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Education

- 1988 Ph.D. Major: Soil Science; Minor: Water Chemistry.
 University of Wisconsin-Madison.
- 1984 M.S. Major: Soil Science. University of Minnesota.
- 1981 B.S. Majors: Soil Science and Agricultural Extension Education.
 University of Wisconsin-Madison.

Professional Experience

- 2004- Present Professor of Soil and Water Chemistry. School of Natural Resources,
University of Nebraska-Lincoln.
- 1997-2004 Associate Professor of Soil Environmental Chemistry. School of Natural
Resources, University of Nebraska-Lincoln.
- 1992-1997 Assistant Professor of Soil Environmental Chemistry. Department of
Agronomy, University of Nebraska-Lincoln.
- 1989-1992 Postdoctoral Research Associate, Soil Chemistry and Soil Physics.
Department of Plant, Soil, and Environmental Sciences, Montana State
University.
- 1988-1989 Postdoctoral Research Associate, Soil Chemistry. Department of Crop and
Soil Sciences, Oregon State University.

Refereed Journal Publications

- (88) Comfort, S., AA da Silva, J Powell, R Cain, A McGreer, RF Dantas. 2025. Remediating Per-and Polyfluoroalkyl Substances (PFAS)-Contaminated Water by Foam Fractionation and Electrochemical Oxidation. *Environments* 12 (6), 185
- (87) McCoy, J. M. Chaffee, A. Mittelstet, S. Comfort. 2024. Nitrate removal by floating treatment wetlands under aerated and unaerated conditions: field and laboratory results. *Nitrogen* 5 (4), 808-827.

- (86) Chaffee, M., A. Mittelstet, S. Comfort, T. Messer, D. Uden, J. McCoy. 2024. Context-Dependent Macroinvertebrate Responses to Prolonged Biological and Chemical Treatment in Urbanized Lentic Ecosystems. *Journal of Natural Resources and Agricultural Ecosystems* 2(4): 213-225
- (85) Chaffee, M., A. Mittelstet, S. Comfort, T. Messer, N. Shrestha, K. Eskridge, J. McCoy. 2023. Monitoring temporal chlorophyll-a using Sentinel-2 imagery in urban retention ponds receiving a biological-chemical treatment. *Ecological Eng.* 197, 107123.
- (84) Chanat Chokejaroenrat, Chainarong Sakulthaew, Athaphon Angkaew, Apiladda Pattanateeradetch, Wuttinun Raksajit, Kanokwan Teingtham, Piyaporn Phansak, Pawee Klongvessa, Daniel D Snow, Clifford E Harris, Steve D Comfort. 2023. Adsorptive–Photocatalytic Performance for Antibiotic and Personal Care Product Using $\text{Cu}_{0.5}\text{Mn}_{0.5}\text{Fe}_2\text{O}_4$. *Antibiotics*. 12(7) 1151.
- (83) Sakulthaew, C., C. Chokejaroenrat, S. Panya, A. Songsasen, K. Poomipuen, S. Imman, N. Suriyachai, T. Kreetachat, S. Comfort. 2023. Developing a Slow-Release Permanganate Composite for Degrading Aquaculture Antibiotics. *Antibiotics* 12 (6), 1025.
- (82) Chokejaroenrat, C., C. Sakulthaew, S. Chantakulvanich, A. Angkaew, K. Teingtham, P. Phansak, T. Poompoung, D. D. Snow, C. E. Harris, S.D. Comfort. 2023. Enhanced degradation of herbicides in groundwater using sulfur-containing reductants and spinel zinc ferrite activated persulfate. *Science of The Total Environment*, 164652
- (81) McCright, C., J McCoy, N. Robbins, S. Comfort. 2023. Slow-Release Lanthanum Effectively Reduces Phosphate in Eutrophic Ponds without Accumulating in Fish. *Environments* 10 (2), 20.
- (80) Pattanateeradetch, A., C. Sakulthaew, A. Angkaew, S. Sutjarit, T. Poompoung, Yao-Tung Lin, C.E. Harris, S. Comfort, C. Chokejaroenrat. 2022. Fabrication of Ternary Nanoparticles for Catalytic Ozonation to Treat Parabens: Mechanisms, Efficiency, and Effects on *Ceratophyllum demersum* L. and Eker Leiomyoma Tumor-3 Cells. *Nanomaterials*. 12:3573.
- (79) Angkaew, A., C. Sakulthaew, M. Nimtim, S. Imman, T. Satapanajaru, N. Suriyachai, T. Kreetachat, S. Comfort, C. Chokejaroenrat. 2022. Enhanced Photo-Fenton Activity Using Magnetic $\text{Cu}_{0.5}\text{Mn}_{0.5}\text{Fe}_2\text{O}_4$ Nanoparticles as a Recoverable Catalyst for Degrading Organic Contaminants. *Water*, 14,3717.
- (78) Yanagida, A., Webb, E., C.E. Harris, M. Christenson, Mark, and S. Comfort. 2022. Using Electrochemical Oxidation to Remove PFAS in Simulated Investigation-Derived Waste (IDW): Laboratory and Pilot-Scale Experiments. *Water*. 14:2708.
- (77) McKercher, L.J., T.L. Messer, A.R. Mittelstet, and S.D. Comfort. 2022. A biological and chemical approach to restoring water quality: A case study in an urban eutrophic pond. *Journal of Environmental Management*. 318:115463.
- (76) Yoo-iama, M., T. Satapanajarua, C. Chokejaroenrata, C. Sakulthaew, S. Comfort, and A. Kambhu. 2021. Developing persulfate-activator soft solid (PASS) as slow release oxidant to remediate phenol-contaminated groundwater. *Environmental Technology and Innovation*. 22:101396.
- (75) Kambhu, A., Y. Li, T. Gilmore, and S. Comfort. 2021. Modeling the Release and Spreading of Permanganate from Aerated Slow-Release Oxidants in a Laboratory Flow Tank. *J. Hazard. Mater.* 403:123719.
- (74) Reece, J., M. Christenson, A. Kambhu, Y. Li, C. Harris, and S. Comfort. 2020. Remediating Contaminated Groundwater with an Aerated, Direct-Push, Oxidant Delivery System. *Water*, 12:3383.

