Patrick J. Shea

Professor, Environmental Chemistry and Toxicology of Xenobiotics
School of Natural Resources
Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln

OFFICE

102c KCR, Lincoln, NE, USA 68583-0817
PH: +1-402-472-1533; FAX: +1-402-472-7904; email: pshea1@unl.edu

EDUCATION

Ph.D. Crop Science (soil science minor, agricultural chemistry focus), NC State Univ., 1981
M.S. Plant Science (agricultural management systems focus), University of Connecticut, 1979
B.S. Biology (general and pre-medical), Fordham University, 1975

CURRENT AND PREVIOUS POSITIONS

1997 to present *Professor*, School of Natural Resources, UNL
2013-present *Mentoring Coordinator*, School of Natural Resources, UNL
2011 *Interim Co-Director*, Center for Environmental Health and Toxicology, University of Nebraska Medical Center (UNMC), Omaha
2007 to 2011 *Professor and Vice Chair*, Department of Environmental, Agricultural and Occupational Health, UNMC, Omaha
2000 to 2001 *Associate Director and Coordinator of Research*, School of Natural Resources, University of Nebraska-Lincoln (UNL)
1993 to 1997 *Professor*, Department of Agronomy, UNL
1986 to 1993 *Associate Professor*, Department of Agronomy, UNL
1981 to 1986 *Assistant Professor*, Department of Agronomy, UNL

Other University Affiliations (current)
Courtesy Professor, UNL Department of Agronomy and Horticulture
Courtesy Prof., UNMC Department of Environmental, Agricultural and Occupational Health
Dean's Special Appointment, Governing Faculty, UNMC College of Public Health
Faculty Fellow, NU Robert B. Daugherty Water for Food Institute and Water Center Affiliate
Faculty, University of Nebraska (NU) Center for Environmental Health and Toxicology

AWARDS AND NOTABLE SERVICE

Board of Scientific Advisors, American Council on Science and Health (on-going)
Associate Editor, Agricultural and Environmental Letters, Am. Soc. Agronomy (2015-2017)
Editorial Board, Journal of Soil and Groundwater Environment (2014-present) (Rep. of Korea)
Certificate of Outstanding Contribution in Reviewing, Elsevier (2015) (J. Environ. Management)
Certificate of Merit, Elsevier (2012) (J. Environ. Management reviewer)
Thirty-five Year Service Award, University of Nebraska-Lincoln (2016)
Governor's Excellence in Wellness Award (UNL Wellness Committee), State of Nebraska (2011)
Outstanding Educational Materials Award (UNL Weed Sci. Group), Amer. Soc. Agronomy (2011)
Commendation Letter for Exceptional Service, American Chemical Society (2010)
(Environmental Science and Technology journal reviewer)
Excellence in Review Award, American Chemical Society (2007)
(Environmental Science and Technology journal reviewer)
Editor's Citation for Excellence in Manuscript Review, American Soc. Agronomy (2006)
(Journal of Environmental Quality reviewer)
Certificate of Merit for Extension Publications, American Soc. Agronomy (2006)
Distinguished Achievement Award for Research, North Central Weed Science Society (1991)
Team Effort Award, IANR, University of Nebraska (1991)

REFEREED PUBLICATIONS

Peer-Reviewed Journal Articles (110 peer-reviewed publications; 1-5-17 h-index 37; i10-index 75)

Weber, J.B., P.J. Shea, and H.J. Strek. 1979. An evaluation of nonpoint sources of pesticide pollution in runoff. *In* M.R. Overcash and J.M. Davidson (eds.), *Environmental Impact of Nonpoint Source Pollution,* Ann Arbor Science Pub., Inc., Ann Arbor, MI.

Shea, P.J., H.J. Strek, and J.B. Weber.1980. Polychlorinated biphenyls: Absorption and bioaccumulation by goldfish (*Carassius auratus*) and inactivation by activated carbon. *Chemosphere* 9:157-164.

Strek, H.J., J.B. Weber, P.J. Shea, E. Mrozek, and M.R. Overcash.1981. Reduction of polychlorinated biphenyl toxicity and uptake of C-14 activity by plants through the use of activated carbon. *J. Agric. Food Chem*. 29:288-293.

