

# EXHIBIT C

(Dr. Andrew Whelton,  
Purdue University; testimony  
and CV)

## **Andrew J. Whelton, Ph.D.**

Professor, Civil, Environmental, and Ecological Engineering  
Director, Healthy Plumbing Consortium  
Founder and Lead, Center for Plumbing Safety at Purdue University  
Lyles School of Civil Engineering, Division of Environmental and Ecological Engineering  
Purdue University  
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[www.PlumbingSafety.org](http://www.PlumbingSafety.org), [www.CIPPSafety.org](http://www.CIPPSafety.org)

Prof. Whelton is an internationally recognized environmental engineer with more than 20 years of experience in the infrastructure and public health disciplines. By leading innovative research teams, he has advanced and positively impacted the safety of communities and workers in and outside the nation. In recent years, his team has unearthed previously undocumented human health and environmental threats associated with plastic manufacture, use, and then innovated technologies and procedures to minimize those risks. He has often been called into nationally significant disasters to provide executive level support. Some disasters include the Freedom Industries Chemical Spill, Camp Fire, Marshall Fire, and fuel contamination in Hawaii, among others. At Purdue, he founded and leads the Center for Plumbing Safety, an industrial consortium, and has led several multi-institution research efforts. Prof. Whelton's leadership has positively changed how U.S. federal (EPA, CDC, NRC, NIOSH, NIST, FEMA, Army, Navy), state, county, and local government agencies act to protect health and safety. In 2022, his experience was sought by President Biden's Administration and previously by Canadian communities and the Ministry of Health in response to wildfires.

Professor Whelton's team discoveries have been reported nationally and internationally because of the significance and impact. Some outlets included the *Associated Press*, *NPR All Things Considered*, *New York Times*, *USA Today*, *CBS Evening News*, among others. Multiple media platforms have amplified the reach and implementation of study discoveries. Numerous discoveries have underscored the value of research and evidence in informing critical public health and safety decisions. Prof. Whelton previously worked for the U.S. Army, private sector, U.S. National Institute for Standards and Technology (NIST), and University of South Alabama. He earned a B.S Civil Engineering, M.S., Environmental Engineering, and Ph.D. Civil Engineering degrees from Virginia Tech.

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## 1. BIOGRAPHICAL INFORMATION

### Education

Virginia Tech, Blacksburg, Virginia August 1996–May 2000  
B.S. Civil Engineering

Virginia Tech, Blacksburg, Virginia August 2000–December 2001  
M.S. Environmental Engineering thesis: M.S. *Thesis: Temperature Effects on Drinking Water Odor Perception*

Virginia Tech, Blacksburg, Virginia August 2005–May 2009  
Ph.D. Civil Engineering Dissertation: Advancing Potable Water Infrastructure through an Improved Understanding of Polymer Pipe Oxidation, Polymer–Contaminant Interactions, and Consumer Perception of Taste