- (73) Yoo-iama, M., T. Satapanajaru, T., Chokejaroenrata, C., Sakulthaew, C., and Comfort, S. 2020. Remediating phenol-contaminated groundwater and aquifer using persulfate oxidation. *Desalination and Water Treatment*. 208:159-171.
- (72) Borsuah, J.F., T.L. Messer, D.D. Snow, S.D. Comfort, and A.R. Mittelstet. 2020. Literature Review: Global neonicotinoid insecticide occurrence in aquatic environments. *Water*, 12, 3388
- (71) Kambhu, A., M. Gren, W. Tang, S. Comfort, and C.E. Harris. 2017. Remediating 1,4-dioxane-contaminated water with slow-release persulfate and zerovalent iron. *Chemosphere* 175:170-177.
- (70) Christenson, M., A. Kambhu, J. Reece, S. Comfort, and L. Brunner. 2016. A five-year performance review of field-scale, slow-release permanganate candles with recommendations for second generation improvements. *Chemosphere*, 150: 239-247.
- (69) Sakulthaew, C. S. Comfort, C. Chokejaroenrat, X. Li., and C. Harris. 2015. Removing PAHs from urban runoff water by combining ozonation and carbon nano-onions. *Chemosphere*, 141: 265-273.
- (68) Kananizadeh, N., C. Chokejaroenrat, Y. Li and S. Comfort. 2015. Modeling improved ISCO treatment of low permeable zones via viscosity modification: Assessment of system variables. *J. Contam. Hydrol.* 173: 25-37
- (67) Sakulthaew, C. S. Comfort, C. Chokejaroenrat, C. Harris, and X. Li. 2014. A combined chemical and biological approach to transforming and mineralizing PAHs in runoff water. *Chemosphere* 117:1-9.
- (66) Huang, Y.H., T.C. Zhang, P. Shea, and S. Comfort. 2014. Competitive reduction of nitrate, nitrite and nitrobenzene in Fe⁰-water systems. *J. of Environ. Eng.* 140:7pgs
- (65) Chokejaroenrat, C. Sakulthaew, S. Comfort, and B. Dvorak. 2014. Improving the treatment of non-aqueous phase TCE in low permeability zones with permanganate. *J. Hazard. Materials*. 268:177-184.
- (64) Chokejaroenrat C, N. Kananizadeh, C. Sakulthaew, S. Comfort, and Y. Li. 2013. Improving the sweeping efficiency of permanganate into low permeable zones to treat TCE: Experimental results and model development. *Environ. Sci. Technol.* 47:13031-13038
- (63) Rauscher, Lindy, Chainarong Sakulthaew, and Steve Comfort. 2012. Using slow-release permanganate candles to remediate PAH-contaminated water. *J. Hazard. Materials* 241-242:441-449.
- (62) Christenson, M.D., A. Kambhu, and S.D. Comfort. 2012. Using slow-release permanganate candles to remove TCE from a low permeable aquifer at a former landfill. *Chemosphere*. 89:680-687
- (61) Kambhu, A., S. Comfort, C. Chokejaroenrat, and C. Chainarong. 2012. Developing slow-release persulfate candles to treat BTEX contaminated water. *Chemosphere* 89:656-664
- (60) Halian, T., J. Albano, S.D. Comfort, and V.A. Zlotnik. 2012. Electrical resistivity imaging of a permanganate injection during in situ treatment of RDX-contaminated groundwater. *Ground Water Monitoring & Remediation*. 32:43-52
- (59) Chokejaroenrat, C., S.D. Comfort, C. Harris, D. Snow, D. Cassada, C. Sakulthaew, and T. Satapanajaru. 2011. Transformation of Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) by Permanganate. *Environ. Sci. Technol.* 45:3643-3649
- (58) Kalderis, D, A. Juhasz, R. Boopathy, and S.D. Comfort. 2011. Soil contaminated by explosives - environmental fate and evaluation of state of the art remediation processes. IUPAC Technical Report published in *Pure and Applied Chemistry* 83:1407-1484