Weber, J.B., H.J. Strek, P.J. Shea, and M.R. Overcash. 1981. Nonpoint source pollution from PCB's: Bioavailability and inactivation with activated carbon. Pages 364-374 *in* A.Q. Khan (ed.), *Toxicology of Halogenated Hydrocarbons*. Pergamon Press, Inc., NY.

Shea, P.J., J.B. Weber, and M.R. Overcash. 1982. Uptake and phytotoxicity of di-n-butyl phthalate on corn (*Zea mays*). *Bull. Environ. Contam. Toxicol*. 29:153-158.

Shea, P.J. and J.B. Weber. 1983. Fluridone adsorption on mineral clays, organic matter, and modified Norfolk soil. *Weed Sci*. 31:528-532.

Shea, P.J. and J.B. Weber. 1983. Effect of soil pH on fluridone activity and persistence as determined by chlorophyll measurements. *Weed Sci*. 31:347-350.

Shea, P.J., J.B. Weber, and M.R. Overcash. 1983. Biological activities of 2,4-dinitrophenol in plant-soil systems. *Residue. Rev*iews 87:1-41.

Shea, P.J. and D.R. Tupy. 1984. Reversal of cation-induced reduction in glyphosate activity with EDTA. *Weed Sci*. 32:802-806.

Ghadiri, H., P.J. Shea, G.A. Wicks, and L.C. Haderlie. 1984. Atrazine dissipation in conventional-till and no-till sorghum. *J. Environ. Qual*. 13:549-552.

Ghadiri, H., P.J. Shea, and G.A. Wicks. 1984. Interception and retention of atrazine by wheat (*Triticum aestivum* L.) stubble. *Weed Sci*. 32:24-27.

Shea, P.J. 1985. Detoxification of herbicide residues in soil. *Weed Sci. (Suppl. 2)* 33:33-41.

Weber, J.B., P.J. Shea, and S.B. Weed. 1986. Fluridone retention and release in soils. *Soil Sci. Soc. Amer. J*. 50:582-588.

Shea, P.J. 1986. Chlorsulfuron dissociation and adsorption on selected adsorbents and soils. *Weed Sci*. 34:474-478.

Fredrickson, D.R. and P.J. Shea. 1986. Effect of soil pH on degradation, movement, and plant uptake of chlorsulfuron. *Weed Sci*. 34:328-332.

Hatterman, H.M., P.J. Shea, and E.T. Paparozzi. 1987. Weed control in annual statice. *Weed Sci*. 35:373-376.

Brejda, J.J., P.J. Shea, L.E. Moser, and S.S. Waller. 1988. Atrazine dissipation and off-site movement in a Nebraska Sandhills subirrigated meadow. *Jour. Range Management* 41:416-420.

Petersen, B.B., P.J. Shea, and G.A. Wicks. 1988. Acetanilide activity and dissipation as affected by formulation and wheat stubble. *Weed Sci*. 36:243-249.

Petersen, B.B. and P.J. Shea. 1989. Microencapsulated alachlor and its behavior on wheat (*Triticum aestivum*) straw. *Weed Sci.* 37:719-723.

Shea, P.J. 1989. Role of humified organic matter in herbicide adsorption. *Weed Technol*. 3:190-197.

Roeth, F.W., R.G. Wilson, A.R. Martin, and P.J. Shea. 1989. Enhanced soil degradation of butylate and EPTC in Nebraska soils. *Weed Technol*. 3:24-29.

Roeth, F.W., R.G. Wilson, A.R. Martin, and P.J. Shea. 1990. Enhanced carbamothioate herbicide degradation research in Nebraska. Ch. 3, pages 23-36 *in* Racke, K.D. and J.R. Coats (eds). *Enhanced Biodegradation of Pesticides in the Environment*, American Chemical Society Symposium Ser. No. 426, American Chemical Society.

Stougaard, R.N., P.J. Shea, and A.R. Martin. 1990. Effect of soil type and pH on adsorption, mobility, and efficacy of imazaquin and imazethapyr. *Weed Sci*. 38:67-73.

