

## Curriculum Vitae

### KARL G. LINDEN

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### Biography

Karl G. Linden is a Professor of Environmental Engineering and the Mortenson Professor in Sustainable Development at the University of Colorado Boulder, USA. He has a BS from Cornell University in Agricultural and Biological Engineering and an MS and PhD from University of California at Davis in Environmental Engineering. He teaches classes on UV Processes in Environmental Systems, Sustainable Water Reuse, and Water Sanitation and Hygiene. Dr. Linden's research investigates sustainable implementation of water and sanitation technologies in developing countries, novel water and wastewater treatment systems, including advanced and innovative UV systems; the efficacy of UV and ozone disinfection for inactivation of pathogens; and the use of UV and advanced oxidation processes for the degradation of organic and other emerging contaminants in water and wastewater. Dr. Linden is a consultant to the World Health Organization for revising the Guidelines for Drinking Water Quality and a member of the WHO Water Quality Technical Advisory Group. He is an associate editor of Journal of the American Water Works Association, serves as Trustee of the Water Science and Research Division of the AWWA and Board member of the AEESP. He was 2013-2016 President of the International Ultraviolet Association (IUVA), was named a 2013-2014 Fellow of the Australian Water Recycling Centre of Excellence, received the 2013 Pioneer Award in Disinfection and Public Health from the Water Environment Federation and was the WaterReuse Association's 2014 WaterReuse Person of the Year. Professor Linden Co-Directs the Mortenson Center for Engineering in Developing Communities at CU Boulder, focusing on research and graduate education.



### Education

Ph.D., Civil and Environmental Engineering, University of California, Davis. March 1997.  
"UV Disinfection: Estimating Effective Germicidal Dose in Low and Medium Pressure UV Systems", *Advisor: Jeannie L. Darby.*

Master of Science, Civil and Environmental Engineering, University of California, Davis.  
March 1993. *Advisor: Jeannie L. Darby.*

Bachelor of Science, Agricultural and Biological Engineering, Cornell University, Ithaca, NY,  
May 1989. *Advisor: William J. Jewell.*

### Areas of Specialization

#### *Teaching*

Areas of competence include water and wastewater treatment processes (physical, chemical, and biological), water reuse, UV processes in environmental systems, appropriate treatment

technologies, environmental aquatic chemistry, ecological environmental engineering, water treatment process laboratory, water chemistry laboratory. Other teaching interests: bioremediation, environmental toxicology, and natural treatment processes. Experience with students diverse in age, ability, and ethnicity.

### **Research**

Research focuses on investigation of alternative disinfectants and advanced oxidation for water and wastewater treatment. Specifically, efficacy of UV irradiation for inactivation of persistent and emerging pathogens; and advanced oxidation processes for the degradation of environmental pollutants of concern in clean and reclaimed water for reuse. Household disinfection for developing communities. Other experience in biological treatment processes, environmental toxicology, industrial wastewater treatment, greywater reuse, streambank stabilization and classification, natural treatment technologies, appropriate treatment technologies, bioremediation techniques, and anaerobic treatment processes.

### **Honors, Awards, and Distinctions (Selected)**

- Mortenson Professor in Sustainable Development, 2015-present
- Helen and Huber Croft Endowed Professorship, 2011 – 2020
- WateReuse Person of the Year Award, 2014
- Australian Water Recycling Center of Excellence Fellow 2013-2014
- Pioneer Award in Disinfection and Public Health, Water Environment Federation, 2013
- University Research Award, Boulder Faculty Assembly, Univ. of Colorado Boulder 2013
- Best Research Paper Award, International UV Association, 2013
- Best Classic UV Paper Award, International UV Association, 2013
- Faculty Research Award, College of Engineering and Applied Science, 2012
- Distinguished Faculty Award, CEAE, Univ of Colorado College of Engineering, 2011
- Best Paper of the Year, Journal AWWA 2010. “Demonstrating 4-log Adenovirus Inactivation in a MP Ultraviolet Disinfection Reactor”, *Journal AWWA*, 101 (4) 90+
- RMIT International Fellow – Royal Melbourne Institute of Technology, Australia 2007-08
- Klein/Stansell Family Distinguished Research Award, Pratt School of Engineering, 2004
- John-Kelly C. Warren Faculty Scholar, Pratt School of Eng., Duke University 2001-2005
- Switzer Environmental Foundation Leadership Fellow: 2001-2003
- National Science Foundation New Century Scholar: 1998

### **Professional Experience**

#### **Academic**

July 2015 – Present. Mortenson Professor in Sustainable Development, Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder, USA.