- (57) Albano, J. S.D. Comfort, V. Zlotnik, T. Halihan, M. Burbach, C. Chokejaroenrat, S. Onanong, W. Clayton. 2010. In Situ Chemical Oxidation of RDX-Contaminated Ground Water with Permanganate at the Nebraska Ordnance Plant. *Ground Water Monitoring & Remediation* 30:96-106.
- (56) Hardiljeet K., B., S.D. Comfort, T. Satapanajaru, J.E. Szecsody, P.R. Grossl and P.J. Shea. 2010. Abiotic transformation of high explosives by freshly precipitated iron minerals in aqueous Fe^{II} solutions. *Chemosphere*, 79:865-872.
- (55) Waria, M. S.D. Comfort, S. Onanong, T. Satapanajaru, H. Boparai, C. Harris, D. Snow, and D.A. Cassada. 2009. Field-scale cleanup of atrazine and cyanazine contaminated soil with a combined chemical-biological approach. *J. Environ. Qual.* 38: 1803-1811.
- (54) Satapanajaru, T., S. Onanong, S.D. Comfort, D.D. Snow, D.A. Cassada, and C. Harris. 2009. Remediating dinoseb-contaminated soil with zerovalent iron. *J. Hazardous Materials* 168:930-937.
- (53) Boparai, H.K., P.J. Shea, S.D. Comfort, and T.A. Machacek. 2008. Sequencing zerovalent iron treatment with carbon amendments to remediate agrichemical-contaminated soil. *Water, Air and Soil Pollution*. 193:189-196.
- (52) Boparai, H.K., S.D. Comfort, P.J. Shea, and J.E. Szecsody. 2008. Remediating explosive-contaminated groundwater by in situ redox manipulation (ISRM) of aquifer sediments. *Chemosphere* 71:933-941
- (51) Onanong, S. S.D. Comfort, P.D. Burrow, and P.J. Shea. 2007. Using gas-phase molecular descriptors to predict dechlorination rates of chloroalkanes by zerovalent iron. *Environ. Sci. Technol.* 41:1200-1205.
- (50) Onanong, S., P.D. Burrow, S.D. Comfort, and P.J. Shea. 2006. Electron capture detector response and dissociative electron attachment cross sections in chloroalkanes and chloroalkenes. *J. Phys. Chem. A* 110:4363-4368.
- (49) Adam, M.A., S.D. Comfort, D.D. Snow, D. Cassada, M.C. Morley, and W. Clayton. 2006. Evaluating ozone as a remedial treatment for removing RDX from unsaturated soils. *Journal of Environmental Engineering*. 132:1580-1588.
- (48) Boparai, H.K., P.J. Shea, S.D. Comfort, and D.D. Snow. 2006. Dechlorinating chloroacetanilide herbicides by dithionite-treated aquifer sediment and surface soil. *Environ. Sci. Technol.* 40:3043-3049.
- (47) Park, J., S.D. Comfort, P.J. Shea, and J.S. Kim. 2005. Increasing Fe^0 -mediated HMX destruction in highly contaminated soil with didecyldimethylammonium bromide surfactant. *Environ. Sci. Technol.* 39:9683-9688.
- (46) Adam, M.L., S.D. Comfort, T.C. Zhang, and M.C. Morley. 2005. Evaluating Biodegradation as a Primary and Secondary Treatment for Removing RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine) from a Perched Aquifer. *Bioremediation Journal* 9:9-19.
- (45) Adam, M.L., S.D. Comfort, M.C. Morley, D.D. Snow. 2004. Remediating RDX-contaminated ground water with permanganate: Laboratory investigations for the Pantex aquifer. *J. Environ. Qual.* 33:2165-2173.
- (44) Shea, P.J., T.A. Machacek, and S.D. Comfort. 2004. Accelerated remediation of pesticide-contaminated soil with zerovalent iron. *Environmental Pollution*. 132:183-188.
- (43) Park, J., S.D. Comfort, P.J. Shea, and T.A. Machacek. 2004. Remediating munitions-contaminated soil with zerovalent iron and cationic surfactants. *J. Environ. Qual.* 33:1305-1313.

