. 2/1/2001 – 12/31/2002. \$331,143. XCT9312.
25. P.C. Johnson (PI). Remediation of MTBE-Impacted Aquifers. Gift – Shell Oil Foundation. \$10,000. 1/1/02 – 12/31/02.
26. P.C. Johnson (PI). Environmental Restoration and Risk Assessment. Mobil Research Foundation. \$10,000. 1/1/02 – 12/31/02.
27. P.C. Johnson (PI). Demonstration of the Enhanced MTBE Bioremediation Process at Port Hueneme, CA. Equilon Enterprises. \$80,114. 9/15/99 – 12/31/02. ORCA00310.
28. P.C. Johnson (PI).. Innovative Technologies for Assessing and Treating MTBE-Impacted Aquifers – Phase 1, 2, and 3. US Navy. \$374,198. 8/30/99 – 5/31/02. XCA6526.
29. P.C. Johnson (PI). Assessing the Longevity of Hydrocarbon Source Zones. Rio Tinto. \$51,528. 9/1/99 – 12/31/01.

30. Johnson. NEX MTBE Plume Characterization. US Navy. \$5,000. 6/8/99 – 6/1/00. XCA6525.
31. P.C. Johnson (PI). Gift – Remediation of MTBE-Impacted Aquifers. Equilon Enterprises. \$20,000. 12/1/99 – 12/1/00
32. P.C. Johnson (PI). Gift – Remediation of MTBE-Impacted Aquifers. Equilon Enterprises. \$10,000. 10/19/99 – 10/18/00.
33. L. Baker (PI) and P.C. Johnson. Management of Nitrate Contaminated Aquifers. Salt River Project. \$22,306. 6/1/99 – 5/16/01. XCT9292.
34. Johnson. Gift - Environmental Restoration and Risk Assessment. Mobil Research Foundation. \$12,000. 12/1/98 – 12/1/99.
35. Johnson. Gift - Remediation of MTBE in Ground Water. Equilon Enterprises. \$86,000. 6/29/98 – 6/1/02.
36. P. Westerhoff (PI) and P.C. Johnson (40%). A Zero-Valent Treatment Process for Removing Nitrate and Perchlorate from Groundwater. American Water Works Association. \$64,812. XCT9283.
37. P.C. Johnson (PI) and R. Johnson (Oregon Graduate Institute). Vadose Zone Natural Attenuation. American Petroleum Institute. \$95,058. XCT9272. 2/12/97 - 6/1/99.
38. Johnson (Oregon Graduate Institute) and P. Johnson (10%). Natutal Attenuation of Dissolved MTBE Plume. American Petroleum Institute. \$90,000. 970060. 2/12/97 - 6/1/99.
39. P.C. Johnson (PI) (33%), R. Johnson (Oregon Graduate Institute), and M. Kemblowski (Utah State University). Diagnostic Tools for the Monitoring and Optimization of In Situ Air Sparging Systems. American Petroleum Institute. \$133,117. XCT9255. 1/1/96 - 12/31/99.
40. P.C. Johnson (PI) and M. Kemblowski (Utah State University). Vadose Zone Natural Attenuation. American Petroleum Institute. \$45,864. 970060. 2/12/97 - 12/31/97.
41. P.C. Johnson (PI). In Situ Bioremediation of Contaminated Aquifer Soils. Battelle/SERDP/USAF. \$223,152. XCJ 6230. 11/1/96 - 12/31/98.
42. P.C. Johnson (PI). Chlorinated Hydrocarbon Remediation. Salt River Project. \$22,000. 5/1/95 - 11/1/97. GFT4628.
43. P.C. Johnson (PI). Gift - Environmental Restoration and Risk Assessment. Mobil Research Foundation. \$20,000. 2/1/97 -. XC51001.
44. P.C. Johnson (PI). and R. Charbeneau (U. Texas). Graphical Tools for Determining Site-Specific Risk-Based Soil Screening Levels for the Soil to Groundwater Transport Pathway - A Practical Alternative to Generic Dilution Attenuation Factors. American Petroleum Institute. \$105,000. 2/1/95 - 7/31/96. XCT 8786.