Stahnke, G.K., P.J. Shea, D.R. Tupy, R.N. Stougaard, and R. Shearman. 1991. Pendimethalin dissipation in Kentucky bluegrass turf. *Weed Sci*. 39:97-103.

Sorenson, B.A., P.J. Shea, and F.W. Roeth. 1991. Effects of tillage, application time and rate on metribuzin dissipation. *Weed Res*. 31: 333-345.

Baer, J.U., W.L. Powers, P.J. Shea, and C.L. Stuefer-Powell. 1992. Pore size distribution index as an indicator of atrazine movement in a Crete silt loam soil. *Soil Sci*. 154:377-386.

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Comfort, S.D., P.J. Shea, L.S. Hundal, Z. Li, B.L. Woodbury, J.M. Martin, and W.L. Powers. 1995. TNT transport and fate in contaminated soil. *J. Environ. Qual*. 24:1174-1182.

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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.

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Martin, J.L., S.D. Comfort, P.J. Shea, T.A. Kokjohn, and R.A. Drijber. 1997. Denitration of 2,4,6-trinitrotoluene (TNT) by *Pseudomonas savastanoi*. *Can. J. Microbiol*. 43:447-455.

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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.

Stolpe, N.B., M.S. Kuzila, and P.J. Shea. 1998. Importance of soil map detail in predicting pesticide mobility in terrace soils. *Soil Sci*. 163:394-403.

Jayachandran, K., N.B. Stolpe, T.B. Moorman, and P.J. Shea. 1998. Application of ^{14}C-most-probable-number technique to enumerate atrazine-degrading microorganisms in soil. *Soil Biol. Biochem*. 30:523-529.

Peterson, M.M., G.L. Horst, P.J. Shea, and S.D. Comfort. 1998. Germination and seedling development of switchgrass and smooth bromegrass exposed to 2,4,6-trinitrotoluene. *Environ. Poll.* 99:53-59.

Bier, E., Z. Li, J. Singh, 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. *J. Environ. Toxicol. Chem.* 18:1078-1084.

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 J*. 3:59-67.

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Vasilyeva, G.K., V.D. Kreslavski, B.-T. Oh, and P.J. Shea. 2001. Potential of activated carbon to decrease 2,4,6-trinitrotoluene toxicity and accelerate soil decontamination. *Environ. Toxicol. Chem*. 20:965-971.

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Vasilyeva, G.K., V.D. Kreslavski, and P.J. Shea. 2002. Catalytic oxidation of TNT by activated carbon. *Chemosphere* 47:311-317.

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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.

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.

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.

Vasilyeva, G.K., L.P. Bakhaeva, E.R. Strijakova, and P.J. Shea. 2003. Bioremediation of 3,4-dichloroaniline and 2,4,6-trinitrotoluene in soil in the presence of natural adsorbents. *Environ. Chem. Lett* 11:179-183.

Gibb, C., T. Satapanajaru, S.D. Comfort, and P.J. Shea. 2004. Remediating dicamba-contaminated water with zerovalent iron. *Chemosphere* 54:841-848.

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.

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.

Papastavros, E., P.J. Shea, and M.A. Langell. 2004. Oxygen, carbon, and sulfur segregation in annealed and unannealed zerovalent iron substrates. *Langmuir* 20:11509-11516.

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.

Tyess, D.L., P.J. Shea, and A.M. Parkhurst. 2006. Mineralization potential of atrazine and degradation intermediates from clustered characteristics in inoculated soils. *J. Soil Sediment Contamination* 15:87-102.

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Joshi, N., M.G. Rhoades, G.D. Bennett, S.M. Wells, S.S. Mirvish, M.J. Breitbach, and P.J. Shea 2013. Developmental abnormalities in chicken embryos exposed to *N*-nitrosoatrazine. *J. Toxicol. Environ. Health, Part A: Current Issues* 76:1015-1022.

Kim, S-A. J-C. Chae, S. Kamala-Kannan, K-J. Lee, Y-J. Park, P.J. Shea, W-H. Lee, H-M. Kim, and B-T. Oh. 2013. Removal of Pb(II) from aqueous solution by zeolite-supported nanoscale zero-valent iron. *Chem. Eng. J.* 217:54-60. (Epub 20 Nov 2012).