### Employment

Professor, July 2021 – Present, joint appointment in the Lyles School of Civil Engineering and Division of Environmental and Ecological Engineering, Purdue University, West Lafayette, Indiana  
Director, 2021 – Present, Healthy Plumbing Consortium, Purdue University  
Founder and Lead, 2017 – Present, Center for Plumbing Safety, Purdue University  
Associate Professor, August 2018 – August 2021, joint appointment in the Lyles School of Civil Engineering and Division of Environmental and Ecological Engineering, Purdue University, West Lafayette, Indiana  
Assistant Professor, August 2014 – July 2018, joint appointment in the Lyles School of Civil Engineering and Division of Environmental and Ecological Engineering, Purdue University, West Lafayette, Indiana  
Assistant Professor, Department of Civil Engineering, University of South Alabama, Mobile, Alabama, January 2011 – August 2014  
Affiliated Faculty, Interdisciplinary Environmental Toxicology Program, University of South Alabama, Mobile, Alabama, January 2011 – August 2014  
National Research Council Associate (Polymer Materials), Polymer Materials Group, Engineering Laboratory, National Institute for Standards and Technology, Gaithersburg, Maryland, December 2010 – December 2011  
Postdoctoral Research Associate (Environmental Nanotechnology), Vikesland Research Group, Department of Civil and Environmental Engineering, Virginia Tech, Blacksburg, Virginia, May 2009 – December 2010  
Virginia Tech, Department of Civil and Environmental Engineering, Graduate Research Assistant, Aberdeen Proving Ground, Maryland, August 2005 – May 2009  
Draper Aden Associates, Inc., Project Engineer, 2007 – 2008  
Whelton, LLC, Owner, Abingdon, Maryland, 2005 – 2007  
U.S. Army Public Health Command, Directorate of Environmental Health Engineering, Project Manager/Civil Engineer, Aberdeen Proving Ground, Maryland, January 2003 – August 2005  
Oak Ridge Institute for Science and Education (ORISE) Postgraduate Research Fellow, Directorate of Environmental Health Engineering, U.S. Army Public Health Command, Aberdeen Proving Ground, Maryland, January 2002 – December 2003  
Graduate Research Assistant, Department of Civil and Environmental Engineering, Virginia Tech, Blacksburg, Virginia, August 2000 – December 2001  
Undergraduate Research Assistant, Department of Civil and Environmental Engineering, Virginia Tech, Blacksburg, Virginia, August 1999 – May 2000

### Licenses, registrations, and certificates

National Association of Sewer Service Companies (NASSCO) Cured-in-Place-Pipe (CIPP) Inspector Certification, 2017  
Future Professoriate Graduate Certificate, Virginia Tech, Blacksburg, Virginia, 2009  
Macromolecular Interfaces with Life Sciences Graduate Certificate, Virginia Tech, Blacksburg, Virginia, 2009  
Engineer in Training Certification, # 28325. Maryland, USA, 2003

### Honors and Awards

Finalist, The Johns Hopkins University Press, Anthology on Water, 2021  
National Academy of Engineering Frontiers of Engineering Symposium Invited Participant, joint Royal Academy of Engineering, Chinese Academy of Engineering, and NAE Global Grand Challenge Symposium, London, England, 2019  
Early Career in Research Excellence Award, Purdue University, 2019

Named University Faculty Scholar to recognize outstanding mid-career faculty who are on an accelerated path for academic distinction, Purdue University, 2019  
 National Academy of Engineering Frontiers of Engineering Symposium Invited Participant, Lincoln Labs, Lexington, Massachusetts, 2018  
 Roy E. and Myrna G. Wansik Research Leadership Award. Civil Engineering, Purdue University, 2017  
 Seeds of Excellence Award, Purdue University, 2017  
 Outstanding Engineering Graduate Student Mentor Award, Environmental and Ecological Engineering, Purdue University, 2017  
 Instruction Matters: Purdue Academic Course Transformation (IMPACT) Faculty Fellow 2016  
 Excellence in Research Award, University of South Alabama, 2014  
 Distinguished Service Award, AEESP, 2013  
 Excellence in Civil Engineering Education (ExCEED) fellowship, American Society of Civil Engineers (ASCE), 2012  
 National Research Council (NRC) fellowship, National Research Council, 2010  
 Inaugural travel award to attend the biannual AEESP Conference in honor of the lives lost at Virginia Tech, Association of Environmental Engineering and Science Professors (AEESP) Foundation–Virginia Tech, 2009  
 Virginia Tech Graduate Research and Development Program Award, 2006  
 Integrative Graduate Education Research Traineeship (IGERT) Assistantship, NSF Program at Virginia Tech, 2005–2007  
 Outstanding Performance Award, U.S. Army Center for Health Promotion and Preventive Medicine, 2004  
 Oak Ridge Institute for Science and Education (ORISE) Postgraduate Fellowship, U.S. Army Center for Health Promotion and Preventive Medicine, 2002  
 Virginia Tech Graduate Student of the Month award, 2001  
 Edna D. Bailey Sussman Environmental Science and Engineering Foundation Fellowship, 2001