45. P.C. Johnson (PI).. Iron-Induced Hydrocarbon Degradation. Arizona Department of Water Resources. \$24,470. 95-0483. 11/1/95-2/1/97.
46. P.C. Johnson (PI).. Regional Water Quality and Supply Management Strategies for the Phoenix Metropolitan Area. Arizona Department of Water Resources. \$24,220. XCT1465. 11/1/95-2/1/97.
47. P. C. Johnson (PI), S. Houston, W. Houston, P.C. Johnson (25%). Direct Well Recharge of Tertiary Effluent. Arizona Department of Water Resources. \$77,558. XCT9251. 11/1/95 - 2/28/97.
48. Westerhoff, L. Baker, P. Johnson (20%). Linking Nitrate Models to Existing Salt River Project Canal Hydraulic Models to Predict Water Quality Impacts of Well Pumping. Salt River Project. \$25,358. GFT 4653. 6/1/96 - 5/31/97.
49. P.C. Johnson (PI). An Evaluation of EPA-Recommended Stack Emissions Monitoring Using Tracer Gas Mass Balance Approach. Salt River Project. \$14,327. GFT 4654. 6/1/96 - 5/31/97.
50. P.C. Johnson (PI). Evaluation of the Use of Elemental Iron to Treat DBCP-Impacted Groundwater. Salt River Project. \$9,327. GFT 4654. 6/1/96 - 5/31/97.
51. Baker, P. Westerhoff, P. Fox, S. Houston, P.C. Johnson (co-PI, 15%), C. Klopotek. US-Mexico Border Water Resource Management Technologies for Sustained Development - Low Cost Strategy for Treating and Reusing Wastewater. SCERP/USEPA. \$135,000. 96287. 9/1/96 - 8/31/97.
52. P.C. Johnson (PI). Environmental Restoration and Risk Assessment. Mobil Research Foundation. \$20,000. 10/1/94 -. XC51001.

Sponsored Research - Equipment Loans:

1. Experimental Controlled Release System. DOE/DOD/ AAATDF/ Rice University. 1/1/97 - 12/31/98. 970936.
2. Geoprobe Unit. University of California at Santa Barbara. 6/1/98 – 11/1/05

Sponsored Research - Internal Grants:

1. Johnson, P. Westerhoff, S. Beaudoin. Assessing the Impact of New Products and Process Changes on Environmental Resources. \$22,000. CEAS. 7/29/97 - 7/29/98.
2. Johnson. Chemistry Module for Undergraduate Civil Engineers. FEIGIA. \$6000. 6/1/95 - 5/31/96. ST1001.
3. Johnson. Restoration of Aquifers Contaminated with Solvents. FGIA. \$6000. XCRG0110. 4/1/95 - 3/31/96.
4. Johnson. Bioremediation of Contaminated Aquifer Soils. \$8000. OVPR. 9/1/94 - 8/31/95. XCR230.