- (42) Gibb, C., T. Satapanajaru, S.D. Comfort and P.J. Shea. 2004. Remediating dicamba-contaminated water with zerovalent iron. *Chemosphere*. 54:841-848.
- (41) Satapanajaru, T., P.J. Shea, S.D. Comfort, and Y. Roh. 2003. Green rust and iron oxide formation influences metolachlor dechlorination during zerovalent iron treatment. *Environ. Sci. Technol.* 37:5219-5227.
- (40) Comfort, S.D., P.J. Shea, T.A. Machacek, and T. Satapanajaru. 2003. Pilot-scale treatment of RDX-contaminated soil with zerovalent iron. *J. Environ. Qual.*,32:1717-1725.
- (39) Satapanajaru, T., S.D. Comfort, and P.J. Shea. 2003. Enhancing metolachlor destruction rates with aluminum and iron salts during zerovalent iron treatment. *J. Environ. Qual.*32: 1726-1734.
- (38) Huang, Y.H., T.C. Zhang, P.J. Shea, and S.D. Comfort. 2003. Effects of oxide coating and selected cations on nitrate reduction by iron metal. *J. Environ. Qual.* 32: 1306-1315.
- (37) Smith, S.K., T.G. Franti, and S.D. Comfort. 2002. Impact of initial soil water content, residue cover, and post-herbicide irrigation on atrazine and metolachlor runoff. *Transactions of the ASAE*. 45:1817-1824.
- (36) Gaber, H.M., S.D. Comfort, P.J. Shea, and T.A. Machacek. 2002. Metolachlor dechlorination by zerovalentiron during unsaturated transport. *J. Environ. Qual.* 31:962969.
- (35) Comfort, S.D., P.J. Shea, T.A. Machacek, H. Gaber, and B.-T. Oh. 2001. Field-scale remediation of a metolachlor spill site using zerovalent iron. *J. Environ. Qual.* 30:1636-1643.
- (34) Gorneau, W.S., T.G. Franti, B.L. Benham, and S.D. Comfort. 2001. Reducing long-term atrazine runoff from south central Nebraska. *Transactions of the ASAE*.44:45-52.
- (33) Oh, B.-T., Sarath, G., Shea, P.J., Drijber, R.A. and Comfort, S.D. 2000. Rapid spectrophotometric determination of 2,4,6-trinitrotoluene in a Pseudomonas enzyme assay. *J. Microbiol. Methods*. 42:149-158.
- (32) Singh, J, S.D. Comfort, and P.J. Shea. 1999. Optimizing Eh/pH for iron-mediated remediation of RDX-contaminated water and soil. *Environ. Sci. Technol.* 33:1488-1494.
- (31) Bier, E.L., J. Singh, Z. Li, S.D. Comfort and P.J. Shea. 1999. Remediating hexahydro-1,3,5-trinitro-1,3,5-triazine-contaminated water and soil by Fenton oxidation. *Environ. Toxicol. Chem.* 18:1078-1084.
- (30) Kreslavski, V.D., G.K. Vasilyeva, S.D. Comfort, R.A. Drijber, and P.J. Shea. 1999. Accelerated transformation and binding of 2,4,6-trinitrotoluene in rhizosphere soil. *Bioremediation* 3:59-67.
- (29) Singh, J., S.D. Comfort, and P.J. Shea. 1998. Remediating RDX-contaminated water and soil using zero-valent iron. *J. Environ. Qual.*27:1240-1245.
- (28) Peterson, M.M., G.L. Horst, P.J. Shea and S.D. Comfort. 1998. Germination and seedling development of switchgrass and smooth brome grass exposed to 2,4,6-trinitrotoluene. *Environ. Poll.* 99: 53-59.
- (27) Singh, J., P.J. Shea, L.S. Hundal, S.D. Comfort, T.C. Zhang, and D.S. Hage. 1998. Iron-enhanced remediation of water and soil containing atrazine. *Weed Sci.* 46:381-388.
- (26) Singh, J., S.D. Comfort, L.S. Hundal, and P.J. Shea. 1998. Long-term RDX sorption and fate in soil. *J. Environ. Qual.* 27:572-577.
- (25) Li, Z.M, P.J. Shea, and S.D. Comfort. 1998. Nitrotoluene destruction by UV-catalyzed Fenton oxidation. *Chemosphere* 36:1849-1865.
- (24) Li, Z.M., P.J. Shea, and S.D. Comfort. 1997. Fenton oxidation of 2,4,6-trinitrotoluene in contaminated soil slurries. *Environ. Eng. Sci.* 14:55-66.

- (23) Hundal, L., J. Singh, E.L. Bier, P.J. Shea, S.D. Comfort, and W.L. Powers. 1997. Removal of TNT and RDX from water and soil using iron metal. *Environ. Poll.* 97:55-64.
- (22) Li, Z.M., M.M. Peterson, S.D. Comfort, G.L. Horst, P.J. Shea, and B.T. Oh. 1997. Remediating TNT-contaminated soil by soil washing and Fenton oxidation. *Sci. Tot. Environ.* 204:107-115.
- (21) Martin, J.L., S.D. Comfort, P.J. Shea, T.A. Kokjohn, R.A. Drijber. 1997. Denitration of 2,4,6-trinitrotoluene by *Pseudomonas savastanoi*. *Can. J. of Microbiol.* 43:447-455.
- (20) Hundal, L., P.J. Shea, S.D. Comfort, W.L. Powers, and J. Singh. 1997. Long-term TNT sorption and bound residue formation in soil. *J. Environ. Qual.* 26:896-904.
- (19) Li, Z.M., S.D. Comfort, and P.J. Shea. 1997. Destruction of 2,4,6-trinitrotoluene (TNT) by Fenton oxidation. *J. Environ. Qual.* 26:480-487.
- (18) Woodbury, B.L., S.D. Comfort, and W.L. Powers. 1996. An automated sampling system for large columns transport studies. *TRANS of ASAE.* 39:2163-2166.
- (17) Peterson, M.M., G.L. Horst, P.J. Shea, S.D. Comfort, and R.K. Peterson. 1996. TNT and 4-amino-2,6-dinitrotoluene influence on germination and early seedling development of tall fescue. *Environ. Poll.* 93:57-62.
- (16) Pearson, R.J., W.P. Inskeep, J.M. Wraith, S.D. Comfort, and H.M. Gaber. 1996. Observed and simulated solute transport under varying water regimes: I. Bromide and pentafluorobenzoic acid. *J. Environ. Qual.* 25:646-653.
- (15) Pearson, R.J., W.P. Inskeep, J.M. Wraith, H.M. Gaber, and S.D. Comfort. 1996. Observed and simulated solute transport under varying water regimes: II. 2,6-difluorobenzoic acid and dicamba. *J. Environ. Qual.* 25:654-661.
- (14) Comfort, S.D., P.J. Shea, L. Hundal, Z. Li, B.L. Woodbury, J.L. Martin, and W.L. Powers. 1995. TNT transport and fate in contaminated soil. *J. Environ. Qual.* 24: 1174-1182.
- (13) Gaber, H.M., W.P. Inskeep, S.D. Comfort, and J.M. Wraith. 1995. Nonequilibrium transport of atrazine through large intact soil cores. *Soil Sci. Soc. Am. J.* 59:60-67.
- (12) Comfort, S.D., W.P. Inskeep, and R.L. Lockerman. 1993. Observed and simulated transport of a conservative tracer under line-source irrigation. *J. Environ. Qual.* 22:554-561.
- (11) Wraith, J.M., S.D. Comfort, B.L. Woodbury, and W.P. Inskeep. 1993. A simplified waveform analysis approach for monitoring solute transport using time-domain reflectometry. *Soil Sci. Soc. Am. J.* 57:637-642.
- (10) Comfort, S.D., W.P. Inskeep, and R. Macur. 1992. Degradation and transport of dicamba in a clay soil. *J. Environ. Qual.* 21: 653-658.
- (9) Comfort, S.D., R.P. Dick, and J. Baham. 1992. Modeling soil sulfate sorption characteristics. *J. Environ. Qual.* 21:426-432.
- (8) Pearson, R.P., S.D. Comfort, and W.P. Inskeep. 1992. Analysis of fluorobenzoate tracers by ion chromatography. *Soil Sci. Soc. Am. J.* 56:1794-1796.
- (7) Gaber, H.M., S.D. Comfort, W.P. Inskeep, and H.M. El- Attar. 1992. A test of the local equilibrium assumption for the adsorption and transport of picloram. *Soil Sci. Soc. Am. J.* 56:1392-1400.
- (6) Comfort, S.D., R.P. Dick, and J. Baham. 1991. Air-Drying and pretreatment effects on soil sulfate sorption characteristics. *Soil Sci. Soc. Am. J.* 55:968-973.
- (5) Comfort, S.D., K.A. Kelling, D.R. Keeney, and J.C. Converse. 1990. Nitrous oxide emissions from soils injected with liquid dairy manure. *Soil Sci. Soc. Am. J.* 54:421-427.
- (4) Comfort, S.D., K.A. Kelling, D.R. Keeney, and J.C. Converse. 1988. The fate of nitrogen from injected liquid manure in a silt loam soil. *J. Environ. Qual.* 17: 317-322.

