**Keri L. Carstens**

formerly Keri L. Henderson

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#### EDUCATION & CERTIFICATION

Ph.D. Toxicology, minor Entomology, Iowa State University, 2008

Dissertation: Impact of veterinary antibiotics in the environment

M.S. Toxicology, Iowa State University, 2004

Thesis: Fate of atrazine and metolachlor in a phytoremediation system: mass balance and plant uptake

B.A. Biology and Education, Summa Cum Laude, Wartburg College, Waverly, IA, 2001

Certified Associate in Project Management, Project Management Institute, 2013

#### PROFESSIONAL EXPERIENCE

*Research and Product Development*

Global Regulatory Lead – Seed Applied Technologies and Biologicals Portfolios, Corteva Agriscience, Agriculture Division of DowDuPont, December 2017-present

Lead global regulatory strategy development for two business portfolios (Seed Applied Technologies, and Biologicals), and lead strategy implementation via directional oversight of networks and functions, including identification of key regulatory requirements, establishment of regulatory plans and investment/resourcing strategies. Serve as Regulatory & Stewardship function representative for global Seed Applied Technologies and Biologicals businesses. Lead the proactive strategy for outreach and communication of stewardship activities for pollinator health and best management practices for seed treatments.

Senior Manager - Integrated Product Research & Stewardship, Seed Treatment Enterprise, DuPont Pioneer, February 2014-December 2017

Lead coordination of integrated product research strategy and testing of seed treatments across crops for DuPont’s Seed Treatment Enterprise, to enable advancement of fully integrated products. Lead the proactive strategy for outreach and communication of stewardship activities for pollinator health and best management practices for seed treatments. Responsible for coordinating stewardship assessments for pre-commercial products.

Affiliate Assistant Professor, Iowa State University, Entomology and Toxicology Graduate Programs, 2010-present

Serve on graduate committees, teach, provide scientific input regarding graduate student projects in areas of toxicology methods (GLP), insecticide toxicology, environmental toxicology, entomology and risk assessment

Soy Program Management Lead, DuPont Pioneer, January 2013-February 2014

Led enterprise-level program management team for Pioneer’s soybean platform. Facilitated cross-functional communications and decision making to enable efficient research and development of soybean products. Managed execution of soy project plans through monitoring and analysis of the critical path, and forecasting demand and resolving constraints for resources using effective communication and facilitation skills.

Environmental Safety Assessment Lead, DuPont Pioneer, 2008-2013

Provided global scientific leadership in environmental safety assessment for biotechnology products, including the design and coordination of environmental studies to determine the potential ecological effects and environmental fate of genetically modified products. Combined data from these studies to conduct ecological risk assessments. Designed and staffed Pioneer’s technical and GLP capacity in environmental risk assessment, and led the international team of scientists in areas of ecotoxicology, entomology, environmental fate, field studies and gene flow. Responsible for internal company reviews of new products, and also represent DuPont Pioneer externally in key industry, academic, and regulatory venues globally, communicating risk assessment of crop biotechnology.

U.S. Environmental Protection Agency STAR Fellow, 2005-2008

Designed experiments, performed research, and published results on the fate and significance of veterinary antibiotics in manure-soil and surface water systems; intact soil column studies; surface water microcosms; evaluation of bioavailability using model organisms and biomimetic devices; studies on maintenance of resistance in enteric bacterial populations, mobility of enteric bacteria, and effects of contaminants on invertebrate gut microbial ecology, under the direction of Dr. Joel Coats, Iowa State University Dept. of Entomology and Dr. Tom Moorman, USDA-ARS National Soil Tilth Laboratory

Program Assistant, Iowa Center for Advanced Neurotoxicology, ISU, 2006-2008, part-time

Edited manuscripts for publication; assisted in the writing of grant proposals and manuscripts; managed the Center’s daily activities

Lab Supervisor/Safety Officer, 2004-2006

Mentored undergraduate research interns; coordinated safety and radiation safety training for lab personnel; inventoried radioactive and non-radioactive compounds; managed hazardous waste removal; coordinated undergraduate student workers in Pesticide Toxicology Laboratory, under the direction of Joel Coats, ISU Dept. of Entomology

Graduate Research Assistantship, 2001-2006

Evaluated the environmental fate and effects of pesticides and veterinary antibiotics in soil and water using gas and liquid chromatography, solvent and solid phase extraction, radiotracer studies, enzyme-linked immunoassay, and invertebrate, plant, and microbial bioassays; designed experiments, collected and analyzed data, presented and published findings under the direction of Joel Coats, ISU

Graduate Administrative Assistantship, December 2002-2005

Wrote grant proposals, publications and progress and final reports to granting agencies; assisted Chair of the Department of Entomology, ISU (Joel Coats) with budgets, inventories, and other daily tasks

Program for Women in Science and Engineering Research Internship, Iowa State University, 2000