## 2. LEARNING AND MENTORING

### University Courses Instructed

Sem/ Year	Course Title	Course Number	# Enrolled In Course
<b>UNIVERSITY OF SOUTH ALABAMA</b>			
S11	Fundamentals of Environmental Engineering	CE 579	11
S11	Environ Engineering Lab –Sect. 2	CE 374	14
S11	Environ. Engineering Lab –Sect. 1	CE 374	19
S11	Intro. to Environ. Engineering	CE 370	44
*F11	Field Analysis & Sampling Techniques	CE 490	2
*F11	Field Analysis & Sampling Techniques	CE 590	6
S12	Fundamentals of Environmental Engineering	CE 579	10
S12	Introduction to Environmental Engineering	CE 370	44
F12	Engineering Economics & Ethics	EG 231	52
*F12	Polymers Infrastructure & Environment	CE 590	9
S13	Fundamentals of Environmental Engineering	CE 579	9
S13	Environmental Engineering Lab –Sect. 2	CE 374	20
S13	Environmental Engineering Lab –Sect. 1	CE 374	15
S13	Introduction to Environmental Engineering	CE 370	33
*F13	Environmental Eng. Design: Physiochemical Processes	CE 590	4
S14	Polymers Infrastructure & Environmental	CE 590	7
S14	Fundamental Environmental Engineering	CE 579	6
S14	Environmental Engineering Lab	CE 370	24
S14	Introduction to Environmental Engineering	CE 370	24
<b>PURDUE UNIVERSITY</b>			
S15	Polymers Infrastructure & Environmental	CE 597	8
F15	Environmental & Ecological Engineering	EEE 250	52
*S16	Solid & Hazardous Waste Management	CE 597 / EEE 597	11
F16	Environmental & Ecological Engineering	EEE 250	48
*F16	Modeling Complexity	EEE 560	28
S17	Solid & Hazardous Waste Management	CE 597 / EEE 597	20
F17	Modeling Complexity	EEE 560	21
F17	Environmental & Ecological Engineering	EEE 250	57
S18	Solid & Hazardous Waste Management	CE 597 / EEE 597	17
F18	Environmental & Ecological Engineering	EEE 250	60
S19	Solid & Hazardous Waste Management	CE 597 / EEE 595	28
F19	Environmental & Ecological Engineering	EEE 250	65
SU20	Building Water Systems	EEE 495	14
F20	Seminar	EEE 690	33
F20	Managing Complex Env. and Public Health Issues	CE 597 / EEE 595	11
S21	Seminar	EEE 690	25
S21	Plastics	EEE 560	23
S21	Purdue Online: Building Water Essentials	CE / ABE / EEE	2
SU21	Plastics in Infrastructure & the Environment	CE 597	19 (+420 audit)
SU21	Building Water Systems	EEE 495	11
SU21	Plastics	EEE 560	2
F21	Disasters and Emergencies	CE 597	28
F22	Seminar	EEE 690	25
S22	Solid & Hazardous Waste Management	CE 597 / EEE 595	21
SU22	Plastics in Infrastructure & the Environment	CE 597	24
F22	Disasters and Emergencies	CE 597	25
S23	Solid & Hazardous Waste Management	CE 597 / EEE 595	32
S23	Plastics in Infrastructure & the Environment	CE 597	15