July 2011 – June 2015. Helen and Huber Croft Endowed Full Professor, Department of Civil, Environmental & Architectural Engineering, University of Colorado Boulder, USA.

January 2008 – 2011. Professor, Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder, USA.

April 2009 – 2011. Associate Director of Education and Research, Mortensen Center in Engineering for Developing Communities, University of Colorado Boulder, CO.

July 2005 – December 2007. Associate Professor with Tenure, Department of Civil and Environmental Engineering, Pratt School of Engineering, Duke University, Durham, NC

August 2006 – December 2006. Visiting Professor, University of Colorado at Boulder, Boulder CO, (host: Prof. R. Scott Summers)

January 2001 – June 2005. John-Kelly C. Warren Assistant Professor, Department of Civil and Environmental Engineering, Pratt School of Engineering, Duke Univ., Durham, NC

July 1999 – 2001. Assistant Professor, Department of Civil and Environmental Engineering, School of Engineering, Duke University

September – December 2003. Visiting Professor, EAWAG, Swiss Federal Institute for Environmental Science and Technol, Dübendorf, Switzerland (with Dr. Urs von Gunten)

March – August 2003. Visiting Professor, Clinical Institute for Hygiene and Medical Microbiology, and the Institute for Medical Physics and Biostatistics, University of Vienna, Austria (with Prof. Regina Sommer and Dipl.-Ing. Alexander Cabaj)

August 1997 – June 1999. Assistant Professor, Department of Civil Engineering, University of North Carolina at Charlotte

June 1990 - June 1991, April 1992 – December 1996. Research Assistant, Department of Civil and Environmental Engineering, UC Davis

September 1992 – March 1995. Teaching Assistant, Department of Civil and Environmental Engineering, UC Davis

Sept. 1991 – Feb. 1992. UC Berkeley Fellow, Peoples Science Institute, Dehra Dun, India

### **Consulting**

January 1998 – Present. Engineering Consultant: Black & Veatch, Montgomery Watson Harza, US EPA, Cadmus Group, Malcolm Pirnie, Hazen and Sawyer, Carollo Engineers, Colorado Department of Public Health and Environment, Dow Water, Brown and Caldwell, AECOM, Tetra Tech.

February – April 1993. Project Engineer, Larry Walker and Associates, Davis, CA

April – September 1990. Project Engineer, Microgen Corporation, Ithaca, NY  
Engineer-In-Training Certificate; License XE095615, California; February 1995

**Professional Affiliations**

American Society of Civil Engineers  
American Water Works Association  
Association of Environmental Engineering and Science Professors  
International Water Association  
International Ultraviolet Association  
American Chemical Society

**Academic Service (Selected)**University of Colorado Boulder

Co-Director, Mortenson Center in Engineering for Developing Communities, Direct Research and Graduate Studies. University of Colorado Boulder, 2015 - Present

Provosts Advisory Committee, 2015 – Present.

Vice Chancellor's Advisory Committee, University of Colorado Boulder, 2012- 2015.

Executive Committee, Mortenson Center in Engineering for Developing Communities, University of Colorado – Boulder, 2010 - present.

Executive Committee, Department of Civil, Environmental, and Architectural Engineering, University of Colorado – Boulder, 2010 - present.