- (3) Comfort, S.D., G.L. Malzer, and R. Busch. 1988. Nitrogen fertilization of spring wheat genotypes: Influence on root growth and soil water depletion. *Agron. J.* 80:114-120.
- (2) Comfort, S.D., P.P. Motavalli, K.A. Kelling, and J.C. Converse. 1987. Soil profile N, P, and K changes from injected liquid dairy manure or broadcast fertilizer. *TRANS. of ASAE* 30:1364-1369.
- (1) Inskeep, W.P., and S.D. Comfort. 1986. Thermodynamic predictions for the effects of root exudates on metal speciation in the rhizosphere. *J. Plant Nutrition.* 9:567-586

Patents

Comfort, S.D., M. Christenson, L. McKercher. **2021. Using slow-release lanthanum and airlift pump to treat eutrophic ponds.** Provisional patent submitted by NuTech Ventures in July, 2021.

Christenson; Mark; Comfort; Steven Douglas. **2018. Modular Oxidant Delivery System.** U.S. Patent #9925574. A direct-push oxidant candle apparatus for the treatment of contaminated groundwater through direct-push installation methods. March 27, 2018

Book Chapters

- (2) Szecsody,, J. E., Comfort, S., Fredrickson,, H. L., Riley, R., Crocker, F., Shea, P., McKinley, J. P., Gamberdinger, A. P., Boparai, H. K., Girvin, D. C., Moser, J. V., Thompson, K., Resch, T., DeVary, B. J., Durkin, L., Breshears, A. T. 2014. In Situ Degradation and Remediation of Energetics TNT, RDX, HMX, and CL-20 and a Byproduct NDMA in the Sub-Surface Environment. *In Biological Remediation of Explosive Residues.*, S.N. Singh (Ed.), (pp. 313-369). Environmental Science and Engineering. Springer International Publishing, Switzerland.
- (1) Comfort, S.D. 2005. Remediating RDX and HMX Contaminated Soil and Water. In M. Fingerman and R. Nagabhushanam (eds) *Bioremediation of Aquatic and Terrestrial EcoSystems*. Science Publishers, Inc. Enfield, NH p. 263-310.

Extension Publications

UNL Extension Circulars, NebGuides, Chapters, and Newsletters

- Comfort, S.D., and K.D. Frank. 2001. pH and liming. p. 51-58. *In Nutrient Management for Agronomic Crops in Nebraska*. University of Nebraska Cooperative Extension. EC 01-155-S.
- Comfort, S.D., 1997. Manure applications: Odor and Related Nuisances. *Manure Matters* Vol. 3, No. 6.
- Comfort, S.D., 1997. Environmental Problems Associated with Land Application of Animal Wastes. *Manure Matters* Vol. 3, No. 11.