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You, Y., J. Shim, C-H. Cho, M-H. Ryu, P.J. Shea, S. Kamala-Kannan, and B-T. Oh. 2013. Biodegradation BTEX mixture by *Pseudomonas putida* YNS1 isolated from oil-contaminated soil. *J. Basic Microbiol.* 53(5):469-75.

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Shim, J., P.J. Shea, I-B. Jung, B-T. Oh, and M. Cho. 2015. Potential of *Pseudomonas* sp. JH 51-2 to stabilize lead in mining site soil. *J. Environ. Biol.* 36:e695-e701.

Shim, J., P.J. Shea, J-M. Lim, and B-T. Oh. 2015. Simultaneous Cr(VI) reduction and methylene blue removal by *Bacillus* sp. JH2-2 isolated from mining site soil. *Desalination Water Treatment* 2015:1-8 (DOI: 10.1080/19443994.2015.1012563)

Shepherd, M. A., A. Labay, P.J. Shea, R. Rautiainen, and C. Achutan. 2016. Operational, water quality and temporal factors affecting impingement of fish and shellfish at a Texas coastal power plant. *Global Ecology and Conservation*. 5:48-57. DOI: 10.1016/j.gecco.2015.11.006

Das, N., K.P. Sarma, A.K. Patel, J.P. Deka, A. Das, A. Kumar, P.J. Shea, and M. Kumar. 2017. Seasonal disparity in the co-occurrence of arsenic and fluoride in the aquifers of the Brahmaputra flood plains, Northeast India. Environmental Earth Sciences 76:183. DOI:10.1007/s12665-017-6488.

Extension Publications (past 10 years)

Martin, A.R., et al. (P.J. Shea). 2007. *Guide for Weed Management in Nebraska*. (P. Shea responsible for "Environmental Considerations When Applying Herbicides" section) EC130, Univ. Nebraska-Lincoln.

Bernards, M. et al. (including P.J. Shea). 2008, 2009, 2010, 2011, 2012. *Guide for Weed Management in Nebraska*. "Environmental Considerations When Applying Herbicides." Univ. Nebraska-Lincoln.

Devlin, D. et al. (P.J. Shea). 2008. *Pesticide Management Water Quality Protection in the Midwest* "Pesticide Behavior and Movement in a Landscape." Heartland Regional Water Coordination Initiative. Kansas State University, Manhattan, KS.

Wortmann, C.S. et al. (P.J. Shea). 2008. *Targeting of Watershed Management Practices for Water Quality Protection.* Heartland Regional Water Coordination Initiative. Univ. NE-Lincoln.

Klein, R.N., M.L. Bernards, and P.J. Shea. 2008. *A Quick Test for Herbicide Carry-Over in the Soil*. NebGuide G1891, Univ. Nebraska-Lincoln.

Bernards, M.L., P.J. Shea, M. Milner, and T.G. Franti. 2010. *Reducing Off-Site Movement of Pesticides*. 2010 Crop Protection Clinic Proceedings, Univ. Nebraska-Lincoln.

Bernards, M.L., R.E. Gaussoin, R.N. Klein, S.Z. Knezevic, D.J. Lyon, L.D. Sandell, R.G. Wilson, P.J. Shea, and C.L. Ogg. 2008, 2009, 2010, 2011. *Guide for Weed Management in Nebraska*. (P. Shea responsible for "Environmental Considerations When Applying Herbicides" section) EC130, Univ. Nebraska-Lincoln.

Jhala, A., R.N. Klein, S.Z. Knezevic, G.R. Kruger, Z. J. Reicher, L.D. Sandell, S.L. Young, R.G. Wilson, P.J. Shea, and C.L. Ogg. 2012, 2013, 2014, 2015, 2016, 2017. *Guide for Weed Management in Nebraska with Insecticide and Fungicide Information*. (P. Shea responsible for "Environmental Considerations When Applying Herbicides" section) EC130, Univ. Nebraska-Lincoln.

