

Assistant Professor  
Department of Civil and Environmental Engineering  
College of Engineering  
University of Nevada, Reno

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Ph.D. Environmental Engineering

August 2011  
Thesis Title: Removal of Disinfection B

Committee Members: Thomas Clevenger, Enos Inniss, Allen Thompson

B.S. Civil Engineering with Honors

December 2009



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Reno, NV  
Assistant Professor

July 2016 – Present



Tempe, AZ  
Postdoctoral Research Associate

August 2015

**CV**

**AWW**

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American Water Works Association Abel Wolman Fellow (\$30k/yr)	2014-2016
Water Environment Federation Canham Graduate Studies Scholar (\$25K)	2014
ACS Graduate Student Award in Environmental Chemistry (\$100)	2014
Sustainable Engineering and the Built Environment Lab Safety Award	2014
Arizona State University Engineering Dean's Fellowship (\$30k/yr)	2011-2013
AZ Water Association Scholarship (\$1,000)	2012
Ira A. Fulton Fellowship (\$5k)	2011-2012
Paul Kufirin Memorial Scholarship (\$5k)	2010

**AWW**

Chelsea Cluff – NSF Graduate Research Fellowship (\$138k)	2017
Chelsea Cluff – AWWA Henry “Bud” Benjes/HDR Scholarship (\$5k)	2017

**CV**

**RP**

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1. Rapid Site Profiling of Organofluorine: Quantification of PFASs by Combustion Gas Analysis Strategic Environmental Research and Development Program \$784k	2019-2022
2. Co-Funding - Securing the Future of Direct and Indirect Potable Reuse Water Research Foundation \$50k	2018-2021
3. Securing the Future of Direct and Indirect Potable Reuse – N-nitrosodimethylamine (NDMA) Formation Pathways and Precursors National Science Foundation CBET \$330k	2018-2021
4. Understanding Formation of a Critical Disinfection Byproduct: NDMA and Previously Unidentified NDMA Precursors in Advanced Potable Reuse Treatment Plants Subcontracted from Orange County Water District, funding from United States Bureau of Reclamation \$25k	2018-2020
5. Atmospheric CO <sub>2</sub> Capture Through Wastewater University of Nevada, Reno New Scholarly Endeavor Grant \$2.5k	2017-2018
6. Mass spectrometry to identify NDMA forming amines isolated from Orange County Advanced Water Purification Facility – Phase 2 Orange County Water District \$15k	2017

**ASU -P**

7. Addressing Human Health Impacts from Emerging Contaminants in Reclaimed Water to Enhance its Use for Urban and Peri-urban Agriculture USDA AFRI Water for Agriculture \$500k	2017-2020
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**SDA**

8. Identifying NDMA Forming Amines from the Orange County Water Purification Facility Orange County Water District Co-author with Paul Westerhoff (PI) \$18.5k	2016-2017
9. Understanding the Source and Fate of Polymer-Derived Nitrosamine Precursors Water Research Foundation #4622 Co-author with Paul Westerhoff (PI)	2016-2018

\$350k  
10.

9. Venkatesan, A. K., Reed, R. B., Lee, S., Bi, X., Hanigan, D., Yang, Y., Ranville, J. F., Herckes,  
126. P., Westerhoff, P. Detection and Sizing of Ti-containing Particles in Recreational Waters Using  
Single Particle ICP-MS. Bulletin of Environmental Contamination and Toxicology, 2018. 100(1):  
p. 120-126.

B10. Lankone, R., Challis, K., Bi, Y., Hanigan, D., Reed, R., Zaikova, T., Hutchison, S. 2018. 2.8 (v)so (a)-2J 4,vvn (ent)3-



- 1.Chen, C., Hanigan, D., Liao, X., Wang, J., Zhang, X., Suffet, I. H., Krasner, S. W., Westerhoff, P. pH Effect on Nitrosamine Precursor Removal by Activated Carbon Adsorption, in Recent Advances in Disinfection By-Products, pp. 173-185, 2015, American Chemical Society.
- 2.Zhang, J., Hanigan, D., Shen, E., Andrews, S., Westerhoff, P., Herckes, P. Modeling NDMA Formation Kinetics During Chloramination of Model Compounds and Surface Waters Impacted by Wastewater Discharges, in Recent Advances in Disinfection By-Products, pp. 79-95, 2015, American Chemical Society.



- 1.Kidd, J., Bi, Y., Hanigan, D., Herckes, P., Westerhoff, P. Yttrium Residues in MWCNT Enable Assessment of MWCNT Removal During Wastewater Treatment. Science of the Total Environment, 201X. (In review)



- 1.Ferrer, I., Thurman, E. M., Hanigan, D., Westerhoff, P. Finding NDMA Precursors Using Accurate Mass Tools with an Agilent 6540 Q-TOF LC/MS. Agilent Application Note, 2017. Agilent Technologies.
- 2.Westerhoff, P., Hanigan, D., Herckes, P., Thurman, E. M., Ferrer, I., Andrews, S., Zhao, V., Bukhari, Z. Relative Importance and Contribution of Anthropogenic and Natural Sources of Nitrosamine Precursors. Water Research Foundation Final Report, 2017. Water Research Foundation: Denver, CO.
- 3.Hanigan, D., Westerhoff, P. Recovery and Mass Spectrometry Aimed at Identifying ogeukhare(A)3.3 ( )0.6 (P00

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(Presenter underlined,



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**B** **f**

1. Junli Wang Expected 2022
2. Saeed Arabi Expected 2022
3. Priyamvada Sharma Expected 2021
4. Utsav Thapa Expected 2021

**C** **f**

1. Elizabeth McKenna Expected 2020
2. Andrew Poustie 2018

**U** **n** **f**

1. Jackson Alicata 2018-Present
2. Paul Wilkerson 2018
3. Richard Mannschreck

Ric1rg64 .3 (x)a23MCI(2018)Tj0 Tc 0 Tw 2.222 0 IS Tdc1rg64 .3 (x)a2



Environmental Science and Pollution Research, Environmental Engineering Science, Science of the Total Environment, Environmental Science & Technology, Journal of Environmental Sciences, RSC Advances, Chemosphere, Journal American Water Works Association, Environmental Science & Technology Letters, Journal of Cleaner Production, Environmental Science: Water Research & Technology

Social Chair, Association of Graduate Civil Engineers, School of Sustainable Engineering and the Built Environment, Arizona State University 2011-2012



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Environmental Engineering Systems: Principles and Design (CEE 390)	S18, S19
Design of Water Treatment Systems (CEE 456/656)	F17, F18
Physiochemical Water Treatment (CEE 752)	S17, F18



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PBS Newshour Science Wednesday – “Scientists Trace Cancer-causing Chemical in Drinking Water back to Methadone”

<http://www.pbs.org/newshour/updates/methadone-cancer-carcinogen-drinking-water/>

American Chemical Society Chemical & Engineering News – “Heroin Analog May Form Carcinogen in Drinking Water”

<http://cen.acs.org/articles/93/web/2015/05/Heroin-Analog-Form-Carcinogen-Drinking.html>

Chromatography Online – “Methadone Linked to NDMA Contamination in Drinking Water”

<http://www.chromatographyonline.com/methadone-linked-ndma-contamination-drinking-water?rel=canonical>

Water Online – “Methadone in the Water: What’s the Real Risk?”

<http://www.wateronline.com/doc/methadone-in-the-water-what-s-the-real-risk-0001>

US Finance Post – “Drinking Polluted Water Could Cause Cancer?”

<http://usfinancepost.com/drinking-polluted-water-could-cause-cancer-25163.html>

Water Online – “Chloramination May2g