First Level Review Committee, College of Engineering and Applied Science, 2008-2012;  
Chair: 2010 – 2012

Leader, Environmental Sustainability Initiative, CEAS, 2010 – Present

Being the Bridge, faculty liaison for Associate Director of Development Nick Lobejko

Research Award Committee, College of Engineering and Applied Science, 2013-2015

SEEC Building Committee, for Environmental Engineering, 2012-2015

*See Full CV for Service at Duke University and UNC-Charlotte*

**Professional Service (Selected)**Committees, Panels and Editorships

Board of Directors, Association of Environmental Engineering and Science Professors (AEESP) 2016 - 2019

World Health Organization (WHO) Water Quality Technical Advisory Group member 2015-present

World Health Organization (WHO) Co-author for revisions of the Guidelines for Drinking Water Quality and lead for updating of the log reduction values. 2015 - present

Trustee, Water Science and Research Division, American Water Works Association 2011-17

Associate Editor, Journal of the American Water Works Association, 2012- Present  
Associate Editor, ASCE: Journal of Environmental Engineering, 2005 - Present  
Journal AWWA Best Paper Award selection committee, 2011-2015  
Expert Advisory Panel, University of British Columbia, RES'EAU-WaterNET, 2009-2017  
Chair, Distinguished Lecturer Committee, Association of Environmental Engineering and Science Professors (AEESP), 2014-2016. Co-Chair 2012-2014.  
Chair, Dissertation Award Committee, Association of Environmental Engineering and Science Professors (AEESP) 2013-14, Member 2011-2014.  
Founding Member/Board Member, International Ultraviolet Association, April 1999 – present  
President, International Ultraviolet Association, 2013-2015  
Technical Advisor, New York City Department of Environmental Protection, UV Disinfection for NYC Drinking Water Supply, October, 2001 – 2006, 2010-2012  
Orange County Water District Technical Review Committee for Groundwater Replenishment System, 2001 – 2004  
Technical Advisor for Disinfection Research Group, New Zealand, Auckland Regional Council, Project Manukau Wastewater UV Disinfection 2002 - 2004  
National Drinking Water Advisory Council (NDWAC), Research Working Group member, US EPA, November 2000 – 2004 (advises EPA on research priorities in drinking water)

- Futures Research Needs Subgroup, NDWAC, US EPA, 2000 - 2004
- Contaminant Mixtures Research Needs Subgroup, NDWAC, US EPA, 2000 - 2004

#### Conferences/Workshops

Lead Organizer, Symposium in Honor of James R. Bolton, IUVA World Congress, Las Vegas, NV, September 22-26, 2013  
Co-Chair (with Urs von Gunten): Session 8: Advanced Oxidation – New Technologies And Applications. 10th IWA Leading-Edge Conference on Water and Wastewater Technologies, International Water Association, Bordeaux, France  
International Scientific Committee, IUVA World Congress 2013, Las Vegas, NV. Sept 22-26, 2013  
Symposium Organizer, “Water Sustainability in Oil and Gas Exploration: Treatment Issues” 249th ACS National Meeting in Denver, CO 3/22/14 – 3/26/14  
Symposium Organizer, “Environmental Fate of Dispersants used in Oil Spills” 243rd ACS National Meeting in San Diego, CA 3/24/12 – 3/29/12  
Symposium Organizer, “Chemistry of Hydroxyl Radicals in Natural and Engineered Aqueous Systems” 242nd ACS National Meeting in Denver, Colorado, 8/28/11 – 9/1/11  
US EPA Water Reuse Research Needs Workshop, UNC-Chapel Hill Feb 3-4, 2010  
WaterReuse Foundation Research Needs Workshop, San Diego, CA Dec 1-3, 2009

Coordinator, Water Reuse in 2030 International Workshop, Brisbane, Australia Sept. 24-25, 2009.

Co-Chair, Advanced Oxidation Session, Leading Edge Technologies Conference, IWA, Zurich, Switzerland June 1-4, 2008

## Teaching Experiences

### ***University of Colorado at Boulder (Professor)***

*Fundamentals of Environmental Engineering*, CVEN 3414 - Fall 2008, 2009, 2011  
Required undergraduate course on science and design of Environmental Engineering processes including water and wastewater treatment, solids waste, air quality, and hazardous waste treatment.