STUDENT THESES AND DISSERTATIONS SUPERVISED

Masters Degrees Supervised

Student	Date	M.S. Thesis Title
Sean Wilson	5/14	Improving our Understanding of Source Zones at Petroleum Impacted Sites through Physical Model Studies
Lisa Clifton	12/08	Effect of Dissolved Oxygen Manipulation on the Benzene Flux from a Low Permeability Soil Layer
Pamela Maass	12/05	Modeling Groundwater Quality Changes Down-gradient of Permeable Reactive Barriers
Roberta Lenski	12/04	Source Longevity Estimates for Ground Water Impacts at the Former Williams AFB Site
Maikel Mendez	5/03	Use of MFI Tests to Project Secondary Effluent Recharge Well Performance in Costa Rica
Makiko Matsumuro	12/02	Occurrence of Fuel Oxygenates in Groundwater at Arizona Leaking Underground Fuel Sites
Suzanne Braunschneider	12/00	Visualization Studies for Bioaugmentation
Jennifer Sigley [w/ S. Beaudoin – ChE]	12/99	Use of Nonionic Surfactants for Reducing Sulfuric Acid Mist Emissions During the Copper Electrowinning Process
Jesko Sollner	6/99	Bioremediation of a MTBE-Contaminated Site – Factors Influencing the Transport of Bacteria Through Soil and Aquifer Sand [<i>Technical University Berlin</i>]
Victoria Hermes	12/98	Numerical Modeling of Vadose Zone Natural Attenuation
Sophie Roggemans	12/98	An Empirical Assessment of Natural Attenuation in the Vadose Zone
Patricia McSparren	12/98	Regional Scale Groundwater Flow Modeling and Assessment of the Impacts of Treated Effluent Discharge near the US-Mexico Border at Nogales
Illa Lyn Amerson	12/97	Diagnostic Tools for the Monitoring and Optimization of In Situ Air Sparging Systems
Angie Luckie	5/97	Long-Term Pump Test Performance of a Deep Horizontal Well in a Highly Heterogeneous Formation
Amar Das	12/96	Laboratory-Scale Study of Volatilization from Residual Source Zones During Air Sparging
David Abranovic	5/96	Graphical Tools for Determining Site-Specific Risk-Based Soil Screening Levels
Kyle Wayne Rutherford	12/95	Effects of Process Control Changes on Interfacial Mass Transfer Rates During In Situ Air Sparging
Jennifer Campbell	12/96	Iron-Induced Degradation of Chlorinated Solvents in Groundwater [MSE Project]
Cindy Barker	5/96	Learning Tools for Undergraduate Students - Chemistry Module for Civil Engineers [MSE Project]

Doctoral Degrees Supervised

Student	Date	Ph.D. Project Title
Chase Holton	4/15	Vapor Migration of Chlorinated Solvents from Groundwater to Indoor Air
Bridget Cavanagh	5/14	Use of Interface Treatment to Reduce Emissions from Residuals in Lower Permeability Zones to Groundwater Flowing Through More Permeable Zones
Ryan Ekre	5/13	Source Zone Mass Depletion of Chlorinated Aliphatic Hydrocarbons: Estimation of Rates and Insight into Source Architecture
Elsy Escobar	5/12	Transport and Biodegradation of Petroleum Hydrocarbon Vapors in the Subsurface: A Laboratory Soil Column Study
Hong Luo	5/09	Field and Modeling studies of Soil Vapor Migration into Buildings at Petroleum Hydrocarbon Impacted Sites
Jennifer Triplett-Kingston	5/08	Critical Evaluation of Thermal-Based Remediation Technologies
Luis Lesser	5/08	Spatial and Temporal Variations in MTBE Degrading Activity
Lilian Deize de Abreu	3/05	A Three-Dimensional Numerical Model for Subsurface Vapor Migration to Enclosed Spaces
Zhuang Liu	12/04	Accelerated Bench-Scale Weathering Tests for Petroleum Hydrocarbons
Paul Dahlen	12/04	Impact of Leaking Underground Storage Tanks on Arizona Groundwater Resources
Ying Xu	4/02	Empirical Analysis of Historical Trends and Prediction of Future behavior of Nitrate Concentrations in Groundwater in the SRP Service Area, AZ
Cristin Bruce.	6/01	Performance Expectations for In Situ Air Sparging Systems

Current Graduate Projects in Progress:

Student	Degree	Project
Yuanming Guo	Ph.D.	Vapor Intrusion and Variable Release Rates from Groundwater Sources

Post-Doctoral Students:

Elsy Escobar (2012) - Arcadis

Hong Luo (2009 – 2012) - Chevron

Paul Dahlen (2004 – 2007) - Arizona State University

Eric Henry (2001) – University of North Carolina, Wilmington

Cristin Bruce (2001 – 2003) – Shell Global Solutions, Houston, TX.