Research topic: Evaluating the toxicity of bioremediated soil utilizing chemical and biological endpoints. Chemical analysis of pesticide-contaminated soil using GC-NPD, conducted toxicity bioassays using algae, lettuce, and earthworm models to evaluate bioavailability, toxicity, and success of bioremediation techniques. Collected, analyzed, and published data. Under the direction of Joel Coats and Todd Phillips, ISU Dept. of Entomology

Student Research Assistant, Microbiology, Wartburg College, 1998-2001

Prepared microbiology laboratory exercises under the direction of Dr. Roy Ventullo

*Teaching and Outreach*

Global Regulatory Lead – Seed Applied Technologies and Biologicals Portfolios, Corteva Agriscience, Agriculture Division of DowDuPont, December 2017-present

Lead the development and implementation of strategy for outreach and communication of stewardship activities related to pollinator health, benefits of seed treatments and best management practices for seed treatments. Communicate (written and oral) with audiences ranging from regulators, seed company executives, academics, commodity groups, farmers, general public and K-12 students. Designated DuPont representative on Keystone Honey Bee Health Coalition, co-lead Forage Working Group and Bee Integrated Demonstration Project.

Senior Manager - Integrated Product Research & Stewardship, DuPont Pioneer, February 2014-Dec. 2017

Lead the development and implementation of strategy for outreach and communication of stewardship activities related to pollinator health, benefits of seed treatments and best management practices for seed treatments. Communicate (written and oral) with audiences ranging from regulators, seed company executives, academics, commodity groups, farmers, general public and K-12 students. Designated DuPont representative on Keystone Honey Bee Health Coalition, co-lead Forage Working Group and Bee Integrated Demonstration Project.

Guest Lecturer, Iowa State University, Toxicology Methods (BMS/TOX 502), 2013-present

Planned and presented lecture on history, purpose and overview of Good Laboratory Practices; wrote and graded assignments.

Guest Lecturer, Iowa State University, Pesticides in the Environment (ENT/TOX 550), 2004-present

Planned and presented lectures on environmental fate of agrichemicals in water, soil, and air, toxicokinetics, pesticides in plants, microbial degradation of agrichemicals, residue analysis and radiotracers, and risk assessment; wrote and graded exam questions and term projects.

Teaching Assistant, Iowa State University, Soil Microbial Ecology (AGRON/MICRO 485), Fall 2004

Planned and presented lectures for four units including topics such as bioremediation and recalcitrant organics, nitrogen cycle, and microbial processes in soil; assisted with organization and presented pre-laboratory instruction; helped with writing exam questions and grading exams, laboratory notebooks, and assigning final grades under the direction of Dr. Tom Loynachan, ISU Dept. of Agronomy

Instructor, Iowa State University, Toxicology Methods (TOX 502), Spring 2004 & 2006

Planned, organized, prepared materials, and instructed laboratory sessions on environmental fate, radiotracers, and residue analysis with gas and liquid chromatography; wrote and graded laboratory reports

Preparing Future Faculty Fellow, Iowa State University, 2005

Teaching Assistant, Iowa State University, Insecticide Toxicology (ENT/TOX 675), Fall 2003 & 2007

Organized material and instructed students on lab techniques for dose-response tests, residue analysis protocols, gas and liquid chromatography, metabolism studies, radiotracer theory and methods, cholinesterase inhibition using enzyme-linked immunoassay. Wrote and graded laboratory exams.

State of Iowa Teaching License, 2001

Student Teaching, 10th grade biology, Cedar Falls High School, Cedar Falls, IA, Spring 2001

Planned and implemented lessons and developed assessment techniques appropriate for course objectives and students with different interests and backgrounds

Supplemental Instructor, Introduction to Biology (BIO 101), Wartburg College, 1999-2001

Planned and conducted meaningful study sessions to assist non-major students with course material; designed study materials including worksheets, practice tests, and models

Chemistry Tutor, 2000-2001

Assisted a high school student with chemistry principles; designed practice problems and study methods

**PUBLICATIONS**

*Peer-reviewed*

Khrunyk, Y., S. Schiewer, K.L. Carstens, D. Hu, and J.R. Coats. 2016. Uptake of C14-atrazine by prairie grasses in a phytoremediation setting. *Intl.J. Phytoremediation*. 19:104-112.

Carstens, K.L., B. Cayabyab, A. De Schrijver, P.G. Gadaleta, R.L. Hellmich, J. Romeis, N. Storer, F.H. Valicente, and M. Wach. 2014. Surrogate species selection for assessing potential adverse environmental impacts of genetically engineered insect-resistant plants on non-target organisms. *GM Crops & Food*. 5:11-15.

Carstens, K.L., A.D. Gross, T.B. Moorman, and J.R. Coats. 2013. Sorption and photo-degradation processes govern distribution and fate of sulfamethazine in freshwater-sediment microcosms. *Environ. Sci. Technol.*47:10877-83.