NOTABLE PRESENTATIONS (past 10 years)

"Using Soil and Land Data in Targeting Pesticide Use BMPs," Heartland Region Targeting Critical Source Areas for Implementation of BMPs Roundtable, Nebraska City, NE, 01/09/2007 (Co-author and co-presenter; invited oral paper)

"Targeting Watershed Vulnerability and Behaviors Leading to Adoption of Conservation Management Practices: A New Integrated Water Quality Project," National Water Conference, 01/30/2007 (Co-author-presenter; volunteer poster)

"Identifying Landscape Vulnerability to Pesticide Leaching and Runoff," South Dakota Department of Environment and Natural Resources 19th Annual Environmental and Ground Water Quality Conference, Pierre, SD, 03/15/2007 (Co-author; invited oral paper)

"Using Soil and Land Data in Targeting Pesticide BMPs," Heartland Region Targeting Critical Source Areas for Implementation of BMPs Workshop, Nebraska City, NE, 06/06/2007 (Co-presenter; invited oral paper)

"Formation of N-Nitrosamines from Reaction of Pharmaceuticals with Nitrite and Chloramine," Society of Toxicology - Central States Chapter, 09/20/2007 (Co-author; volunteer poster)

"Nitrosamine Formation from Reaction of Pharmaceuticals and Pesticides with Nitrite and Chloramine," SNR Research Colloquium, 10/23/2007 (Co-author; volunteer poster)

"Modeling Landscape Vulnerability to Pesticide Contamination of Surface and Ground Waters," National Water Conference, 02/04/08 (Co-author-presenter; volunteer poster)

"Modeling Landscape Vulnerability to Herbicide Contamination of Ground and Surface Waters," Weed Science Society of America, 02/05/08 (Co-author; volunteer poster)

"Application of Landscape Vulnerability Models to Assess Off-Site Pesticide Movement in a Nebraska-Kansas Watershed," National Water Conference, 02/09/09 (Co-author-presenter; volunteer poster)

"Understanding Pesticide Fate and Transport," U.S. Park Service Workshop, 07/15/09 (Author-presenter; invited oral paper)

"Assessment of Herbicide Transport in Central Missouri Watersheds Using a Process-Based Index Model," Am. Soc. Agronomy-Crop Sci. Soc. Am.-Soil Sci. Soc. Am., 11/04/09 (Co-author; volunteer paper)

"Accounting for the Impact of Impermeable Soil Layers on Pesticide Runoff and Leaching in a Landscape Vulnerability Model," National Water Conference, 02/09/10 (Co-author-presenter; volunteer poster)

"Assessing Off-site Pesticide Movement in a Nebraska-Kansas Watershed Using Novel Landscape Vulnerability Models," Weed Science Society of America, 02/08/10 (Co-author; volunteer oral paper)

"Relationship of Precipitation and Crop Planting Dates to Stream-Measured Atrazine Levels in the NE-KS Blue River Basin," Soil and Water Conservation Society, 07/19/10 (Co-author; volunteer poster)

"Assessing the Formation and Biological Significance of Selected Environmental Nitrosamines using Model Systems." American Public Health Association, 11/06/10 (Co-author, volunteer poster) Abstract: http://apha.confex.com/apha/138am/webprogram/Paper221373.html

"Contributions of Agronomic Practices, Precipitation Patterns, and Landscape Vulnerability to Atrazine Load in the Big Blue River Basin," Weed Science Society of America, 02/08/11 (Co-author, volunteer oral presentation) Abstract 157: http://wssaabstracts.com/public/abstract-157.html

"Nitrosoatrazine Formation and Behavior in Water and Soil." American Chemical Society, 03/28/2011 (Co-author, volunteer poster) http://abstracts.acs.org/chem/241nm/program/view.php

"Field-Scale Adaption of a Process-Based Index Model for Landscape Vulnerability to Surface and Ground Water Contamination," Am. Soc. Agronomy-Crop Sci. Soc. Am.-Soil Sci. Soc. Am., 10/17/11 (Co-author, volunteer poster)
Abstract 34-7: http://a-c-s.confex.com/crops/2011am/webprogram/Paper67726.html