Undergraduate Projects Supervised:

1. Shawn Whitmer - Iron-Induced Chlorinated Hydrocarbon Degradation Studies
2. Makiko Matsumuro – WISE Program. Vapor Transport Studies.

PROFESSIONAL AND SCIENTIFIC SERVICE

Local Professional Committees and Appointments:

1. Governor Appointment to the Arizona UST Technical Appeals Board (1998 - 2002)
2. Governor Appointment to the Arizona Water Quality Assurance Revolving Fund (WQARF) Advisory Panel (1997 - 2000)
3. ADEQ Ground Water Study Working Group (1999 - 2000)
4. Arizona Groundwater Clean-up Standards Task Force (1996 - 1997)
5. Arizona Department of Environmental Quality Director's Advisory Panel on Soil Clean-up Standards (1996)

Scientific and Professional Society Memberships:

1. American Society for Testing and Materials - Co-Chairman, Risk-Based Corrective Action for Superfund and Self-Directed Cleanups Task Group (1995 - 1997)
2. Groundwater Remediation Technologies Analysis Center - Guidance Committee Member (1995 - 1998).
3. Advanced Applied Technology Demonstration Facility (DoD - AATDF) Program - Advisory Committee Member (1994 - 1998)
4. National Ground Water Association (current)
5. American Chemical Society (current)
6. American Society of Engineering Education (current)

Conference Activities:

1. Session Co-Chair. Cool Ideas Session. ASEE Engineering Deans Institute. Kiawah Island, SC April 12-14, 2015.
2. Conference Co-Chair. ASEE Engineering Deans Institute. Scottsdale, AZ April 6 – 9, 2014.
3. Session Co-Chair. Disruptive Paradigms in Engineering Education. ASEE Engineering Deans Institute. Scottsdale, AZ April 6 – 9, 2014.
4. Session Co-Chair. Cool Ideas. ASEE Engineering Deans Institute. Scottsdale, AZ April 6 – 9, 2014.
5. Session Chairman. Natural Source Zone Depletion. International Conference on Bioremediation. Jacksonville, FL (May 2013).
6. Session Chairman. Vapor Intrusion Sampling and Assessment. International Conference on Remediation of Chlorinated Solvents and Other Recalcitrant Compounds. Monterey, CA (May 2012).

7. Session Chairman, Annual SERDP/ESTCP Partners in Innovation Conference. Vapor Intrusion. Washington, D.C.. (2010).
8. Session Chairman, International Conference on Chlorinated Solvents and Other Recalcitrant Compounds. Combining Thermal with Other Remediation Technologies. Monterey, CA (2010).
9. Session Chairman, Annual SERDP/ESTCP Partners in Innovation Conference. Vapor Intrusion. Washington, D.C.. (2009).
10. Session Chairman, International Conference on Chlorinated Solvents and Other Recalcitrant Compounds. Combining Thermal with Other Remediation Technologies. Monterey, CA (2008).
11. Session Chairman, Third International Conference on Chlorinated Solvents and Other Recalcitrant Compounds. Monterey, CA (2002).
12. Session Chairman, In Situ and On-Site Bioreclamation Conference - 6th International Symposium. June 4- 7. San Diego, CA (2001).
13. Session Chairman, Second International Conference on Chlorinated Solvents and Other Recalcitrant Compounds. Monterey, CA (2000).
14. Session Chairman, In Situ and On-Site Bioreclamation Conference - 5th International Symposium. San Diego, CA (1999).
15. Session Chairman, First International Conference on Chlorinated Solvents and Other Recalcitrant Compounds. Monterey, CA (1998).
16. Session Chairman, In Situ and On-Site Bioreclamation Conference - 4th International Symposium. New Orleans, LA (1997).
17. Session Chairman, Advanced Applied Technology Demonstration Conference. Rice University. Houston, TX (1996).
18. Session Chairman, In Situ and On-Site Bioreclamation Conference - 3rd International Symposium. San Diego, CA (1995).
19. Session Chairman, API/NGWA Conference: Petroleum Hydrocarbons and Organic Chemicals in Groundwater. Houston, TX (1993).