Carstens, K.L., J. Anderson, P. Bachman, A. De Schrijver, G. Dively, B. Federici, M. Hamer, M. Gielkins, P. Jensen, W. Lamp, S. Rauschen, G. Ridley, J. Romeis, A. Waggoner. 2012. Genetically modified crops and aquatic ecosystems: considerations for environmental risk assessment and non-target organism testing. *Transgenic Res*. 21:813-842.

Romeis, J., R.L. Hellmich, M.P. Candolfi, K.L. Carstens, et al. 2011. Recommendations for the design of laboratory studies on non-target arthropods for risk assessment of genetically engineered plants. *Transgenic Res.* 20:1-22.

Henderson, K.L. and J.R. Coats [Eds.]. 2010. *Veterinary Pharmaceuticals in the Environment*. American Chemical Society, Washington, D.C. Series 1018.

Hu, D., B.Fulton, K. Henderson, and J. Coats. 2008. Identification of tylosin photoreaction products and comparison of ELISA and HPLC methods for their detection in water. *Environ. Sci. Technol.* 42:2982-7.

Henderson, K.L., J.B. Belden, and J.R. Coats. 2007. Fate of atrazine in grassed phytoremediation systems: mass balance and plant uptake. *Environ. Toxicol. Chem.* 26:1836-1842.

Henderson, K.L., J.B. Belden, and J.R. Coats. 2007. Mass balance of metolachlor in a grassed phytoremediation system. *Environ. Sci. Technol.* 41:4084-4089.

Henderson, K.L., J.B. Belden, S. Zhao, and J.R. Coats. 2006. Phytoremediation of pesticide wastes in soil. *Z. Naturforsch.* 61c, 213-221.

Arthur, E.L., P.J. Rice, P.J. Rice, T.A. Anderson, S.M. Baladi, K.L. Henderson, and J.R. Coats. 2005. Phytoremediation: an overview. *Crit. Rev. Plant Sci.* 24:109-123.

Belden, J.B., B.W. Clark, T.A. Phillips, K.L. Henderson, E.L. Arthur, and J.R. Coats. 2004. Detoxification of pesticide residues in soil using phytoremediation. Chapter 12 in *Pesticide Decontamination and Detoxification*. J.J. Gan, P.C. Zhu, S.D. Aust, and A.T. Lemley [Eds]. pp. 155-167. American Chemical Society, Washington, D.C.

Belden, J.B., T.A. Phillips, K.D. Henderson, B.W. Clark, M.J. Lydy, and J.R. Coats. 2003. Persistence, mobility, and bioavailability of pendimethalin and trifluralin in soil. Chapter 10 in *Environmental fate and effects of pesticides.* J.R. Coats and H. Yamamoto [Eds]. pp. 167-177. American Chemical Society, Washington, D.C.

*Other Publications and Technical Reports*

Carstens, K.L., K. Hayter, and R.J. Layton. 2010. A perspective on problem formulation and exposure assessment of transgenic crops. *IOBC/wprs Bulletin.* Vol. 52: 23-30.

Hu, D., K.L. Henderson, and J.R. Coats. 2009. Fate of transformation products of synthetic chemicals. Chapter in *The* *Handbook of Environmental Chemistry—Degradation of Synthetic Chemicals in the Environment*. A. Boxall [Ed]. pp. 103-120.

Henderson, K.L., T.B. Moorman, and J.R. Coats. 2008. Mobility of tylosin and enteric bacteria in soil columns. Chapter in *Fate of pharmaceuticals in the environment and in water treatment systems.* D. Aga [Ed]. CRC Press, Boca Raton, FL.

Henderson, K.L., T.B. Moorman, and J.R. Coats. 2004. Fate and significance of a veterinary antibiotic in the environment: a laboratory study. Progress Report for the Center for Health Effects of Environmental Contaminants, Iowa City, IA.

Coats, J.R. and K.L. Henderson. 2004. Veterinary antibiotics: transport to and degradation in surface water. Progress Report for the Iowa State Water Resources Research Institute.

Belden, J.B., T.A. Phillips, K.L.D. Henderson, J.R. Coats. 2001. Comparison of chemical and biological endpoints for evaluating the success of phytoremediation of pesticide contaminated soil. Final report to the Center for Health Effects of Environmental Contamination, Iowa City, IA.

Numerous internal DuPont Pioneer technical reports

*In Preparation*

Carstens, K.L., T.B. Moorman, and J.R. Coats. Estimating bioavailability of veterinary antibiotics: comparing biomimetic devices to traditional aquatic invertebrate assays. Submitted to *Environ. Toxicol. Chem.*

*Adhoc Reviewer*

*Transgenic Research, GM Crops, Science of the Total Environment, Environmental Entomology, Ecotoxicology and Environmental Safety*, US Department of Agriculture Biotechnology Risk Assessment Grants Program

#### PRESENTATIONS

*Symposia and Workshops Organized*

Workshop on Surrogate Species Selection for Assessing Adverse Environmental Impacts on Non-target Organisms. June 26-28, 2012. Center for Environmental Risk Assessment, International Life Sciences Institute, Washington, DC.