- Comfort, S.D., T.J. Franti, and S. Smith. 1996. *Pesticide runoff and water quality in Nebraska*. Cooperative Extension Service. University of Nebraska Extension Circular. EC96-143. 19 pp.
- Kuzila, M.S., A.R. Martin, F.W. Roeth, P.J. Shea, N.B. Stolpe, S.D. Comfort. 1996. *Pesticides and Groundwater: An Applicator's Map and Guide to Prevent Groundwater Contamination*. Land Use Map. No. 33. Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln. 4 pp.
- McNamara, J., D. Holshouser, T. Peterson, P. Shea, S. Comfort, L. Schulze, and M. Kuzila. 1996. *Decision aid for selected herbicides in corn, sorghum, soybeans and wheat*. University of Nebraska Extension Circular. EC96-145.
- Comfort, S.D., P.J. Shea, and F.W. Roeth. 1994. *Understanding Pesticides and Water Quality in Nebraska*. Cooperative Extension Service. University of Nebraska-Lincoln. Extension Circular. EC94-135. 16 pp.
- Comfort, S.D., and F.W. Roeth. 1993. *Questions and Answers about Atrazine*. Cooperative Extension Service. University of Nebraska, NebGuide: G93-1158-A. 4 pp.
- Comfort, S.D. 1992. *Modeling Pesticide Behavior*. Crop Pest Management Update Proceedings. Cooperative Extension. IANR University of Nebraska-Lincoln. December 3-4, 1992. pg. 67-75.
- Comfort, S.D. 1995. Nitrogen components of manure and important transformations affecting the fate of manure-applied nitrogen. *Manure Matters*. Vol 1, No. 8.
- Comfort, S.D., and B. Eghball. 1996. Phosphorus leaching from manure applications. *Manure Matters*. Vol 2, No. 8.

Funded Proposals (1992 to present)

Research Grants

- Comfort, S.D., and A. Mittelstet. 2023. A Biological and Chemical Approach to Restoring Eutrophic Ponds in the Lower Platte South NRD: A 319 Phase 2 Project. Department of Environment and Energy (NDEE) Nonpoint Source Water Quality Grants (Section 319, Phase II). \$284,275
- Messer, T., Comfort, S., and A. Mittelstet. 2021. *Surface water nutrient removal in eutrophic ponds using floating treatment wetlands in Nebraska*. Nebraska Environmental Trust. \$111,797.
- Messer, T. and Comfort, S. 2020. *Nebraska Floating Wetlands Pilot Project*. Nebraska Department of Environment and Energy (NDEE) Nonpoint Source Water Quality Grants (Section 319). \$15,000.
- Christenson, M (Principal Investigator, AirLift), Comfort, S. (Principal Investigator, UNL), 2020. *Removing PFAS in Investigation Derived Waste (IDW) with Electrocoagulation and Electrochemically Activated Persulfate*. Small Business Innovation Research (SBIR) grant from Environmental Protection Agency (EPA), PHASE I. AirLift Environmental LLC, Industry, Research, \$98,832 (\$24,820 to UNL).

- Christenson, M (Principal Investigator, AirLift), Comfort, S. (Principal Investigator, UNL), Yusong Li (UNL). 2015-17. *Improving the treatment of contaminated aquifers by developing direct-push oxidant candles with pneumatic circulators*. Small business technology transfer (STTR) grant from National Institute of Health (NIH), PHASE II. AirLift Environmental LLC, Industry, Research, \$1,057,463 (\$348,510 to UNL).
- Comfort, S. (Principal Investigator) 2013. *Improving the treatment of contaminated aquifers by developing direct-push oxidant candles with pneumatic circulators*. Small business technology transfer (STTR) grant from National Institute of Health (NIH), PHASE I. AirLift Environmental LLC, Industry, Research, \$49,450
- Comfort, S.D. and Yusong Li. 2009. *A Solute Transport System for Systematically Evaluating Remedial Technologies for Chlorinated Solvent-Contaminated Groundwater*, USGS 104(b); \$11,000; March 2009-March 2010.
- Comfort, S.D. V. Zlotnik, T. Halihan. 2007. *Using Electrical Resistivity Imaging (ERI) to Evaluate Permanganate Performance during an In Situ Treatment of a RDX-Contaminated Aquifer*. Environmental Security Technology Certification Program (ESTCP). \$98,777.
- Comfort, S.D. 2005-2012. *Field-scale demonstrations of innovative remediation techniques for contaminated soil and water*. EPA Federal Earmark Appropriation. \$994,100
- Comfort, S.D. 2004. *Bench testing for in situ ozone oxidation of high explosives*. BWXT Pantex, LLC. \$44,739.
- Comfort, S.D. 2004. *Remediation of PCB-contaminated soils and sediments using zerovalent iron and surfactants*. United States Geological Survey 104(b) Program. \$18,126.
- Szecsody, J. (Principal Investigator) S.D. Comfort (Co-investigator plus others). 2004. Enhancement of in situ bioremediation of energetic compounds by couple abiotic/biotic processes. SERDP (Strategic Environment Research and Development Program) \$845,000 (\$186,457 to UNL).
- Shea, P.J., M.A. Langell, P.D. Burrow, S.D. Comfort, and T.C. Zhang. 2001. *Building surface analysis into a new university infrastructure in environmental science*. University of Nebraska-Nebraska Research Initiative (NRI). First year funded at \$280,000.
- Comfort, S.D., P.D. Burrow, and P.J. Shea. 2001. *Predicting contaminant dehalogenation rates from electron scattering studies*. USDA-National Research Initiative (NRI). \$150,000.
- Comfort, S.D., and P.J. Shea. 2001. *Laboratory treatability studies for in-situ treatment of a RDX-contaminated aquifer*. Sandia National Laboratory. \$75,000. In addition to the direct mRDX and ^{15}N -RDX) at an estimated cost of \$27,000.
- Jones, C. (Brice Environmental), S.D. Comfort and P.J. Shea (University of Nebraska). 2001. *Chemical Oxidation/Reduction Innovative Technology Evaluation for the Massachusetts Military Reservation*. Ogden Environmental and Energy Services, Inc. \$61,280 to UNL (Funded subcontract for UNL analytical services, interpretation, and report).
- Shea, P.J., T.C. Zhang, P.D. Burrow, and S.D. Comfort. 2001. *Managing Soil and Water Contamination Using Novel Predictive, Remediation Treatment and Exposure Assessment Technologies*. Nebraska/EPA EPSCoR Program. \$410,000.
- Nebraska Fertilizer & Ag-Chemical Institute, University of Nebraska (S.D. Comfort and P.J. Shea) and Compliance Advisory Services, Inc. 2001. *Innovative Remediation of Pesticide-Contaminated Soil*. Nebraska Environmental Trust. \$50,000 to UNL.

