

CURRICULUM VITAE

CAROLINE E. SCRUGGS, PhD, PE

University of New Mexico
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EDUCATION

PhD, Environment & Resources, Stanford University, June 2012
MS, Environmental Engineering (thesis option), Virginia Tech, June 1996
BS, Civil Engineering (Cum Laude), Virginia Tech, August 1994

Rising Environmental Leaders Program: Washington, D.C., March 2012
Design Thinking Certificate, Stanford University, September 2011
Summer Institute for Entrepreneurship, Stanford Business School, July 2008
Professional Engineer's (PE) License, obtained in 2000 (still active)

ACADEMIC EXPERIENCE

Assistant Professor, Community and Regional Planning, University of New Mexico, 2012-present. Courses designed and taught: Planning Healthy and Sustainable Communities; Water and Energy in NM: Conversations on Our Common Future; Environmental Issues, Stakeholders, and Politics; Analytical Methods for Planners.

Graduate Teaching Assistant, Emmett Interdisciplinary Program in Environment and Resources (E-IPER), Stanford University, 2008.

Visiting Lecturer/Course Developer, School of Civil and Environmental Engineering, Virginia Tech, 2006.

Visiting Lecturer, School of Public Health, University of North Carolina, 2005-2006.

Visiting Lecturer, School of Medicine, University of Kansas, 2000-2004.

Graduate Research Assistant, Environmental Engineering Division, VA Tech, 1995-96.

Graduate Teaching Assistant, School of Civil and Environmental Engineering, VA Tech, 1994-96.

Research Assistant, Engineering Science and Mechanics Dept., VA Tech, 1993.

Westinghouse Fellowship Researcher, Engineering Science and Mechanics Dept., VA Tech, 1992.

PROFESSIONAL EXPERIENCE

Intern, International Chemical Secretariat (ChemSec, a nonprofit organization), Göteborg, Sweden, Fall 2008, 2009, and 2010.

- Interviewed companies participating in ChemSec's business group to learn about their voluntary chemicals management strategies, as well as how various international chemicals management policies affect their ability to control their supply chains and deliver safe products to the public.

- Learned about and participated in ChemSec's work and lobbying efforts in the European nonprofit sector.

Intern, Swedish Chemicals Agency (KemI), Stockholm, Sweden, Fall 2008.

- Assisted with design of a research project prepared for dissenting EU Member States to study implications of different interpretations of hazardous chemical allowances in consumer products under the EU's REACH legislation.
- Learned about REACH and GHS legislations through conferences, meetings, projects, and interviews with KemI staff and outside experts in Stockholm.
- Examined REACH's effects on numerous stakeholder groups and their reactions to the new legislation.

Lead Process Environmental Engineer, Black & Veatch (B&V) Corporation's Advanced Environmental Technologies Division, 1996-2006.

- Lead process specialist on local to global water quality projects, from small-scale studies to multi-billion dollar design projects.
- Collaborated with scientists, researchers, professors, manufacturers, and clients on environmental projects, presentations, and publications.
- Participated in project proposals and pursuits.
- Involved in numerous meetings involving stakeholders and/or community members for proposed and existing projects.
- Developed the emerging issue of *chemicals of concern and endocrine disrupting chemicals* in water and wastewater as a Strategic Initiative for B&V, helping B&V become a leader in this area.

RESEARCH ACTIVITY AT UNM

Grants Awarded

NSF CREST Center for Water and the Environment Grant, *Engaging Underrepresented Minority Students in STEM Careers through the Center for Water and the Environment*, \$5,000,000, 5-year grant, Senior Personnel/Collaborator (4/1/2014-3/31/2019).

UNM Research Allocation Committee Grant, *Unregulated Hazardous Chemicals in Consumer Products: How Do Parents' Understanding, Perspectives, and Socioeconomics Influence Children's Exposure?* \$4,000, PI (7/01/2013-12/18/2014).

Unfunded Research

Investigation of Bikeshare Feasibility in Albuquerque in Collaboration with City Planners (as part of a UNM service-learning course), 2012-14.

PUBLICATIONS

Published Peer-Reviewed Articles

Effect of Company Size on Potential for REACH Compliance and Selection of Safer Chemicals, Environmental Science and Policy, (2015) 79-91, DOI: 10.1016/j.envsci.2014.10.001, C.E. Scruggs, L. Ortolano, M.P. Wilson, M.R. Schwarzman.

Why Leading Consumer Product Companies Develop Proactive Chemical Management Strategies, Business and Society, (published online first in 2014) DOI: 10.1177/0007650314536393, C.E. Scruggs and H. Van Buren.