Carstens, K.L., W. Ridley, S. Duke, and N. Storer. 2010. Comparing Conventional and Biotechnology-based Pest Management. American Chemical Society 239th National Meeting, San Francisco, CA.

Carstens, K.L., R. Hellmich, and J. Romeis. 2009. Regulation of Transgenic Crops: The State of the Science. Entomological Society of America 57th National Meeting, Indianapolis, IN.

Workshop on Problem Formulation of Biotechnology-derived Crops and Aquatic Ecosystems. October 13-15, 2009. Center for Environmental Risk Assessment, International Life Sciences Institute, Washington, DC.

Prihoda, K.R., K.L. Henderson, and J.R. Coats. 2008. Environmental Fate of Transgenic Insecticidal Proteins from Genetically-modified Crops: The Metamorphosis of Ecotoxicology. Entomological Society of America 56th National Meeting, Reno, NV.

Henderson, K.L. and J.R. Coats. 2007. Veterinary Pharmaceuticals in the Environment. American Chemical Society 233rd National Meeting, Chicago, IL.

*Invited Seminars and Presentations\**

Carstens, K.L. 2018. Seed treatment use and regulation. Invited presentation, American Honey Producers Association, San Diego, CA.

Carstens, K.L. 2017. Overview of seed treatment technology and stewardship. Invited presentation, Honey Bee Health Coalition Bee Integrated Project training, Jamestown, ND.

Carstens, K.L. 2016. Development of new seed treatment technologies through the lens of integrated product stewardship. Invited presentation, International Congress of Entomology, Orlando, FL.

Carstens, K.L. 2016. Communicating science to diverse audiences: it's not a science, it's an art. Invited seminar, Iowa State University Toxicology Program, Ames, IA.

Carstens, K.L. 2016. Pollinator stewardship: coordinated approaches across the ag community. Invited webinar, Agronomy Society of America webinar series.

Carstens, K.L. 2015. Overview of seed treatment stewardship and best management practices. Invited presentation, NCCC/NC205 Conference, San Antonio, TX.

Carstens, K.L. 2014. Overview of seed treatment stewardship and best management practices. Invited panelist, University – Industry Consortium, Raleigh, NC.

Carstens, K.L. 2014. Pollinator health: a complex issue requiring coordinated approaches. Keynote panelist, Ozark-Prairie Regional Meeting of the Society of Environmental Toxicology and Chemistry, Kansas City, MO.

Carstens, K.L. 2013. Environmental risk assessment of genetically modified crops. Iowa State University Department of Plant Pathology, Ames, IA.

Carstens, K.L. 2012. Genetically modified crops and aquatic ecosystems: considerations for environmental risk assessment and non-target organism testing. International Congress of Entomology, Daegu, Korea.

Carstens, K.L. 2010. Putting it all together: surrogate species selection and design considerations relevant to aquatic ecosystems. International Symposium on the Biosafety of Genetically Modified Organisms, Workshop on Design Considerations for Laboratory Studies on Non-target Arthropods for Risk Assessment of GM Plants, Buenos Aires, Argentina.

Carstens, K.L., R. Layton, J. Ostrem, and A. Pascual. 2010. Surrogate species for regulatory risk assessment—a valid concept for GM crops? International Symposium on the Biosafety of Genetically Modified Organisms, Workshop on Ecological Studies of Arthropod Species for Regulatory Non-target Risk Assessment of GM Crops, Buenos Aires, Argentina.

Carstens, K.L. 2010. Problem formulation for the risk assessment of genetically-modified crops in aquatic ecosystems. 31st Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Portland, OR.

Carstens, K.L. 2010. Considerations for environmental risk assessment assay development: differences between conventional pesticides and biotech crops. American Chemical Society 239th National Meeting, San Francisco, CA.

Carstens, K.L. 2010. Environmental risk assessment for biotech crops from an industry perspective. Iowa State University Seminar Series [January 25, 2010].

Carstens, K.L., R. Layton, J. Ostrem, and A. Pascual. 2009. The surrogate species concept: a Lepidoptera case study. Annual Meeting of the Entomological Society of America, Indianapolis, IN.

Carstens, K.L. and L.S. Higgins. 2009. Easy being green? Perspectives from industry on green technology and pest management. Annual Meeting of the Entomological Society of America, Indianapolis, IN.

Henderson, K.L., K. Hayter, and R.J. Layton. 2009. A perspective on problem formulation and exposure assessment of transgenic crops. IOBC-WPRS 4th Meeting on Ecological Impact of Genetically Modified Organisms, Rostock, Germany.