"Process-Based Index Modeling of Landscape Vulnerability to Pesticide Off-Site Transport," American Water Research Association, 03/27/13 (Lead author-presenter; invited oral paper)

"Process-Based Index Modeling of Landscape Vulnerability to Off-Site Agrichemical Movement," Water for Food Conference, 05/07/13 (Lead author-presenter; volunteer poster)

"Development of Hybrid Alginate Beads for Contaminant Removal and Metal Recovery from Water and Waste Water," OP-SETAC Conference, 5/20-21/14 (Co-author, volunteer poster)

" An Ecological Study Evaluating the Association Between County Birth Defect Rates and Percent of Wells Testing Positive for Nitrate and Nitrosatable Agrichemical Compounds in Nebraska, USA," Water for Food Global Conference, 4/24-26/16 (Co-author, volunteer poster)

"Influence of DOM and POM on Photolysis of Diclofenac," International Symposium on Sustainable Urban Environment, Tezpur University, Assam, India, 6/23/17 (Co-author, volunteer oral paper)

GRANTS (past 10 years)

Targeting Watershed Vulnerability and Behaviors Leading to Adoption of Conservation Management Practices. $570,000. USDA-CSREES National Integrated Water Quality Program. Sept. 2006 – Sept. 2010. Lead PI.

Graphite and Carbide Catalysts for Management of Soil and Sediment Quality. $12,000. Channing B. and Katherine W. Baker Fund, University of Nebraska-Lincoln. Aug. 2006 – July 2007. PI.

Impacts of Emerging Contaminants on Natural and Societal Environments. $20,000. Water Resources Research Initiative Seed Grant Program, Jan. 2007 – June 2008. Lead PI.

Formation of Nitrosamine and Hydrazine Derivatives of Pesticides and Pharmaceuticals During Disinfection of Drinking Water and Wastewater. $19,210. USGS 104b. March 2007 – Feb. 2008. PI.

Pump Enabling Post-Column Derivatization for Fluorescence Detection of Glyphosate and Other Organic Environmental Contaminants in HPLC Analysis. $2,950. Water Center Small Equipment Fund. June 2008. Co-PI.

Public Health and Liberal Education Curriculum and Faculty Development Project. $1,350 (workshop travel grant). APTR and AAC&U. July 2008. Co-PI.

Evaluating the Physical and Biological Availability of Pesticides and Pharmaceuticals in Agricultural Contexts. $55,500. USDA Multi-State Program, Sept. 2006 – Sept. 2010. PI (Nebraska).

Evaluating the Physical and Biological Availability of Pesticides and Contaminants in Agricultural Ecosystems. $50,000 (total anticipated, awarded annually). USDA Multi-State Program, Oct. 2010 – Sept. 2015. PI (Nebraska).

Development of Smart Alginate Hybrid Beads for Eco-Friendly Water Treatment. $15,000. USGS 104b. March 2015-Feb. 2016. Co-PI.

Nitrate and Atrazine: Is the Mixture Toxic to the Developing Embryo? $10,000. UNL Research Council Grant, January 1, 2016-March 31, 2017. Co-PI.

Risk of Adverse Birth Outcomes Associated with Maternal Exposure to Nitrate and Nitrosatable Compounds in Drinking Water $149,964. NU Collaboration Initiative Seed Grant, July 1, 2017-June 30, 2019. PI

Risk of Adverse Birth Outcomes Associated with Maternal Exposure to Nitrate and Nitrosatable Compounds in Drinking Water (Supplemental Funding) $19,964. NU Collaboration Initiative Seed Grant, July 1, 2017-June 30, 2019. Co-PI

TEACHING

Instructor/co-instructor of courses in pesticide chemistry and mode of action, xenobiotics in environment, environmental health, advanced toxicology, herbicide technology, readings in environmental remediation and restoration, graduate seminar courses in water resources and natural resource sciences, environmental health and toxicology, and scientific writing; occasional lecturer for other UNL and UNMC courses.

DISSERTATION/THESIS COMMITTEES CHAIRED OR CO-CHAIRED – 13 Ph.D./17 M.S.