The Role of Chemical Policy in Improving Supply Chain Knowledge and Product Safety, Journal of Environmental Studies and Sciences, (2014) 4:132-141, C.E. Scruggs, L. Ortolano, M.R. Schwarzman, M.P. Wilson.

Reducing Hazardous Chemicals in Consumer Products: Proactive Company Strategies, Journal of Cleaner Production, 44 (2013) 105-114, C.E. Scruggs.

Creating Safer Consumer Products: The Information Challenges Companies Face, Environmental Science and Policy, 14 (2011) 605-614, C.E. Scruggs and L. Ortolano.

EDCs in Wastewater: What's the Next Step?, Water Environment & Technology, March 2005, C.E. Scruggs, G.L. Hunter, E.M. Snyder, B. Long, and S. Snyder.

Not-So-Simple Disinfection Strategies, Water Environment & Technology, December 2004, C.L. Wallis-Lage, C.E. Scruggs, G.L. Hunter, and R. Huber.

Biological Phosphorus Removal, Water Environment & Technology, February 2003, J.L. Barnard and C.E. Scruggs.

Evaluation of Filamentous Microorganism Growth Factors in an Industrial Wastewater Activated Sludge System, Water Science and Technology, April 1998, C.E. Scruggs and C.W. Randall.

Conference Proceedings

Disinfection Strategies: Not as Simple as They Used to Be, North Carolina Water Environment Association Annual Conference Proceedings, November 2005, C.L. Wallis-Lage, G.L. Hunter, C.E. Scruggs.

Endocrine Disrupting Chemicals in Wastewater, North Carolina Water Environment Association Annual Conference Proceedings, November 2005, C.E. Scruggs.

A Proactive Approach to Managing Nutrient Loads in Las Vegas Bay and Lake Mead, Water Environment Federation Annual Conference Proceedings, October/November 2005, I. Rackley, C.E. Scruggs, T.L. Johnson, and D. Karafa.

Are We Ready to Begin Permitting EDCs?, Water Environment Federation Annual Conference Proceedings, October/November 2005, G.L. Hunter, E.A. Kobylinski, C.E. Scruggs.

Addressing EDCs in Wastewater, South Carolina Water Environment Association Conference Proceedings, March 2005, C.E. Scruggs.

Could EDC Control Change Disinfection Practices at WWTPs?, Water Environment Federation Disinfection 2005 Conference Proceedings, February 2005, C.E. Scruggs, G.L. Hunter, C.L. Wallis-Lage.

Blend It or Treat It? Strategies for Dealing with Wet Weather Flows at WWTPs, North Carolina Water Environment Association Conference Proceedings, November 2004, C. deBarbadillo, D. Pond, and C.E. Scruggs.

EDCs in Wastewater, Water Environment Federation WEFTEC Conference Proceedings, October 2004, C.E. Scruggs, G.L. Hunter, S. Snyder, B. Long, E.M. Snyder.

GAOs or Secondary Release? Causes and Prevention of EBPR Failure, Water Environment Federation Annual Conference Proceedings, October 2003, C.E. Scruggs and J.L. Barnard.

Ballasted Flocculation: A Wet-Weather Treatment Solution?, Water Environment Federation Annual Conference Proceedings, October 2001, C.E. Scruggs and C.L. Wallis-Lage.

Published Professional Reports and Articles

Information on Chemicals in Electronic Products: A study of needs, gaps, obstacles, and solutions to provide and access information on chemicals in electronic products, Report for the United Nations Environment Program's (UNEP) Strategic Approach on International Chemicals Management (SAICM), August 2011, N. Nimpuno and C.E. Scruggs.

Protecting Consumers and the Environment: A Comparison of Approaches to Developing Restricted Substance Lists by Makers of 'Stuff We All Use,' Report for the International Chemical Secretariat (ChemSec, an international NGO), May 2009, C.E. Scruggs.

Effects of Wastewater Treatment on Microconstituents and Endocrine Disrupting Compounds, Technical Practice Update for the Water Environment Federation, June 2007, C.E. Scruggs.

EDCs in Wastewater: What's Next?, Water & Waste Treatment, January 2005, C.E. Scruggs and F. Rogalla.

Academic Publications and Reports

Bike Share Mobility: Exploring Cultural and Financial Viability in Albuquerque, supervised and edited the work of Andrea Aragon, Taylor Blueher, Ray Holland, Ashley Hooper, Estacia Huddleston, Priscila Poliana, and Michel Wingard in Planning Sustainable Communities course, a deliverable to the City of Albuquerque and interested community members, December 2013.