*UV Processes in Environmental Systems*, CVEN 5834 – Fall 2006, Spring 2010, 2015  
Elective course for advanced graduate students interested in photolysis and oxidation in water and wastewater, including disinfection and advanced oxidation processes.

*Water Sanitation and Hygiene*, CVEN 5834-03 – Fall 2008 - 2011, 2013-2015  
Graduate course in the Engineering for Developing Communities program covering appropriate treatment technologies for applications in water, air and sanitation in rural and developing communities.

*Water Reuse*, CVEN 5834 – Spring 2009, 2011, 2014  
Advanced graduate course focusing on the social, political, and technical aspects of implementing water reuse.

*Environmental Engineering Senior Design*, CVEN 4434/5434 – Spring 2013  
Senior Capstone Design, focusing on design projects over the complete design process, including entry into national competitions.

*See Full CV for Teaching at Duke University and UNC-Charlotte*

## Research Funding (Selected)

### **As Principal Investigator**

1. “Alaska Water and Sewer Challenge - Phase 3 – Prototype Development and Pilot Testing” University of Alaska Anchorage, State of Alaska (prime) (\$120,000, 12/15 – 6/17) Linden PI
2. “Ultraviolet Light Disinfection of Drinking Water Using Light Emitting Diodes” Zodiac Water & Waste Aero Systems (\$200,000, 9/1/15 – 8/31/18) Linden PI
3. Reinvent The Toilet Challenge: Solar Biochar Toilet” Bill & Melinda Gates Foundation, (\$1,780,3512, 9/1/12 – 08/31/15) Linden, K.G. (PI), Weimer, A. and Summers R.S. (Co-I) [Total funding \$1,780,351] Grant #OPP1065047

4. “Demonstrating Advanced Oxidation Technologies/Biofiltration on Pharmaceutical Removal in wastewater” Water Environment Research Foundation U2R11, (\$190,000, 3/12 – 4/14) Linden, K.G. (PI)
5. “Guidance Document for Testing Medium Pressure UV Inactivation of Viruses” Water Research Foundation 4376 (\$441,500, 10/11 – 6/14) Linden K.G. (PI)
6. “IRES: Toward Sustainable Water and Sanitation Infrastructure” National Science Foundation OISE - 1065050 (\$149,384, 4/11 - 9/14) Linden K.G. (PI)
7. “Advanced Oxidation and Transformation of Organic Contaminants” Water Research Foundation 4241, (\$785,994, 1/11 – 4/14) Linden K.G. (PI), von Gunten, U. (Co-PI)
8. “Investigating Underlying Mechanisms behind the Extreme Resistance of Adenoviruses to UV Disinfection” National Science Foundation *CBET-0933560* (\$397,281 9/09 – 3/13) Linden K.G. (PI), Hernandez, M. (Co-PI)
9. “Ozone Testing for Virus Inactivation at the Eastern Wastewater Treatment Plant”, Melbourne Water 1546757, Australia (\$207,658 1/10-6/11), Linden K.G. (PI)
10. “Partnerships in Sustainability: Working with Partners in Peru to Enhance Local Water Projects” Office for University Outreach, University of Colorado-Boulder (\$10,000, 2009-2011) Linden K.G. (PI)
11. “Photochemical Fate Of Oil Dispersants Used in The Gulf Oil Spill clean -up” National Science Foundation RAPID Program *CBET-1043818* (\$82,319 7/10 – 1/12) Linden K.G. (PI), Rosario, F. (Co-PI)
12. “Characterization and Disinfection of Greywater using ozone, UV and Chlorine” Carollo Engineers/San Francisco Public Utilities Commiss. (\$25,500 8/10 – 3/11) Linden K.G. (PI)
13. “Water Reuse 2030” WateReuse Foundation (\$296,954, 2/09 – 6/11) Linden K.G. (PI), Drewes, J; Khan S. (Co-PIs)
14. “UV-Based Advanced Oxidation Treatment of Pre- and Post-GAC Contacted Water” American Water Works Association Research Foundation (\$100,000, 3/08 – 8/09) Linden, K.G. (PI)
15. “Impact of UV Location and Sequence on Byproduct Formation” American Water Works Association Research Foundation (\$436,000, 10/07 – 1/10) Linden K.G. (PI), Weinberg H. (UNC), Mitch W. (Yale) (Co-PIs)
16. “Enhanced Disinfection of Adenoviruses with UV Irradiation” WateReuse Foundation Unsolicited Project (\$168,692, 2/07 – 3/09), Linden K.G. (PI), Thurston-Enriquez J. (USDA) (Co-PI)
17. “Presence, Fate, and Treatability of Estro- and Androgenic Contaminants in Wastewater and Biosolids” US EPA Office of WW Management (\$100,000, 5/06 – 5/08) Linden K.G. (PI), Kullman, S.W. (Co-PI).
18. “Innovative Technologies for Treatment of Reclaimed Water” WateReuse Foundation (\$460,000, 1/06-12/08) Linden K.G. (PI), Salveson, A., Thurston-Enriquez, J. (Co-PIs)
19. “Pulsed UV versus Low to Medium Pressure UV: Evaluation of Drinking Water Treatment Efficiency” US EPA (\$200,000, 9/04-3/08) Linden, K.G. (PI)