Journal Editor Service:

Ground Water Monitoring and Remediation – Editor-in-Chief (2003 - 2011)

Journal of Bioremediation (1996 - 2003) - Associate Editor

International Journal of Soil Contamination (1996 - 2003) - Editorial Advisory Board

Journal Referee Service:

Bioremediation Journal
Ground Water
Ground Water Monitoring and Remediation
Environmental Science and Technology
Journal of Contaminant Hydrology
Environmental Engineering Science
Water Resources Research
Separation Science and Technology
ASCE Journal of Environmental Engineering
Soils
Water Environment Research
Biotechnology and Bioengineering
International Journal of Bioremediation

Proposal Reviewer:

National Science Foundation - Directorate for Geosciences (1993)
USEPA OUST Program (1994 - 1995)
Department of Energy/Department of Defense - AATDF Program (1993 - 1997)
DOE SERDP Program (1995, 1999, 2003, 2004, 2005)

Other:

Mentor - USEPA EarthVision Program (high school students; 1996 - 1997)

UNIVERSITY COMMITTEE SERVICE AND OTHER SERVICE

University-Level Service

Associate Vice President – Research (2004 – 2006)

College of Engineering and Applied Sciences/Ira A. Fulton Schools of Engineering:

Ira A. Fulton Schools of Engineering: Dean (2010 – present)

Ira A. Fulton Schools of Engineering: Executive Dean (2006 – 2010)

College of Engineering and Applied Science Associate Dean – Research (2002 - 2004)

Dean's Personnel Advisory Committee – Chair (2000 – 2001, 2001 – 2002)

Dean's Personnel Advisory Committee (1999 - 2000)

College of Engineering and Applied Science Research Committee (1998 – 1999)

College of Engineering and Applied Science ECE-100 Curriculum Committee (2000 – 2001, 2001 – 2002)

Department of Civil and Environmental Engineering:

Associate Chair – Graduate Programs (2000 – 2001, 2001 – 2002)

ASCE Student Chapter Advisor (2001 – 2002)

CEE Personnel Committee - Chair (1997 – 1998, 1998 - 1999)

CEE Advisory Committee (1999 – 2000, 2001 – 2002)

CEE Self-Study Committee (2001 – 2002)

CEE Faculty Search Committee – Chair (1996 – 1997)

CEE Faculty Search Committee (1995 – 1996)

CEE Scholarship Committee (2001 – 2003)

EVALUATION OF INSTRUCTION – AWARDS

ASU College of Engineering Teaching Excellence Award	2002*
ASU Parents Association Teacher of the Year Finalist	2000
ASU College of Engineering Teaching Excellence Award	1998*
ASCE Student Chapter Best Teacher Award	1996

* - *The College of Engineering and Applied Sciences (CEAS) presents this award only to two faculty each year.*

EVALUATION OF INSTRUCTION – SUMMARY OF STUDENT EVALUATIONS
 [max. score = 5.0]

Year and Term	Course #	Course Title	No. Students	Instructor Evaluation	Course Evaluation
2014	ASU101	Introduction to ASU	17	4.74	4.47
2014	CEE560	Soil and Groundwater Remediation	17	4.89	4.75
2014	CEE564	Contaminant Fate and Transport	19	4.51	4.45
2013	ASU101	Introduction to ASU	17	4.80	4.28
2013	CEE560	Soil and Groundwater Remediation	25	4.81	4.54
2013	CEE564	Contaminant Fate and Transport	21	4.64	4.17
2012	CEE560	Soil and Groundwater Remediation	11	4.94	4.63
2012	CEE564	Contaminant Fate and Transport	21	4.36	4.28
2011	CEE560	Soil and Groundwater Remediation	19	4.68	4.47
2011	CEE564	Contaminant Fate and Transport	23	4.73	4.16
2010	ASU101	Introduction to ASU	18	4.94	4.57
2010	CEE560	Soil and Groundwater Remediation	23	4.44	4.12
2009	CEE564	Contaminant Fate and Transport	25	4.85	4.43
2009	CEE560	Soil and Groundwater Remediation	9	4.92	4.49