Bike Share Guide for the City of Albuquerque, supervised and edited the work of Maria Lohmann and Shavone Otero in Planning Sustainable Communities course, a deliverable to the City of Albuquerque and interested community members, December 2012.

Sustainable SITES Final Report, supervised and edited the work of Joe Affinati, Lesley Maurer, and Michaela Shirley in Planning Sustainable Communities course, a deliverable to the City of Albuquerque Parks and Recreation and interested community members, December 2012.

Minimizing Unregulated Hazardous Chemicals in Consumer Products: Challenges, Strategies, and Motivations of Proactive Companies. Dissertation submitted to The Emmett Interdisciplinary Program in Environment and Resources and the Committee on Graduate Studies of Stanford University. Caroline Scruggs, April 2012.

PRESENTATIONS Invited Lectures

Unregulated Hazardous Chemicals in Consumer Products: Interdisciplinary Research on an Environmental Health Problem, Invited lecture to the UNM Department of Economics, April 2013, C.E. Scruggs.

Creating Safer Consumer Products: The Information Challenges Companies Face, Invited lecture at Lund University Centre for Sustainability Studies, Lund University, Sweden, November 2010, C.E. Scruggs.

Removing Hazardous Substances from Products & Supply Chains, Invited talk at the Stanford University Product Realization Network's Sustainable Manufacturing Conference, June 2009, C.E. Scruggs.

Removing Hazardous Substances from Products & Supply Chains: Observations from the EU, Invited talk at the National Environmental Partnership Summit, May 2009, C.E. Scruggs.

Roll-Out of the SIN List: Observations from the EU, Invited talk at the City of San Francisco's Substitute It Now: Understanding the Origins and Exploring the Potential of ChemSec's Bold List of "Bad Actor" Chemicals Workshop, January 2009, C.E. Scruggs.

California, KEMI, & Questions About Chemicals, Invited Lecture at the Swedish Chemicals Agency (KEMI), November 2008, C.E. Scruggs.

Managing Chemicals to Protect the Environment & Human Health, Invited lecture In Stanford University's Civil and Environmental Engineering Department, February 2008, C.E. Scruggs.

Removing EDCs from Wastewater – How and Where?, Invited talk at the U.K. Chartered Institution of Water and Environmental Management Specialty Conference: Endocrine Disrupting Chemicals in the Water Environment, March 2006, C.E. Scruggs and F. Rogalla.

Featured Speaker in *Emerging Contaminants in Wastewater* Webcast, Water Environment Federation Production, December 2005, D. Sedlak, S. Snyder, C.E. Scruggs, R. Deeb (over 1,000 participants via internet).

Conference Presentations

Bike Share: A Catalyst for Community Action and Engaged Learning, New Mexico APA 2014 Conference, September 2014, C.E. Scruggs, P. Morris, J. Luna, C. Malagodi, M. Lohmann.

Public Perception and Understanding Related to Hazardous Chemicals in Consumer Products, Association for Environmental Studies and Sciences 2014 Conference, June 2014, C.E. Scruggs and J. Thacher.

International Generation and Flow of E-waste: Consequences for Human and Environmental Health and Recommendations for a More Sustainable Future, Association for Environmental Studies and Sciences Conference: Linking Rural & Urban Societies & Ecologies, June 2013, C.E. Scruggs and N. Nimpuno.

Challenges of voluntary chemicals management strategies for protecting human and environmental health: lessons for Toxic Substances Control Act reform in the US, Association for Environmental Studies and Sciences Conference: Linking Rural &

Urban Societies & Ecologies, June 2013, C.E. Scruggs, L. Ortolano, M.P. Wilson, M.R. Schwarzman.

A Business Case for Chemicals Policy Reform in the United States: Challenges of Voluntary Chemicals Management Strategies for Protecting Human and Environmental Health, Elsevier's Environmental Health 2013: Science and Policy to Protect Future Generations Conference, March 2013, C.E. Scruggs, L. Ortolano, M.P. Wilson, M.R. Schwarzman.

A Survey of Consumer Product Companies to Explore REACH Understanding and Compliance, Flow of Chemicals Information in Supply Chains, and Unmet Information Needs, Elsevier's Environmental Health 2013: Science and Policy to Protect Future Generations Conference, March 2013, C.E. Scruggs.

Approaches of Several Proactive Multinational Companies to Removing Hazardous Substances from Products & Supply Chains, American Chemical Society Conference, March 2010, C.E. Scruggs.