Ghadiri, H. 1983. Atrazine dissipation, stubble interception and retention in soils under various tillage systems. (Ph.D.)

Fredrickson, D.R. 1984. Effects of soil pH on degradation and availability of chlorsulfuron in soil. (M.S.)

Petersen, B.B. 1985. Influence of wheat stubble residue on the activity and dissipation of three acetanilide herbicides. (M.S.)

Lauer, J.A. 1987. Effect of pH and differential metabolism on imazethapyr uptake and selectivity in soybean and common cocklebur. (M.S.)

Fredrickson, D.R. 1988. Soil mobility, octanol-water coefficients, and degradation of six sulfonylurea herbicides. (Ph.D.)

Sorenson, B.A. 1988. Effects of tillage, corn and wheat residue, and application time on metribuzin efficacy and dissipation in soil. (M.S.)

Masterson, S.D. 1989. The effects of vesicular-arbuscular mycorrhizal fungi on atrazine injury in soybeans. (M.S.)

Stahnke, G.K.1989.Pendimethalin dissipation and the influence of preemergence herbicides on Kentucky bluegrass shoot and root growth. (PhD)

Petersen, B.B. 1990. Interactions between agricultural chemicals and their effects on pesticide persistence in soil. (Ph.D.)

Hutchinson, P.J. 1991. Immunoassay for carbamothioate detection and application to enhanced pesticide degradation. (Ph.D.)

Schleicher, L.C., Jr. 1992. Efficacy and dissipation of pendimethalin and dithiopyr in a perennial ryegrass turf. (M.S.)

Smith, E.A. 1993. Effects of pore size distribution, compaction, and saturation cycles on bromide and atrazine movement through a surface soil. (M.S.)

Martin, J.L. 1995. Metabolism of 2,4,6-trinitrotoluene by *Pseudomonas savastanoi*. (M.S.)

Tyess, D.L.1996.Atrazine degradation in soil as influenced by microbial populations and soil characteristics. (M.S.)

Li, Z.M. 1996. Remediating trinitrotoluene-contaminated soil by Fenton oxidation. (Ph.D.)

Peterson, M. 1996. Potential for use of tall fescue and switchgrass for phytoremediation of trinitrotoluene-contaminated soil. (M.S.)

Hundal, L.S. 1997. TNT sorption and fate in munitions-contaminated soil: Implications for abiotic remediation. (Ph.D.)

Singh, J. 1997. Natural and accelerated detoxification of RDX and atrazine in contaminated soil and water. (Ph.D.)

Oh, B.-T. 1999. Transformation and detoxification of 2,4,6-trinitrotoluene by a *Pseudomonas aeruginosa* strain. (Ph.D.)

Satapanajaru, T. 2002. Remediating chloroacetanilide-contaminated water using zerovalent iron. (Ph.D.)

Park, J. 2004. Remediating munitions-contaminated soil and water with zerovalent iron and surfactants. (Ph.D.)

Culp. R. 2004. Using a bioluminescence assay to assess the toxicity of munitions-contaminated water during remediation with reducing and oxidizing agents. (M.S.)

Boparai, H. 2006. Evaluating in situ redox manipulation for remediating pesticide- and explosive-contaminated groundwater. (Ph.D.)
Onanong, S. 2006. Using gas-phase and quantum molecular descriptors to predict dehalogenation rates of chlorinated alkanes by zerovalent iron. (Ph.D.)
Kronschnabel, B.J. 2007. Graphite and carbide catalysts for contaminant remediation. (M.S.)
Kim, Jong S. 2007. Formation of nitrosamines from reaction of pharmaceuticals with nitrite and chloramine (M.S.)
Dhakal, K. 2011. Atrazine runoff in the Blue River Basin: Geomorphology, rainfall, and agronomic practices. (M.S.)
Joshi, N. 2011. Assessing the stability, biological transfer and developmental impact of environmentally relevant nitrosamines using a chicken egg model. (M.S.)
Wei, H-R. 2011. Formation, adsorption, and degradation of *N*-nitrosoatrazine in water and soil. (M.S.)
Hosseini, A. 2012. Modeling field-scale vulnerability to pesticide runoff. (M.S.)