Henderson, K.L. and L.S. Higgins. 2009. Easy being green? Perspectives from industry on green technology and pest management. Annual Meeting of the North Central Branch of the Entomological Society of America, St. Louis, MO.

Henderson, K.L., K.R. Prihoda, M.S. Harper, and R.J. Layton. 2008. Putting it in perspective: a weight of evidence approach to transgenic protein exposure characterization. Entomological Society of America 56th National Meeting, Reno, NV.

Henderson, K.L., T.B. Moorman, and J.R. Coats. 2008. Fate of sulfamethazine in surface water microcosms and bioaccumulationin sediment-dwelling invertebrates. American Chemical Society 236th National Meeting, Philadelphia, PA.

Henderson, K.L., A.M. Jessick, T.B. Moorman, and J.R. Coats. 2007. Estimating bioavailability of veterinary antibiotics: comparing passive sampling devices to traditional aquatic invertebrate assays. 28th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Milwaukee, WI.

Henderson, K.L., T.B. Moorman, and J.R. Coats. 2007. Bioavailability of veterinary antibiotics in surface water. American Chemical Society 233rd National Meeting, Chicago, IL.

Henderson, K.L., D. Hu, and J.R. Coats. 2006. Environmental fate of a veterinary antibiotic: tylosin. 27th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Montreal, Canada.

Henderson, K.L. and J.R. Coats. 2004. Neonicotinoid insecticides. Seed Treatment Workshop, Seed Science Center, Iowa State University, Ames, IA, July 29, 2004.

Henderson, K.L., J.B. Belden, and J.R. Coats. 2004. Mass balance of atrazine and metolachlor in phytoremediated soil systems. Young Scientist Research Recognition Symposium, Agrochemicals Division and Women Chemists’ Committee, American Chemical Society 227th National Meeting, Anaheim, CA.

Henderson, K.L., T.A. Phillips, T.B. Moorman, and J.R. Coats. 2003. Tylosin: mobility in a manure-soil matrix and dissipation in surface water. 24th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Austin, TX.

\*Numerous presentations to DuPont internal audiences (employees, management, sales force)

*Platform Presentations*

Carstens, K.L. 2012. Genetically modified crops and aquatic ecosystems: considerations for environmental risk assessment and non-target organism testing. Ozark-Prairie Regional Meeting of the Society of Environmental Toxicology and Chemistry, Ankeny, IA.

Henderson, K.L., T.B. Moorman, and J.R. Coats. 2007. Degradation and bioavailability of sulfamethazine in pond water microcosms. Ozark-Prairie Regional Meeting of the Society of Environmental Toxicology and Chemistry, St. Louis, MO.

Henderson, K.L., Y. Khrunyk, and J.R. Coats. 2005. Differential metabolism and uptake of atrazine by three prairie grass species. Joint Regional Meeting of the Ozark-Prairie and MidSouth Chapters of the Society of Environmental Toxicology and Chemistry, Carbondale, IL.

Henderson, K.L, T.A. Phillips, T.B. Moorman, and J.R. Coats. 2004. Tylosin: mobility in a manure-soil matrix and dissipation in surface water. American Chemical Society 228th National Meeting, Philadelphia, PA.

Henderson, K.L. 2004. Fate of atrazine and metolachlor in a phytoremediation system: mass balance and plant uptake. M.S. Thesis Seminar, Department of Entomology, Iowa State University, Ames, IA.

Henderson, K.L., T.A. Phillips, T.B. Moorman, and J.R. Coats. 2004. Tylosin: mobility in a manure-soil matrix and dissipation in surface water. Joint Regional Meeting of the Ozark-Prairie and Midwest Chapters of the Society of Environmental Toxicology and Chemistry, LaCrosse, WI.

*Poster Presentations*

Carstens, K.L., K. O’Bryan, M. Burnison. 2015. Agronomic assessment of neonicotinoid insecticidal seed treatments on corn and soybeans. Entomological Society of America, Minneapolis, MN.

Carstens, K.L., P. Gadaleta, R.L. Hellmich, M. McLean, A. Raybould, J. Romeis, N.P. Storer, M. Wach, and A. Roberts. 2012. Surrogate species selection for assessing adverse environmental impacts on non-target organisms. International Symposium on the Biosafety of Genetically Modified Organisms, St. Louis, MO.

Henderson, K.L., T.B. Moorman, and J.R. Coats. 2008. Exposure and impact of a veterinary antibiotic to sediment invertebrates. 4th Pan Pacific Conference on Pesticide Science, Honolulu, HI.

Henderson, K.L., T.B. Moorman, D. Aga, J. Bidwell, N. Cooper, C. Seery, and J.R. Coats. 2008. Fate and ecotoxicology of veterinary macrolide and sulfonamide antibiotics in surface water. USDA-CSREES National Water Conference, Reno, NV.