Year and Term	Course #	Course Title	No. Students	Instructor Evaluation	Course Evaluation
2009	ASU101	Introduction to ASU	19	NA	NA
2008	CEE564	Contaminant Fate and Transport	16	4.55	4.39
2007	CEE560	Soil and Groundwater Remediation	13	4.59	4.39
2007	ASU101	Introduction to ASU	14	NA	NA
2007	CEE598	Special Topics: Data Systems – Environmental	7	4.85	4.74
2006	CEE591	Seminar	25	NA	NA
2006	CEE564	Contaminant Fate and Transport	24	4.61	4.25
2006	CEE 598	Special Topics: Advanced Environmental Chemistry	9	4.40	4.41
2005	CEE 598	Special Topics: Data Systems – Environmental	10	4.86	4.71
2005	CEE 564	Contaminant Fate and Transport	29	4.55	4.04
2003	CEE 564	Contaminant Fate and Transport	23	4.38	3.98
2002	CEE 560	Soil and Groundwater Remediation	25	4.77	4.40
2002 Spring	CEE 598	Contaminant Fate and Transport	18	4.79	4.43
2001 Fall	CEE 540	Groundwater Hydrology (new course)	23	4.73	4.42

EVALUATION OF INSTRUCTION – SUMMARY OF STUDENT EVALUATIONS [CONT.]

[max. score = 5.0]

Year and Term	Course #	Course Title	No. Students	Instructor Evaluation	Course Evaluation
2001 Spring	CEE 598	Contaminant Fate and Transport	18	4.84	4.45
2000 Fall	CEE 540	Groundwater Hydrology (new course)	23	4.73	4.42
1999 Fall	ECE 100 M	Introduction to Engineering: Modeling	45	4.47*	3.71
1999 Fall	CEE 598	Contaminant Fate and Transport	11	4.88	4.49
1998 Fall	ECE 100 M	Introduction to Engineering: Modeling	32	4.68**	3.46
1998 Fall	CEE 560	Soil and Groundwater Remediation	12	4.79	4.32
1998 Spring	CEE 598	Contaminant Fate and Transport	21	4.63	4.31
1998 Fall	CEE 560	Soil and Groundwater Remediation	12	4.79	4.32
1998 Spring	CEE 598	Contaminant Fate and Transport	21	4.63	4.31
1997 Fall	CEE 560	Soil and Groundwater Remediation	20	4.65	4.27
1997 Fall	ECE 300	Intermediate Engineering Design	39	4.50***	4.30
1996 Fall	CEE 361	Introduction to Environmental Engineering	26	4.81	4.18

* - highest rating of ECE100 M instructors that semester - and highest rating achieved by any ECE100 modeling instructors in the three-year period

** - highest rating of ECE100 M instructors that semester

***- highest rating of ECE300 instructors that semester

For reference, the average ECE100 M instructor rating is approx. 3.9

For reference, the average ECE300 instructor rating is approx. 3.8

EVALUATION OF INSTRUCTION – NEW COURSES DEVELOPED

CEE560 – Soil and Ground Water Remediation
CEE598 – Contaminant Fate and Transport
ECE100 – Curriculum Development Committee (ECE100 revisions)
CEE598 – Environmental Data Systems and Analysis

WORKSHOPS/SHORT COURSES DEVELOPED

US Navy RITS: In Situ Thermal Remediation

P.C. Johnson and J. Triplett-Kingston

- May – June 2014, Washington D.C.; Jacksonville, FL; San Diego, CA, Honolulu HI; Norfolk, VA

Estimating DNAPL Source Zone Natural Attenuation

P.C. Johnson, R. Ekre, R. Hinchee, and P. Lundegard

- December 2011, SERDP/ESTCP Partners in Environmental Technology, Washington, D.C.