20. "Impact of UV and UV Advanced Oxidation Processes on Toxicity of Endocrine Disrupting Compounds in Water" American Water Works Association Research Foundation, (\$150,000, 2/03-7/06) Linden, K.G. (PI), Kullman, S.
21. "Advanced Oxidation Processes for the Treatment of Candidate Contaminant List (CCL) Chemicals" US EPA Office of Water, Cooperative Agreement, (\$300,000, 9/01 – 8/06) Linden, K.G. (PI), Sharpless, C., Suffet, I.H.
22. "Effectiveness of UV Irradiation for Pathogen Inactivation in Surface Waters" US EPA Science To Achieve Results Program, (\$525,000, 9/01 – 10/05) Linden, K.G. (PI), Sobsey, M.D.
23. "Development of an on-line Fluence Meter" KIWA Netherlands, (\$80,000, 5/03-5/04) Linden, K.G. (PI), Sharpless, C.
24. "Innovative technologies for long term compliance with microbial water quality standards", Malcolm Pirnie Inc./Cincinnati Water Works, (\$105,000 3/1/01 – 8/31/02) Linden, K.G. (PI) *Note: Received the Engineering Excellence award in the Research category from the American Council of Engineering Companies (ACEC) of Ohio.*
25. "Innovative UV Technologies to Oxidize Organic and Organoleptic Chemicals" American Water Works Association Research Foundation/US Environmental Protection Agency, (\$425,000 1/1/00-12/31/03) Linden, K.G. (PI), Andrews, S., Atasi, K., Bolton, J., Suffet, I.H.
26. "Fate and persistence of pathogens subjected to disinfection", Water Environment Research Foundation, (\$576,031 1/4/99 – 12/3/03) Linden, K.G. (PI), Sobsey, M.D., and J.D. Oliver.
27. "Disinfection efficiency and dose measurement for medium pressure and pulsed-UV disinfection systems" American Water Works Association Research Foundation, (\$224,780 11/1/98 – 3/31/02) Linden, K.G. (PI), Mofidi, A.A.