Henderson, K.L., T.B. Moorman, and J.R. Coats. 2007. Exposure and impact of a veterinary antibiotic to sediment invertebrates. 28th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Milwaukee, WI.

Henderson, K.L., T.B. Moorman, and J.R. Coats. 2007. Fate of sulfamethazine in surface water microcosms. American Chemical Society 234th National Meeting, Boston, MA.

Henderson, K.L., T.B. Moorman, and J.R. Coats. 2006. Bioavailability of veterinary antibiotics in environmental matrices. 27th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Montreal, Canada.

Henderson, K.L. 2006. Bioavailability of veterinary antibiotics in environmental matrices. EPA Graduate Fellowship Conference, Washington, DC.

Henderson, K.L., D. Hu, T.B. Moorman, and J.R. Coats. 2005. Bioavailability of tylosin in environmental matrices. 26th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Baltimore, MD.

Henderson, K.L., D. Hu, T.B. Moorman, and J.R. Coats. 2005. Bioavailability of tylosin in environmental matrices. American Chemical Society 230th National Meeting, Washington, DC.

Henderson, K.L., T.A. Phillips, T.B. Moorman, and J.R. Coats. 2004. Dissipation of tylosin in surface water. 4th World Congress of the Society of Environmental Toxicology and Chemistry, Portland, OR.

Henderson, K.L., J.B. Belden, and J.R. Coats. 2004. Mass balance of atrazine and metolachlor in soil phytoremediation systems. 4th World Congress of the Society of Environmental Toxicology and Chemistry, Portland, OR.

Henderson, K.L., J.B. Belden, D. Hu, and J.R. Coats. 2004. Mass balance of 14C-metolachlor in a phytoremediation system. American Chemical Society 228th National Meeting, Philadelphia, PA.

Henderson, K.L., J.B. Belden, and J.R. Coats. 2004. Fate of 14C-atrazine and 14C-metolachlor and metabolites in vegetated and unvegetated soil systems. Joint Regional Meeting of the Ozark-Prairie and Midwest Chapters of the Society of Environmental Toxicology and Chemistry, LaCrosse, WI.

Henderson, K.L., J.B. Belden, and J.R. Coats. 2003. Fate of 14C-atrazine and 14C-metolachlor and metabolites in vegetated and unvegetated soil systems. 24th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Austin, TX.

Henderson, K.L., J.B. Belden, and J.R. Coats. 2003. Fate of 14C-atrazine and 14C-metolachlor and metabolites in vegetated and unvegetated soil systems. American Chemical Society 226th National Meeting, New York, NY.

Henderson, K.L., J.B. Belden, and J.R. Coats. 2003. Fate of 14C-atrazine and 14C-metolachlor and metabolites in vegetated and unvegetated soil systems. Ozark-Prairie Chapter Regional Meeting of the Society of Environmental Toxicology and Chemistry, St. Louis, MO.

Henderson, K.L.D., J.B. Belden, and J.R. Coats. 2002. Fate of 14C-atrazine and metabolites in vegetated and unvegetated soil systems. 23rd Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America). Salt Lake City, UT.

Henderson, K.L.D., J.B. Belden, and J.R. Coats. 2002. Fate of 14C-atrazine and metabolites in vegetated and unvegetated soil systems. 224th National Meeting of the American Chemical Society. Boston, MA.

Henderson, K.L.D., J.B. Belden, J.A. Grodnitzky, and J.R. Coats. 2002. Sodium thiosulfate-aided degradation of aged and fresh metolachlor residues in soil. Ozark-Prairie Regional Chapter of Society of Environmental Toxicology and Chemistry. Omaha, NE.

Deppe, K.L., J.B. Belden, T.A. Phillips, J.R. Coats. 2000. Evaluating the toxicity of bioremediated soil utilizing chemical and biological endpoints, Program for Women in Science and Engineering internship final program, Iowa State University.

*Contributing Author*

Coats, J.R., K.L. Henderson, Y. Khrunyk. 2007. Uptake and transformation of atrazine and metolachlor in prairie grasses for phytoremediation. 28th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Milwaukee, WI.

Jessick, A.M., K.L. Henderson, and J.R. Coats. 2007. Bioavailability of the veterinary antibiotic erythromycin in aquatic microcosms. 28th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Milwaukee, WI.

Hu, D., K.L. Henderson, and J.R. Coats. 2007. Mobility of the veterinary antibiotic tylosin in agricultural soil columns. American Chemical Society 233rd National Meeting, Chicago, IL.

Moorman, T.B., K.L. Henderson, and J.R. Coats. 2007. Degradation and bioavailability of sulfamethazine in pond water microcosms. American Chemical Society 233rd National Meeting, Chicago, IL.

Hu, D., K.L. Henderson, and J.R. Coats. 2005. Development of an analytical method for the study of the veterinary antibiotic tylosin in the environment. Joint Regional Meeting of the Ozark-Prairie and MidSouth Chapters of the Society of Environmental Toxicology and Chemistry, Carbondale, IL.