## **Graduate Students**

### Advised at Purdue University

Maria Palmegiani, MS CE (chair), Development of tools to predict fixture water quality prediction for plumbing design and investigation decisions  
Christian Ley, PhD EEE (chair), Evaluating the impacts of sustainable water use measures on drinking water microbiology and chemistry  
Elizabeth Montagnino, MS CE (chair), Commercial building water quality: detecting chemical and microbial changes, their causes, and evaluating remedial actions, Purdue University  
Karen Casteloes, MS CE (chair), Techniques and Technologies for Decontaminating Chemically Contaminated Premise Plumbing  
Maryam Salehi, PhD CE (chair), Exploring Metal Deposition onto Plastic Water Infrastructure: The Nexus of Environmental Engineering, Material Science Frontiers  
Kyungyeon Ra, MS EEE (chair), Characterizing Chemical Flux from Cured-in-Place-Pipe Installations  
Xianzhen Li, MS CE (chair), The Interaction of Heavy Metals with Drinking Water Pipes: Accelerated Aging, Deposition and Release  
Tianqi Wang, MS EEE (chair), Waste Materials and Management: Lessons from the Flint Water Crisis and Blast Furnace Slag Usage in Indiana  
Xiangning Huang, PhD CE (chair), Towards a Better Understanding of Contaminant Fate in Plastic Plumbing and their Decontamination  
Mahboobeh Teimouri, PhD CE (chair), Improving Worker Safety and Environmental Protection by Understanding Chemical Emissions from Plastic Composites During Manufacture and Use  
Kyungyeon Ra, PhD CE (chair), Stagnation Impacts on Building Drinking Water Safety: The Pandemic and Microplastics  
Yoorae Noh, PhD CE (chair), Protection of Public and Worker Safety by Understanding Hazardous Chemical Air and Exposure Risks during Plastic Cured-In-Place-Pipe Manufacture and Use  
Caroline Jankowski, MS EEE (chair), Water Quality Implications of Contaminated Plumbing Systems: Softeners, Wildfires, and Hydrocarbons

### Advised at the University of South Alabama

Matthew Tabor, MS CE, The Influence of Rehabilitated Stormwater Infrastructure on Water Quality and *D. magna* Toxicity: A Field and Laboratory Investigation  
Markus Moore, MS CE, Trihalomethane Formation with Free Chlorine Disinfection Due to Organic Carbon Leaching from Polypropylene and Polyethylene Pipes  
Keven Kelley, MS CE, The Impact of Cross-Linked Polyethylene (PEX) Pipe on Drinking Water Chemical and Odor Quality  
Maryam Salehi, MS CE, Toxicity of A Promising Oil Spill Dispersant, Hyperbranched Polyethyleneimine, to *D. Magna*  
Matt Connell, MS ETOX, Assimilable Organic Carbon Release, Chemical Migration, and Drinking Water Impacts of Multiple Brands of Plastic Pipes Available in the USA  
Jeffrey Gill, MS CE, Biocide Induced Power Plant Cooling Water Infrastructure Degradation  
LaKia McMillan, MS ETOX, Residential Tap Water Contamination, Public Perceptions, and Health Impacts Due to the 2014 Elk River Chemical Spill, West Virginia  
Caroline Novy, Aquatic Toxicity and Chemical Fate for the 2014 Elk River Chemical Spill, West Virginia

### Currently Advising Graduate Students

Sruthi Dasika, PhD EEE (member), Purdue University  
Xi Li, PhD HHS (member), Purdue University  
Rasul Diop, PhD EEE (co-chair), Purdue University  
Kristofer Isaacson, PhD EEE (co-chair), Purdue University  
Kyeongsuk Lee (member), Purdue University  
Lauren Gustafson (chair), B.S. Honors Thesis, Purdue University  
Pritee Pahari, MS/PhD CE (chair), Purdue University  
Paula Cohelo, MS/PhD EEE (chair), Purdue University  
Gracie Fitzgerald, MS EEE, Purdue University

## Served Graduate Committees

Ryan Julien, PhD ABE, Impacts of green building practices and water conservation on water age and resulting water quality, especially regarding opportunistic premise plumbing pathogens (OPPPs), Michigan State University  
Mohammad Nuruddin, PhD MSE, Characterization of Transport and Release of Small Molecules from Infrastructure Materials  
Holly Halfich, MS EEE, Polyamide Membrane Degradation  
Kun Huang, PhD CE, Organic nitrogen reactivity with free chlorine: effects on disinfection by-product formation and polyamide membrane stability, Purdue University  
Utami Irawati, PhD CE, Revisiting the decay of monochloramine, Purdue University  
Gaopin Cao, MS CE, Disinfectant Byproduct Formation Due to Chemical Leaching from Plastic Drinking Water Pipe, Purdue University  
Ming Chen, PhD CE, Anion Exchange on Cross-Linked Cationic Surfactant Micelles Across Ultrafiltration Membranes, Purdue University  
Rachel Rodriguez, BS BIOL (honor thesis), Toxicity of Corexit and Hyperbranched Polyethyleneimine Polymer to Oyster Spat, University of South Alabama  
Ugochukwu Obiako, MS ETOX, Toxicity of Stormwater Runoff from Roadways in South Alabama, University of South Alabama,  
Michael Greifenstein, MS MPH, Effects of Temperature & Storage Time on Military Packaged Water in Afghanistan–Polyethylene Terephthalate Water Bottles, Uniformed Services of the Health Sciences University