**As Co-Principal or Senior Investigator** (\$ is amount to Linden unless noted)

1. "Assessing Odor & Odor Control for the RTTC" Duke University, Prime: Bill & Melinda Gates Foundation (\$140,000, 1/15 – 6/17) Linden Co-PI OPP1119852
2. "PhD Fellowship Program Toward Engineering Resilience (2015-2020) GAANN: Department of Education" Senior Faculty
3. "Mechanisms of UV inactivation of viruses for tailored disinfection applications. National Science Foundation, (\$151,100, 1/16-12/17) CBET 1512616: Co-PI, with University of Texas El Paso, PI Rodriguez.
4. Design of Risk Reducing, Innovative Implementable Small System Knowledge (DeRISK) Center", US Environmental Protection Agency, Summers (PI) \$4,100,000, 9/1/14-8/30/18 Linden (Co-PI) Share \$776,244
5. "SRN: Routes to Sustainability for Natural Gas Development and Water and Air Resources in the Rocky Mountain Region", National Science Foundation, Ryan (PI). \$12,000,000, 1/1/13-12/31/18 (Linden Share ~\$350,000)
6. "Evaluation of cVOC Removal Efficiencies by Various Technologies", Water Research Foundation (ARCADIS, Prime) Cotton (PI), Linden Co-PI. Linden Share \$150,000



7. “Enhanced Self Sufficiency for Water with Robust UV LED Disinfection” Office of Naval Research BAA 11-007, Subcontract from Sensor Electronic Technologies (SET) (\$125,000, 3/12 – 2/14)
8. “The Science and Technology of Dispersants as Relevant to Deep Sea Oil Releases: Research Consortia” Gulf of Mexico Research Institute (GRI) (\$11,400,000 total, \$222,000 to Linden, 1/12 – 12/14) Linden, K.G. (Co-PI), John, V. (Tulane-PI)
9. “Demonstrating Advanced Oxidation Technologies on Pharmaceutical Removal Downstream of Biological Treatment” Water Environment Research Foundation INFR 6SG09 (\$37,000, 1/10 – 5/11) Linden K.G. (Co-PI)
10. “Constructed Wetlands and UV Disinfection for Wastewater Treatment and Reuse in Small Communities” Multinational Agricultural Research and Development Program, US-Israeli Bi-National Agricultural Research and Development Fund. BARD FG-9502-09 (\$10,000 4/10 – 3/11) Linden K.G. (Co-PI)
11. “Heterogeneous Photocatalytic System for Water Remediation” Eltron Research (NIEHS 1R41ES017575-01), (\$30,000, 8/09 – 4/10) Linden (Co-PI).
12. Workshop: “Ensuring the Sustainable Reuse of Wastewater for Agricultural Irrigation in Semi-Arid Regions” U.S.-Israel Binational Science Foundation, Linden (Co-PI), Zoller (PI) (\$25,000, 2008)
13. “Fate and Effects of Hormones in Waste From Concentrated Animal Feeding Operations” (CAFOS) US EPA STAR, Linden K.G. (Co-PI), Kullman S.W. (PI), Ferrel G. (USGS) (Co-PI), Meyer M. (USGS) (Co-PI) (\$25,000, 6/07 – 5/10)
14. “Superfund Chemicals Impact on Reproduction and Development, Project 7: Microbial and Photolytic Transformations of Superfund Chemicals“, Subcontract from Superfund Hazardous Substances Basic Research Center, Dr. DiGiulio, Duke University, (\$1,400,000 [Shared equally with A. Schuler], 4/05 – 4/09).
15. "Inactivation of pathogens by innovative UV technologies", American Water Works Association Research Foundation, Subcontract from University of New Hampshire, (\$85,000 1/1/00 - 12/31/02) Linden, K.G. (Co-PI), Malley, J. UNH (PI)
16. “Innovative Ultraviolet Light Source for Disinfection of Drinking Water” Phase II Small Business Innovative Research Program, Topic C. Clean Water, US EPA, Subcontract from Phoenix Science and Technology, (\$37,000, 12/01 – 12/02)

### Peer Reviewed Publications (Selected from >140)

Notes: Names in **Bold** from Linden’s Lab, \* indicates Linden is corresponding author; ^ denotes work published prior to academic appointments.