Coats, J.R., K.L. Henderson, J.B. Belden, S. Zhao. 2004. Phytoremediaton of pesticide wastes in soil. Invited presentation in OECD Workshop “Phytoremediation: Environmental and Molecular Biological Aspects,” Matrahaza, Hungary.

Belden, J.B., K.L. Henderson, and J.R. Coats. 2003. Fate of 14C-pendimethalin in vegetated and unvegetated soil systems. 24th Annual Meeting of the Society of Environmental Toxicology and Chemistry (North America), Austin, TX.

Belden, J.B., T.A. Phillips, K.L.D. Henderson, E.L. Arthur, and J.R. Coats. 2001. Phytoremediation of pesticides in field microplots. 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry. Baltimore, MD.

Phillips, T.A., E.L. Arthur, K.L.D. Henderson, J.B. Belden, and J.R. Coats. 2001. Phytoremediation of pesticides in field microplots. 222nd National Meeting of the American Chemical Society. Chicago, IL.

Phillips, T.A., J.B. Belden, K.L. Deppe, E.L. Arthur, and J.R. Coats. 2001. Evaluating success of phytoremediation of pesticides in field microplots using chemical and biological endpoints. Ozark-Prairie and South Central Joint Regional Chapters of Society of Environmental Toxicology and Chemistry. Stillwater, OK.

#### TECHNICAL SKILLS

Bioavailability and toxicity studies with terrestrial insects, aquatic invertebrates, earthworms, algae, lettuce, corn, and prairie grasses

Microbiology, including isolation, identification, culture, and antibiotic resistance development testing

Molecular biology techniques, DNA extraction, PCR, denaturing gradient gel electrophoresis

Radiotracers, 14C and 3H

Liquid scintillation counting, sample oxidizer, and BetaRAM HPLC radiodetector

High pressure liquid chromatography

Enzyme immunoassay

Gas chromatography

Degradation studies of pesticides and other organic contaminants in soil and water matrices

Solvent and solid phase extraction

Statistical analysis (SAS, SigmaPlot, Statview)

Computer skills (Word, Excel, PowerPoint)

Science communication (written and oral)

Project management - Certified Associate in Project Management, Project Management Institute, 2013

**PATENTS AND RESEARCH GRANTS**

Carstens, K.L., A. Cochran, J. Haegele, S. Mitchell, K.A. O’Bryan, M. Reisinger, M. Toapanta, A. Trepanier, S. Paszkiewicz. Crop product development and seed treatments. Patent Application WO2017035161A1. 08242015.

Coats, J.R., T.B. Moorman, J. Bidwell, D. Aga, and K.L. Henderson. 2006. Fate and Significance of Veterinary Antibiotics in Surface Water. U.S. Department of Agriculture National Research Initiative, Program 26.0 Water and Watersheds. $399,984.

Henderson, K.L. 2005. Impact of Veterinary Antibiotics in Terrestrial Ecosystems. U.S. Environmental Protection Agency STAR Fellowship. $104,000.

Coats, J.R., T.B. Moorman, T.A. Phillips, J.B. Belden, and K.L.D. Henderson. 2003. Fate and significance of a veterinary antibiotic in the environment: a laboratory study. Center for Health Effects of Environmental Contamination, Iowa City, IA. $19,976.

Coats, J.R., T.L. Carson, T.A. Phillips, and K.L.D. Henderson. 2003. Veterinary antibiotics: transport to and degradation in surface water. Iowa State Water Resources Research Institute. $21,900.

#### AWARDS AND HONORS

DuPont Pioneer Worldwide Research Award nominee – STE Integrated Product Development, 2017

DuPont Working Mother of the Year award, Working Mother magazine, 2015

Young Alumni Award, Wartburg College, 2015

Outstanding Regional Chapter Member, Society of Environmental Toxicology and Chemistry, 2014

Leadership Iowa, Class of 2013-2014

Zaffarano Prize for superior performance in publishable research, honorable mention, Iowa State University, 2008

Second place Student Poster Competition and Travel Award winner, American Chemical Society 234th National Meeting, Agrochemicals Division, 2007

Herbert Osborn Award for Professional Performance, ISU Dept. of Entomology, 2007

First place, Ph.D. Student Platform Competition, Ozark-Prairie Regional Meeting of the Society of Environmental Toxicology and Chemistry, 2007

U.S. Environmental Protection Agency STAR Graduate Fellowship, 2005-present

First place, Student Platform Competition, Joint Regional Meeting of Ozark-Prairie and MidSouth Chapters of the Society of Environmental Toxicology and Chemistry, 2005

American Chemical Society 230th National Meeting, Agrochemicals Division Travel Award, 2005

Sigma Xi, scientific research society, Member, 2005

Preparing Future Faculty Fellow, 2005

American Chemical Society 228th National Meeting, Agrochemicals Division Travel Award, 2004