POSTDOCTORAL RESEARCH ASSOCIATES AND VISITING SCHOLARS: 9
VISITING SCIENTISTS HOSTED/CO-HOSTED: 9

EXTENSION/SERVICE EXPERIENCE

Work with extension specialists and educators in cooperative publications, giving presentations at workshops and conferences, and providing technical information to university extension and agency personnel, agricultural and environmental consultants, the chemical industry, producers, and the public.

SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

Board of Scientific Advisors, American Council on Science and Health (1988-present)
American Association of University Professors; American Public Health Association
Sigma Xi; Gamma Sigma Delta; Nebraska Academy of Sciences
American Chemical Society; International Union of Pure and Applied Chemists
Society of Environmental Toxicology and Chemistry; Society of Toxicology Central States Chapter
American Society of Agronomy; Soil Science Society of America
Weed Science Society of America; International Weed Science Societies
International Soil Science Society; International Humic Substances Society

SELECTED NOTABLE UNIVERSITY COMMITTEE SERVICE

University of Nebraska-Lincoln

Faculty Senate (multiple terms as Senator and Senate Secretary; currently Senator); Academic Planning Committee; Academic Rights and Responsibilities Committee; ARRC Panel (current); Committee on Academic Titles (created Prof. of Practice classification); School of Natural Resources (SNR) Promotion and Tenure Committee (current); UNMC College of Public Health Promotion and Tenure Committee; UNMC Environmental Health, Occupational Health and Toxicology Graduate Committee (current); Agronomy Promotion and Tenure Committee; SNR and Agronomy Graduate Committees; SNR Undergraduate Committee (current); SNR and Agronomy Faculty Advisory Committees; Chancellor's Committee on Wellness; UNL IANR Master Conservationist Award Committee

University of Nebraska Medical Center

Various committees involved in creating the College of Public Health (CoPH) and hiring faculty, CoPH Leadership Council, CoPH Promotion and Tenure Committee, Department of Environmental, Agricultural and Occupational Health (EAOH) Promotion and Tenure Committee, EAOH (EHOHT) Graduate Committee (current), Master of Public Health Accreditation Committee, Sparks Pre-Professional Undergraduate Public Health Awards Committee (current)

PUBLICATION REVIEWER

Environmental Science & Technology; J. Environmental Quality; Chemosphere; J. Environmental Management; Geoderma; J. Hazardous Materials; Environmental Engineering Science; Environmental Pollution; J. Environmental Toxicology and Chemistry; Ecological Engineering; Soil and Sediment Contamination: An International Journal; PLOS ONE; J. Agricultural and Food Chemistry; Bulletin of Environmental Contamination and Toxicology; Science of the Total Environment; Biodegradation; J. Contaminant Hydrology; Transactions of the American Society of Biological Engineers; Industrial and Engineering Chemistry Research; J. Environmental Modeling and Assessment; International Journal of Soil, Sediment and Water; Ecotoxicology and Environmental Safety; Desalination and Water Treatment; J. Material Cycles and Waste Management; Annals of Environmental Science; Weed Science; Pesticide Science; Weed Technology; Soil Science Society of America J.; Soil Science; Open J. Soil Science, Agronomy J., J. Association Official Analytical Chemists, J. Soil and Water Conservation; Water Research; Clays and Clay Minerals; Soil Biology and Biochemistry; Cogent Chemistry; African Journal of Agricultural Research; J. Natural Resources and Life Sciences Education; Great Plains Research Quarterly; American Chemical Society Symposium Series; Special Publications of the American Society of Agronomy, Soil Science Society of America, and the American Council on Science and Health; other journals, articles, and reports; theses and dissertations.

GRANT PROGRAM AND RESEARCH PROJECT REVIEWER

USDA; *NSF*; *DOD ERDC and SERDP; USEPA-STAR Graduate Fellowship Program; Canadian Competitive Grants Program; Civilian Research and Development Foundation Global Science Centers Program; United States-Israel Binational Agricultural Research and Development (BARD) Fund; other university, state, national and international grant program and research project proposals.*