1. **Lester, Y., Aga, D.S., Love, N, Singh, R., Morrissey, I., \*Linden, K.** (2016) “Integrative Advanced Oxidation and Biofiltration for Treating Pharmaceuticals in Wastewater” *Water Environment Research*, In Press
2. **Beck, S.E., Rodriguez, R.A., Hawkins, M.A., Hargy, T.M., Larason, T.C., \*Linden,**

- K.G.** (2016) “Comparison of UV-Induced Inactivation and RNA Damage in MS2 Phage Across the Germicidal UV Spectrum” *Applied and Environmental Microbiology*, 82(5): 1468-1474.
3. **Lester, Y.**, Thurman, E.M., Ferrer, I., **Sitterley, K.**, Korak, J.A., Aiken, G., **\*Linden, K.G.** (2015) “Characterization of fracturing flowback water in Colorado: Implications for water treatment” *Science of the Total Environment* 521-513: 637-644.
  4. **Beck, S.E.**, Wright, H.B., Hargy, T.M., Larason, T.C., **\*Linden, K.G.** (2015) “Action Spectra for Validation of Pathogen Disinfection in Medium-Pressure Ultraviolet (UV) Systems” *Water Research*, 70:27-37
  5. **Barstow, C.K.**, **Dotson, A.D.**, **\*Linden, K.G.** (2014) “Assessing point of use ultraviolet disinfection for safe water in urban developing communities” *IWA Journal of Water and Health*, 12(4):663-669
  6. **Chatterley, C.**, Javernick-Will, A., **Linden, K.G.**, Kawser, A., Laure, B., Mohini, V. (2014) “A qualitative comparative analysis of well-managed school sanitation in Bangladesh” *BMC public health*, Vol. 14, No. 6. Pp. 1-14.
  7. **Lester, Y.**, Ferrer, I., Thurman, E.M., **\*Linden, K.G.** (2014) “Demonstrating sucralose as a monitor of full-scale UV/AOP treatment of trace organic compounds” *Journal of Hazardous Materials*, 280: 104-110. DOI: 10.1016/j.jhazmat.2014.07.009
  8. **Rodriguez, R.A.**, **Bounty, S.H.**, **Beck, S.E.**, **Chan, C.**, **McGuire, C.**, **\*Linden, K.G.**, (2014) “Photoreactivation of bacteriophages after UV disinfection: role of genome structure and impacts of UV source” *Water Research* 55, pp 143–149.
  9. **Lester, Y.**, **Yacob, T.**, **Morrissey, I.** and **\*Linden, K.G.** (2014) Can We Treat Hydraulic Fracturing Flowback with a Conventional Biological Process? The Case of Guar Gum *Environmental Science & Technology Letters* 1 (1), pp 133–136. DOI: 10.1021/ez4000115
  10. **Beck, S.E.**, **Rodriguez, R.A.**, **\*Linden, K.G.**, Hargy, T.M., Larason, T.C., Wright, H.B. (2014) Wavelength Dependent UV Inactivation and DNA Damage of Adenovirus as Measured by Cell Culture Infectivity and Long Range Quantitative PCR” *Environmental Science & Technology* 48 (1), pp 591–598. DOI: 10.1021/es403850b
  11. **Keen, O.S.**, McKay, G., Mezyk, S.P., **Linden, K.G.**, Rosario-Ortiz, F.L., (2014) Identifying the factors that influence the reactivity of effluent organic matter with hydroxyl radicals, *Water Research* 50: 408-419. DOI: 10.1016/j.watres.2013.10.049.
  12. **Kover, S.C.**, Rosario-Ortiz, F.L., **\*Linden, K.G.** (2014) Photochemical fate of solvent constituents of Corexit oil dispersants. *Water Research*, 52:101-111. DOI: 10.1016/j.watres.2013.12.013
  13. **Chatterley, C.**, **Linden, K.G.**, Javernick-Will, A. (2013) Identifying pathways to continued maintenance of school sanitation in Belize. *Journal of Water Sanitation and Hygiene*, 3(3):411-422. doi:10.2166/washdev.2013.128
  14. **Beck, S.E.**, **Rodriguez, R.A.**, Salveson, A., Goel, N., Rhodes, S., Kehoe, P., **\*Linden, K.G.** (2013) “Disinfection Methods for Treating Low TOC, Light Graywater to California Title 22 Water Reuse Standards” *ASCE: Journal of Environmental*