Young Scientist Research Recognition Award, Runner-up, Agrochemicals Division, American Chemical Society 227th National Meeting, 2004

First place, Student Platform Competition and second place Student Poster Competition, Joint Regional Meeting of Ozark-Prairie and Midwest Chapters of the Society of Environmental Toxicology and Chemistry, 2004

Third place, Student Platform Competition, Iowa State University Toxicology Program Retreat, 2003

Runner-up, Student Poster Competition, American Chemical Society 226th National Meeting, Agrochemical Division, 2003

Second place, Student Poster Competition, Ozark-Prairie Chapter Regional Meeting of the Society of Environmental Toxicology and Chemistry, 2003

American Chemical Society 226th National Meeting, Agrochemicals Division Travel Award, 2003 Phi Kappa Phi honor society, 2003

Gamma Sigma Delta professional agriculture honor society, 2003

Society of Environmental Toxicology and Chemistry 23rd Annual Meeting Student Travel Award, 2002

American Chemical Society 224th National Meeting, Agrochemicals Division Travel Award, 2002

American Chemical Society Travel Award for 224th National Meeting, local chapter, Ames, IA, 2002

Third place, Student Poster Competition, Ozark-Prairie Chapter Regional Meeting of the Society of Environmental Toxicology and Chemistry, 2002

Premium for Academic Excellence Award, 2001-2002, Iowa State University Graduate College

Most Outstanding Senior in Biology Education, Wartburg College, May 2001

Who’s Who Among Students in American Universities and Colleges, 2000-2001

Dean’s List, Wartburg College, 1997-2001

Wartburg Regents Academic Scholarship, 1997-2001

William & Pauline Hughes Scholarship, for outstanding achievement in secondary education, 2000

Dr. H.W. Rathe Scholarship, for outstanding achievement in biological and chemical sciences, 2000

Franklin Saemann Foundation Scholarship, for outstanding academic achievement, 1998-1999

Track & Field: Team captain 2000-2001, varsity letter 1998-2001, IIAC Academic All-Conference, Most Inspirational 2000-2001

Alpha Chi: national college scholarship honor society, recognizing top 10% of graduating class, 2000

Kappa Delta Pi: education honor society, 1999

Beta Beta Beta: biological honor society, 1998

**PROFESSIONAL ASSOCIATIONS**

American Chemical Society, 2001-present

American Seed Trade Association, 2014-present

Entomological Society of America, 2008-present

Leadership Iowa Alumni Association, 2014-present

Society of Environmental Toxicology and Chemistry, 2001-present

**SERVICE AND OUTREACH**

*Professional Organizations*

Society of Environmental Toxicology and Chemistry, Ozark-Prairie Chapter

Past President, 2013-2015

President, 2011-2013

Board member, 2007-present

Secretary and Board member, January 2003-2006

American Chemical Society Agrochemicals Division

Strategic Planning Committee, 2011-2013

Executive Committee Member, 2008-2012

Long-Range Planning Committee Student Representative, 2007

Symposium Organizer, 2006

CropLife America, Pollinator Issues Management Team, 2014-present

Agricultural Biotechnology Stewardship Technical Committee on Non Target Organisms

Committee Member, 2008-2013

Organizer, Workshop on Aquatics Testing, 2008-2012

International Society for Biosafety Research member, 2010-2014

*Community/Volunteer Organizations*

Volunteer speaker, Careers in science, Des Moines Hoover High School, 2013-present

Volunteer speaker, Des Moines Chrysallis afterschool program, 2014 and 2016

Gifts in Ministry Team Member, Bethesda Lutheran Church, Ames, IA, 2011-2015

Iowa State University Program for Women in Science and Engineering, 2013-14

Taking the Road Less Traveled interactive session leader

Volunteer Science Fair Judge, Hanawalt Elementary School, Des Moines, IA 2010-2014

Polk County Conservation TrashBash volunteer, 2012-2014

Iowa State University, Guest Lecturer (see above Teaching)

Guest Speaker

Career presentations – 2017-2018 school year: FemSTEM, Franklin 4H group, Gilbert Middle School

“My Pioneer Career and ISU,” Program for Women in Science and Engineering, Iowa State University, 2010

“So what do I do now? College, career options, and life after GHS,” Grinnell High School Academic Honors Banquet, 2005

“Pesticides and Soils,” Grinnell Middle School 8th grade Earth Science classes, 2005

WOI AM 640 radio discussing my M.S. and Ph.D. research, 2005

“Toxicology and Graduate School at ISU,” Wartburg College, 2004 & 2005

Iowa State University Toxicology Graduate Student Organization

President, 2005-2006

Recruitment Committee Chair, August 2004-2005; help organize poster session and college visits

Department of Entomology Social Committee member, Iowa State University, 2003-2006

ScienceBound session leader, Iowa State University, 2005