A Holistic Approach to Managing the EDC Issue, Water Environment Federation Annual Conference, October 2006, C.E. Scruggs, A.E. Rimer, F. DiGiano.

Addressing EDCs in Wastewater, North Carolina Water Environment Association Annual Conference, November 2005, C.E. Scruggs.

Disinfection Strategies: Not as Simple as They Used to Be, North Carolina Water Environment Association Annual Conference, November 2005, C.L. Wallis-Lage, G.L. Hunter, C.E. Scruggs.

Are We Ready to Begin Permitting EDCs?, Water Environment Federation Annual Conference, October/November 2005, G.L. Hunter, E.A. Kobylinski, C.E. Scruggs.

A Proactive Approach to Managing Nutrient Loads in Las Vegas Bay and Lake Mead, Water Environment Federation Annual Conference, October/November 2005, C.E. Scruggs, I. Rackley, T.L. Johnson.

EDCs in Wastewater, Georgia/South Carolina/North Carolina American Water Works Association Drinking Water Technology Forum, October 2005, C.E. Scruggs.

Endocrine Disrupting Chemicals in Wastewater, Kentucky/Tennessee Water Professionals Conference, September 2005, C.E. Scruggs.

Removing EDCs from Wastewater: Reuse Concerns, Georgia Water and Pollution Control Association Annual Conference, July 2005, C.E. Scruggs.

Factoring the Removal of Endocrine Disrupting Chemicals into Wastewater Treatment Plant Design, American Water Works Association Annual Conference and Exposition, June 2005, E.M. Snyder and C.E. Scruggs.

Endocrine Disrupting Chemicals in Wastewater, North Carolina Water Environment Association Spring Conference, April 2005, C.E. Scruggs.

EDCs in Wastewater, California Water Environment Association Annual Conference, April 2005, C.E. Scruggs.

Addressing EDCs in Wastewater, South Carolina Water Environment Association Annual Conference, March 2005, C.E. Scruggs.

Endocrine Disruptors and Pharmaceuticals in the Environment: Overview and Implications for the Water Industry, Kansas State University Environmental Conference, February 2005, E.M. Snyder and C.E. Scruggs.

Could EDC Control Change Disinfection Practices at WWTPs?, Water Environment Federation Disinfection 2005 Conference, February 2005, C.E. Scruggs.

Blend It or Treat It? Strategies for Dealing with Wet Weather Flows at WWTPs, North Carolina Water Environment Association Annual Conference, November 2004, C.E. Scruggs.

EDCs in Wastewater: What's the Next Step?, Water Environment Federation Annual Conference, October 2004, C.E. Scruggs, G.L. Hunter, S. Snyder, B. Long, E.M. Snyder.

A Proactive Approach to Determining System Modification Requirements to Meet Stringent Limits on Nutrients and Other Contaminants, California Water Environment Association Annual Conference, April 2004, C.E. Scruggs.

Trouble-Shooting BPR, California Water Environment Association Annual Conference, April 2004, C.E. Scruggs and J.L. Barnard.

EDCs and PPCPs: What Are They, Where Do They Come From, and Why Do We Care?, B&V Technology Transfer Session, October 2003, C.E. Scruggs.

GAOs or Secondary Release? Causes and Prevention of EBPR Failure, Water Environment Federation Annual Conference, October 2003, C.E. Scruggs and J.L. Barnard.

Ballasted Flocculation: A Wet-Weather Treatment Solution?, Water Environment Federation Annual Conference, October 2001, C.E. Scruggs.

Stretching Technologies for Cost Effective Reuse, South Carolina Environmental Conference, March 2001, C.L. Wallis-Lage and C.E. Scruggs.

Retrofitting Plants for BNR, Kansas State University Environmental Conference, February 2001, J.L. Barnard and C.E. Scruggs.

Springfield, MO: A Plant-Wide Challenge, Water Environment Federation Annual Conference, October 2000, C.E. Scruggs.

BNR Challenges in Springfield, Missouri, Missouri Water Environment Association, March 2000, C.E. Scruggs.

Wastewater Treatment Plant Expansion for Nutrient Removal, Southwestern Ohio Water Environment Association Annual Conference, March 2000, C.E. Scruggs.

Wastewater Treatment Plant Expansion Requirements and Costs Associated with Various Nutrient Removal Objectives and Alternatives, Water Environment Federation Annual Conference, October 1999, C.E. Scruggs.

Evaluation of Microscopic Methods for Bulking Identification, Quantification, and Control, Water Environment Federation Annual Conference, October 1998, C.E. Scruggs.