*Engineering*, 139(9), 1137–1145

15. Azaizeh, H., **Linden, K.G., Barstow, C.**, Kalbouneh, S. Tellawi, A, Albalawneh, A., Gerchman, Y. (2013) “Constructed wetlands combined with UV disinfection systems for removal of enteric pathogens and wastewater contaminants” *Water Science and Technology* Vol. 67, No. 3, 651-657. doi: 10.2166/wst.2012.615.
16. **Keen, O.S. and \*Linden, K.G.** (2013) Degradation of Antibiotic Activity during UV/H<sub>2</sub>O<sub>2</sub> Advanced Oxidation and Photolysis in Wastewater Effluent *Environmental Science & Technology* **2013** 47 (22), 13020-13030
17. **Lester, Y.**, Sharpless, C.M., Mamane, H. and **\*Linden, K.G.** (2013) Production of Photo-oxidants by Dissolved Organic Matter During UV Water Treatment *Environmental Science & Technology* **2013** 47 (20), 11726-11733
18. **Keen, O.S. and \*Linden, K.G.** (2013) Re-Engineering an Artificial Sweetener: Transforming Sucralose Residuals in Water via Advanced Oxidation *Environmental Science & Technology* **2013** 47 (13), 6799-6805
19. **Rodriguez, R.A., Bounty, S., \*Linden, K.G.** (2013) Long-Range Quantitative PCR for Determining Inactivation of Adenovirus 2 by UV Light. *J. Applied Microbiology*. 114(6) 1854-1865
20. **Bounty, S. Rodriguez, R., \*Linden, K.G.** (2012) “Inactivation of adenovirus using low-dose UV/H<sub>2</sub>O<sub>2</sub> advanced oxidation”, *Water Research*, Vol. 46, No. 19, 6273-6278 <http://dx.doi.org/10.1016/j.watres.2012.08.036>
21. **Keen, O.**, Baik, S, **\*Linden, K.G.**, Aga, D.S., Love, N.G. (2012) “Enhanced biodegradation of carbamazepine after UV/H<sub>2</sub>O<sub>2</sub> advanced oxidation” *Environmental Science and Technology*, Vol. 46, 6222–6227
22. **Dotson, A.D., Rodriguez, C., \*Linden, K.G.** (2012) “UV Disinfection Implementation Status in US Water Treatment Plants” *Journal of the American Water Works Association*, Vol. 104, No. 5, 318-324
23. **Keen, O.**, Love, N.G., **\*Linden, K.G.** (2012) The role of effluent nitrate in trace organic chemical oxidation during UV disinfection”, *Water Research*, Vol. 46, 5224-5234.
24. **Eisheid, A.**, Thurston, J., **\*Linden, K.G.** (2011) ” UV Disinfection of Adenovirus: Current State of the Research and Future Directions” *Critical Reviews in Environmental Science and Technology* Vol. 41, 1375–1396
25. **Eisheid, A., and \*Linden, K.G.** (2011) ”Molecular Indications of Protein Damage in Adenoviruses after UV Disinfection” *Applied and Environmental Microbiology*, Vol. 77, No. 3. Pp 1145-1147
26. **Chatterley, C.J. and \*Linden K.G.** (2010) “Demonstration and evaluation of germicidal UV-LEDs for point-of-use water disinfection” *Journal of Water and Health*, Vol. 8, No. 3, pp 479 – 486.
27. Reckhow, D.A., **Linden, K.G.**, Kim, J., **Shemer, H.**, Makedissy, G. (2010) “Effect of UV Treatment on DBP Formation”, *Journal of the American Water Works Association*, Vol. 102, No. 6, pp 100-113.

28. **Wu, C., \*Linden, K.G.** (2010) "Phototransformation of selected organophosphorus pesticides: Roles of hydroxyl and carbonate radicals" *Water Research*, Vol. 44, p. 3585-3594.
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