- Shea, P.J. and S.D. Comfort. 2000. *A test of permeable zerovalent iron barriers for in-situ containment and remediation of pesticide contamination in unsaturated soils*. USGS 104 Program. Year 2: Role of Green Rusts and Magnetite in Iron-Mediated Pesticide Destruction. \$16,505.
- Comfort, S.D. 2000. *Bench-Scale Investigations into the Treatment of HMX-Contaminated Soils*. Sandia National Laboratories. \$21,750.
- Comfort, S.D. and P.J. Shea. 1999. *A test of permeable zero-valent iron barriers for in-situ containment and remediation of pesticide contamination in unsaturated soils*. USGS 104 Program. \$12,500.
- Comfort, S.D. 1999. *Permeable zero-valent iron barriers for in-situ containment and remediation of pesticide contamination in unsaturated soils*. USDA Cooperative Exchange Program. \$3,700.
- Comfort, S.D. 1996-98. *Application of Abiotic Treatments for Remediating Munitions-Contaminated Soil: Pilot-Scale Demonstrations*. National Water Research Institute and University of Nebraska Water Center/Environmental Programs. \$74,453
- Shea, P.J., S.D. Comfort, G.L. Horst, T.C. Zhang, and R.A. Drijber. 1996-98. *Environmental Processes for Accelerated Bioremediation of Xenobiotics in Soil and Water*. National Science Foundation (NSF)-EPSCoR program. \$657,591.
- Zhang, T.C., P.J. Shea, and S.D. Comfort. 1996-99. *Simultaneous transformation of atrazine and nitrate in contaminated water, sediment and soil by zero-valent iron-promoted processes*. Great Plains - Rocky Mountain Hazardous Substance Research Center. EPA Regions 7 and 8. \$155,515.
- Comfort, S.D., and P.J. Shea. 1993-95. *Predicting Pesticide Degradation and Transport Characteristics in the Vadose Zones of the Platte River Valley*. USGS 104 Program. \$31,000.
- Comfort, S.D., P.J. Shea, and G.L. Horst. 1993-94. *Temporal Aspects of Munitions Sorption and Transport in Contaminated Soils*. U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, NH. \$24,990.
- Comfort, S.D., P.J. Shea, D. McCallister, and W.L. Powers. 1993-96. *The Fate and Transport of Munitions Residues in Contaminated Soils*. Great Plains - Rocky Mountain Hazardous Substance Research Center. EPA Regions 7 and 8. \$114,688
- Comfort, S.D. 1994-96. *Remediating RDX and HMX contaminated soil and water using chemical pretreatments*. National Water Research Institute and University of Nebraska Water Center/Environmental Programs. \$30,000.
- Comfort, S.D. 1992. *The Fate and Transport of Munitions Residues in Contaminated Soils*. A 1-year proposal to University of Nebraska Layman Trust for construction of an automated sampling system for large soil column transport studies. \$5,800.
- Shea, P.J., S.D. Comfort, G.L. Horst, R. Drijber, W.L. Powers, and T.C. Zhang. 1995-97. *Integration of Abiotic Treatments with Plant-based Strategies for Remediating Soil Contaminated with Organonitrogen Compounds*. UNL Interdisciplinary Research Grant. \$28,000.

Equipment Grants

- Comfort, S.D., and P.J. Shea. 1995-96. *State-of-the-art Mass Selective Detector for Identification and Confirmation Analyses*. National Research Initiative (NRI) Equipment Grant. \$21,582.
- Comfort, S.D., and P.J. Shea. 1997. *Ion Chromatography for analysis of Contaminant Degradation Products in Soil and Water*. IANR Administrative Council. \$25,556.
- Comfort, S.D. 1999. *Upgrade of High Performance Liquid Chromatograph for Analysis of Contaminants in Soil and Water*. University of Nebraska Water Center. \$21,093.
- Machacek, T.A., P.J. Shea and S.D. Comfort. 1999. *Waste Minimization Grant: Dionex Accelerated Solvent Extractor*. UNL Environmental Health and Safety. \$13,493 (partial support of \$40,480).
- Comfort, S.D. 2001. Equipment request to UNL Water Center: Dionex UV-25 Detector for Ion Chromatography (IC) System and Dynamax Soil Monitoring System. \$15,598.