## Advised Non-thesis and Distance MS students

Jesse Hamm, MS EEE (chair), Purdue University  
Katharine Hughes, MS EEE (chair), Purdue University  
Trenton Jackson, MS CE (chair), Purdue University  
Tolu Odimeyomi, MS EEE (chair), Purdue University  
Christian Ley, MS EEE (chair), Purdue University  
A. Rasul Diop, MS EEE (member), Purdue University  
Sai Teja Reddy Yadatha MS EEE (chair), Purdue University  
Luke Beier, MS EEE (member), Purdue University  
John Albin, MS EEE (member), Purdue University  
Joseph Maxwell, MS CE (member), Purdue University  
Scott Jaimie, MS CE (member), Purdue University  
Mark Kosak, MSCE (member), Purdue University  
Deepika Sree Solamuthu Krishnakumar, MS CE (chair), Purdue University  
Michael Jay Guymon, MS CE (co-chair), Purdue University  
Michael Thomas Perkins, MS CE (member), Purdue University  
Sharanya Mathur, MS CE (co-chair), Purdue University  
Monica Maria Aponte-Alequin MS CE (member), Purdue University  
Colten Golden, MSCE (member), Purdue University  
Craig Petgrave, MSCE (member), Purdue University  
Christiana Rose, MSCE (chair), Purdue University  
Adedolapo Wasiu Adesope, MSCE (member), Purdue University

## Examiner

Anastasia Doronina, PhD CE, University of Sheffield, UK

## **Postdoctoral and Visiting Scholars**

Halley Le, Summer Undergraduate Researcher, Prior position Bennington College, Topic: BTEX Contamination of Home Plastic Plumbing Components and their Decontamination  
Sydney Butler, Summer Undergraduate Researcher, Prior position Howard University, Topic: Chemical composition and byproduct production of styrene and nonstyrene CIPP resins  
Caitlin Proctor, PhD (Biology), Lilian Gilbreth Postdoctoral Fellow, Prior position Eawag Switzerland, Topic: Plastics, Microbiology, and Drinking Water  
Tolu Odimeyomi, Research Engineer, Purdue University, Topic: Building Water Systems and Disasters  
Miriam Tariq, Summer Undergraduate Researcher, Prior position Louisiana State University, Topic: Disinfectant Decay in Plastic Piping Systems

Maryam Salehi, PhD, Postdoctoral Research Associate, Prior position Purdue University, Topic: Drinking Water Plumbing Safety

Catherine Yip, Summer Undergraduate Researcher, Prior position US Naval Academy, Topic: Removal of Surfactants from Decontamination Wastewater

Trevor Graham, Summer Undergraduate Researcher, Prior position US Naval Academy, Topic: Removal of Surfactants from Decontamination Wastewater

Raphael Rivadávia Mendes Oliveira, Summer Undergraduate Researcher, Prior position Federal University of Viçosa, Brazil, Topic: DBP Production in Building Plumbing Systems

Stephane Andry Reis Cerrato, Summer Undergraduate Researcher, Prior position Federal University of Viçosa, Brazil, Topic: Chemical Spill Response Countermeasures for Community Resiliency

Henriques Rodrigues de Melo, Summer Undergraduate Researcher, Prior position University of Sorocaba, Brazil, Topic: Plumbing System Water Quality Monitoring and Control

Xiangning Huang, Research Engineer, Prior position Purdue University Health Sciences Program, Topic: Fate of Petroleum Contaminants in Water Infrastructure Systems

Julia Eddlebroack, Summer Undergraduate Researcher, Prior position Findlay University, Topic: Toxicity of Corexit 9500 to oyster spat; Prof. Boettcher (BIOL) was main advisor.