Evaluation of Filamentous Microorganism Growth Factors in an Industrial Wastewater Activated Sludge System, International Association on Water Quality: 2nd International Conference on Microorganisms in Activated Sludge and Biofilm

Processes, Berkeley, California, July 1997, C.E. Scruggs and C.W. Randall.

Panel Organization and Moderation

Co-organizer of a 5-speaker panel for 2014 NM American Planning Association Annual Conference in Albuquerque, NM (with Petra Morris), entitled *Bike Share: A Catalyst for Community Action and Engaged Learning*.

Creator, Organizer, and Moderator of 3-part, 10-speaker panel series for 2014 Association of Environmental Studies and Sciences conference at Pace University in New York City, entitled *Synthetic Chemicals and Society: Research and Perspectives on Ethics and Environmental Health, Governance, and Education*.

Creator, Organizer, and Moderator of Panel for the 2005 Water Environment Federation conference in Washington, D.C., entitled *Surface Water Quality and Ecology: EDCs in Wastewater: Implications for the Water Quality Industry*.

Invited Guest Lectures in UNM Courses

CRP 588 Professional Project/Thesis Prep: Fall 2012, Fall 2013, Fall 2014

CRP 580 Community Growth and Land Use Planning: Spring 2013

CRP 577 The Practice of Policy Development: Fall 2012

CRP 431/531 Foundations of Community Development: Spring 2013, Spring 2014

CRP 265 Sustainable Community Planning Methods: Fall 2012, Fall 2014

Public Scholarship

Bikeshare Mobility: Exploring Cultural and Financial Viability in Albuquerque, Invited presentation to the Albuquerque-Bernalillo County Air Quality Control Board, January 2014, C.E. Scruggs, A. Hooper, R. Holland, M. Wingard.

AWARDS & HONORS

Udall Foundation Doctoral Fellowship, \$24,000, 2011-2012.

William C. and Jeanne M. Landreth Fellowship, \$35,000, 2010-2011.

Environmental Protection Agency's STAR Award, \$126,000, 2007-2010.

Stanford E-IPER Rudolph Grant, \$5,000, 2008.

Stanford School of Earth Sciences McGee Grant, \$8,000, 2007.

Sussman Fellowship Award, 1995-96.

Pratt Scholarship Award, 1994-95.

Member of Chi Epsilon, Civil Engineering Honor Society, 1994-present.

Westinghouse Fellowship Award, 1992.

PROFESSIONAL & COMMUNITY SERVICE

Advisor for Healthy Communities Transformation Initiative, an initiative to develop healthy community indicators, sponsored by HUD and organized by the New Mexico Mortgage Finance Authority.

Organizer of Public Lecture Series on Water & Energy in NM, including opportunity for water and wastewater treatment plant operator CEUs (as part of a UNM course), 2013-14.

Appointed Member of Bernalillo Co. Water Protection Advisory Board, 2012-15.

Frequent Manuscript Reviewer for Journal of Cleaner Production, 2012-present.

Member of American Chemical Society, 2010-present.

Elected Representative of Graduate Student Program Committee, 2008-09.

Student Advising Mentor to E-IPER PhD and Masters students, 2008-10.

Member of Stanford's Environmental Forum Committee, 2007-09.
Member of American Assoc. for Advancement of Science (AAAS), 2007-present.
Member of American Water Resources Association, 2007-present.
Co-Chair of Technical Group for Water Environment Federation's Community of Practice on Endocrine Disrupting Chemicals, 2005-06.
Member of Black & Veatch's Leadership Institute, 2001-06.
Member of Water Environment Federation, 1994-2007.
Member of International Water Association, 1994-2002.
Member of American Society of Civil Engineers, 1992-98.
Student Engineers' Council Representative for VA Tech, elected position, 1992-94.

UNM SERVICE

CRP Student Learning Outcomes Committee, 2012-present.
CRP Personnel Committee, 2012-present.
CRP and SA+P Representative on UNM Water Resources Program Steering Committee, 2013-present.
SA+P PhD Committee, 2012-April 2014.
Committee as a Whole Member, CRP new faculty hire, 2012.
Committee as a Whole Member, CRP student admissions, 2012-present.
Contributing Author of CRP Self Study Report; Supervised Design, Implementation, and Analysis of 2 Surveys; and Report Editor for 2014 CRP Program Accreditation.
Service on Dean's panels for SA+P water and environment research, 2012-13.
Consultant for CRP Advanced Planning Studio Course, Fall 2013.
Member of UNM Women's Caucus, 2012-present.