Graduate Students Advised/Co-Advised, (Degree, Graduation Date)

- Martin, J.L (M.S., Dec. 1995). *Metabolism of 2,4,6-Trinitrotoluene (TNT) by Pseudomonas savastanoi*.
- Tyess, D.L. (M.S., March, 1996). *Relationships between Atrazine Mineralization and Soil Characteristics in the Presence of Atrazine-Degrading Microorganisms*.
- Li, Z.M. (Ph.D., May, 1996). *Remediating TNT-Contaminated Water and Soil by Fenton Oxidation*.
- Bier, E.L. (M.S., April, 1997). *Remediating RDX-Contaminated Soil by Abiotic Oxidation and Reduction Treatments*.
- Singh, J. (Ph.D., Dec., 1997). *Natural and Accelerated Detoxification of Atrazine and RDX in Contaminated Soil and Water*.
- Santapanajaru, T. (Ph.D., Nov., 2002). *Iron Mediated Destruction of Metolachlor: Roles of Surface Oxides*.
- Adam, M. (M.S. in Environ. Eng., Oct., 2003). *Evaluating in-situ permanganate oxidation and biodegradation of RDX in a perched aquifer*.
- Park, J. (Ph.D., March, 2004). *Remediating Munitions-Contaminated Soil with Zerovalent Iron and Surfactants*.
- Onanong, S. (Ph.D., May, 2006). *Using Gas Phase and Quantum Molecular Descriptors to Predict Dehalogenation Rates of Chlorinated Alkanes by Zerovalent Iron*.
- Boparai, H.K. (Ph.D., May, 2006). *Evaluating In Situ Redox Manipulation for Remediating Pesticide- and Explosive-Contaminated Groundwater*.
- Waria, M. (M.S., Dec., 2007). *Field-scale remediation of pesticide-contaminated soil by a combined chemical-biological approach*.
- Chokejaroenrat, C. (M.S., Aug., 2008). *Laboratory and pilot-scale investigations of RDX treatment by permanganate*.
- Albano, J. (M.S., Jan., 2009). *In situ chemical oxidation of RDX-contaminated groundwater with permanganate at the Nebraska Ordnance Plant*.
- Christenson, M. (M.S., Aug., 2011). *Using slow-release permanganate to remove TCE from a low permeable aquifer at a former landfill*.
- Kambhu, A. (M.S., Dec., 2011). *Developing slow-release persulfate candles to treat BTEX-contaminated groundwater*.
- Chokejaroenrat, C. (Ph.D., Dec., 2012). *Improving the treatment of aqueous and nonaqueous*

phase TCE in low permeable zones with permanganate.
 Sakulthaew, C. (Ph.D., May. 2014). *Removing PAHs from urban runoff by combining ozonation, adsorption, and biodegradation.*
 Kambhu, A. (Ph.D., Jan., 2019). *Treating 1,4-dioxane with slow-release persulfate and zerovalent iron and modeling the radius of influence of aerated oxidant candles*
 McKercher, L. (M.S., July, 2021). *A Biological and Chemical Approach to Restoring Water Quality in an Urban Eutrophic Pond.*
 McCoy, J. (M.S., Dec. 2023). *Nitrate Removal via Plant Uptake and Denitrification from Floating Treatment Wetlands under Aerated and Unaerated conditions: Field and Laboratory Results.*

Postdoctoral Associates/Visiting Scientist

Amanda Araújo (5/2023 to 9/2023) Ph.D. Student, State University of Campinas, São Paulo, Brazil.
 Angkaew, A. (2/2022 to 8/2022) Ph.D. Student, Kasetsart University, Bangkok, Thailand.
 Petr Zajicek (9/2016 to 12/2017). Ph.D. Student, Palacky University, Olomouc, Czech Republic
 Dr. Hesham Gaber (4/99 to 10/99) Ph.D. Alexandria University, Alexandria Egypt
 Dr. Michele Arienzo (1/96 to 7/97). Ph.D. University of Degli Studi Di Napoli Federico, Casera, Italy.

Courses Taught

NRES 115. *Introduction to Environmental Science*. Fall Semester 2021, 2022. Undergraduate course that introduces students to the environmental science field.

NRES/SOIL/GEOL/AGRON/WATS/ 361. *Soils, Water and Environmental Quality*. 2005-2025. Undergraduate course that focuses on fate of chemicals in soil-water environment and remediation techniques for pollution abatement.

NRES 451/851, ENVE 851. *Soils, Water and Environmental Chemistry*: Spring Semester 2000, 2002, 2004, 2007, 2011, 2015-2025.

NRES 491/891. *Professional Development*. Spring Semester 2003. Course concentrates on improving technical writing and public speaking skills of graduate students. Course Evaluation: Spring 2003 (3.86/4.00)

Honors, Awards and Service

Certificate of Merit from American Chemical Society, Division of Environmental Chemistry for poster presentation entitled “Using Gas Chromatography with Electron Capture Detection (GC/ECD) to predict dehalogenation rates of environmental contaminants by zerovalent iron, 2005

Recognition of Junior Faculty for Excellence in Research Award. Institute of Agriculture and Natural Resources. University of Nebraska. 1996

Editor’s Citation for Excellence in Manuscript Review. Journal of Environmental Quality. 1996.

American Society of Agricultural Engineers Blue Ribbon Award (1997) for Extension Publication “Pesticide Runoff and Water Quality in Nebraska” by S.D. Comfort, T.G. Franti and S.K. Smith.

Associate Editor. Journal of Environmental Quality. 1997- 2000.

Honorary Faculty Member. Hanshan Normal University. Chaozhou, China. 2007

Sustained Excellence in Teaching and Learning Faculty Award, Holling Family Award. College of Agriculture and Natural Resources. 2021