USEPA Vapor Intrusion Workshop

P. C. Johnson, T. McAlary, I. Hers, H. Dawson, R. Truesdale, H. Schuver and others

- March and October 2004, March 2005, March 2006

Vapor Intrusion Workshop

P. C. Johnson, R.A. Ettinger, T. McAlary, E. Nichols, and others

- September and October 2003

In Situ Air Sparging DoD Field Camp Course

P. C. Johnson, R.L Johnson, C. Bruce, P. Dahlen, J. Osgood

- May 2002, July 2002 (twice)

MTBE Remediation

[requested by USEPA and CA State Water Quality Control Board]

- April 1999, May 1999, June 1999, September 1999

Risk Assessment

J. Rocco, L. Hay-Wilson, J. Mercer, J. Till, Johnson, P.C.

Santa Fe, NM.

- April 1998, April 1999.

USEPA/ASTM ES-38 Risk-Based Corrective Action Workshop

ASTM ES-38 Task Group

- August 1996, March 1996, October 1995, September 1995, May 1995, December 1994

Air Sparging Workshop

International Network for Environmental Training

P.C. Johnson, R.E. Hinchee

- December 1994

Risk-Based Corrective Action Workshop

P.C. Johnson, C.C. Stanley, G.E. DeVaul, R.A. Ettinger, P.M. McAllister

- AWMA Conference March 1994, AEHS Conference March 1994

Aeration-Based Technologies (Soil Venting, Air Sparging, Bioventing) - Environmental Education Enterprises

P.C. Johnson, R.E. Brown and G.E. Hoag

- October 1995, January 1995, June 1994, March 1994, June 1993, December 1993

Groundwater Contamination from Petroleum Hydrocarbons

University of Texas - College of Engineering, Austin, TX.

Charbeneau, R., P. Bedient, C.Y. Chiang, D.Daniel, P.C. Johnson, R. Loehr, G.E. Speitel Jr., and J. Weaver.

- April 1994, April 1993, October 1992, April 1992, April 1991

USEPA Strategic Technology Evaluation Workshop

P.C. Johnson and D. Mohr

- February 1994

Soil Remediation Workshop - Petroleum Contaminated Soils Conferences

Johnson, P.C. J.P. Salanitro, L.W.R. Dicks, M.H. Huesemann, G.M. Deeley, A.R. Marsden, Jr., W.G. Rixey, and J.B. Gustafson.

- March 1993, September 1992, March 1992, September 1991, March 1991

USEPA Corrective Action Technology Transfer Workshop on NAPL Recovery and Residual Hydrocarbon Removal.

Johnson, P.C., J. Parker, T. Peargin

- January 1993

An Exposure/Risk-Based Corrective Action for UST Sites - Petroleum Contaminated Soils Conferences

Johnson P.C. and C.C. Stanley

- March 1993

HyperVentilate© - A Software Guidance System for Vapor Extraction - Applications.

P.C. Johnson

- USEPA Region VII - March 1994, USEPA Region VII - February 1994

Other Professional Information

Past or Current Consultant to:

US Environmental Protection Agency	IT Corporation
US Department of Defense	Battelle
US Department of Energy	Envirogen
Rice University	Siemens
Parsons-Engineering Science	Phillip Environmental
Baker Environmental	BP Oil
Mobil Oil Corporation	GeoMatrix
Lockheed	Chevron
Occidental Chemical	State Regulatory Agencies
Motorola	Lawrence Livermore National Laboratory
Unocal	Oxygenated Fuels Association
Allied Signal/Honeywell	Woodward-Clyde Consultants
Equilon Enterprises	Geosyntec
Groundwater Services, Inc.	Haley and Aldrich
Shell Global Solutions	CA RWQCB San Luis Obispo
Anadarko	CA RWQCB San Diego