Sabrina Carr, Summer Undergraduate Researcher, Prior position Syracuse University, Topic: Impact of Corexit 9500 on *Daphnia magna*: A Toxicological Assessment

Derrick Newman, Research Scientist, University of South Alabama, Prior position University of South Alabama, Topic: Water Quality Impacts of Cured in Place Pipe Stormwater Culvert Repair Material

Maryam Salehi, PhD (Textile Engineering), Visiting Scholar University of South Alabama, Prior position Amirkabir University of Technology, Topic: Water Interactions with FRP and PEUU Materials

Wade Holley, PhD (Chemistry), Postdoctoral Research Associate University of South Alabama, Prior position Oak Ridge National Laboratory, Topic: Polymer Degradation in Nuclear Power Station Cooling Water Facilities

**Undergraduate Student Researchers: Business, Engineering, Science (not visiting)**

Purdue University

Stephanie Shaffner, BS Environmental and Ecological Engineering

Savannah Kusinerz, BS Environmental and Ecological Engineering

Katherine Del Real, BS Environmental and Ecological Engineering

Lauren Gustafson, BS Civil Engineering

Myles Cook, BS Environmental and Ecological Engineering

Hanna Fulford, BS Environmental and Ecological Engineering

Ryan Day, BS Civil Engineering

Danielle Angert, BS Environmental and Ecological Engineering

Nafissa Maiga, BS Environmental and Ecological Engineering

Andrew Golden, BS Civil Engineering

Ethan Edwards, BS Civil Engineering

Yifei Bi, BS Environmental and Ecological Engineering

Emerson Ringger, BS Environmental and Ecological Engineering

Erica Wang, BS Environmental and Ecological Engineering

Emily Conkling, BS Environmental and Ecological Engineering

Jason Hawes, BS Environmental and Ecological Engineering

Devin Kelly, BS Environmental and Ecological Engineering

Lila Gillespie, BS Environmental and Ecological Engineering

Lena Abu Ali, BS Environmental and Ecological Engineering

University of South Alabama

Eddy Colmenarez, BS Chemical Engineering

Jesus Estaba, BS Mechanical Engineering

Mark Crawford, BS Civil Engineering

Elisa Prado, BS Civil Engineering

William Radcliffe, BS Civil Engineering

Luis Navarro, BA Business

Matt Tabor, BS Civil Engineering

Tom Nguyen, BS Civil Engineering

Kevin Waddell, BS Civil Engineering



### **Student Mentoring Activities**

Faculty advisor for the Purdue University student joint chapter of the Indiana American Water Works Association (AWWA) and Water Environment Association (WEA). 2018–Present

Mentored undergraduate students where 11 have lead and co-authored 13 peer-review journal papers and reports.

Mentored undergraduate students where 15 have delivered conference and symposium presentations.

Awards and Honors to Postdoctoral Associates and Students Working with Prof. Whelton

Besozzi Youth Delegate, AWWA Indiana Section, 2023, Paula Coelho  
Purdue Summer Undergraduate Research Program People's Choice Presentation Award, 2023, Halley Le  
Besozzi Youth Delegate, AWWA Indiana Section, 2022, Caroline Jankowski  
Fulbright Scholar, 2021, BSCE, Ethan Edwards  
2<sup>nd</sup> Place AWWA Beyond the Meter Session, Lightning Presentation Award, 2021, Maria Palmegiani  
3<sup>rd</sup> Place AWWA Beyond the Meter Session, Lightning Presentation Award, 2021, Ryan Day  
Purdue University College of Engineering Outstanding Graduate Student Research Award, 2021, Christian Ley  
AWWA Water Quality Division Best Paper Award, 2021, Dr. Caitlin Proctor [Lilian Gilbreth Postdoc, *not student*.  
*Proctor awarded College level postdoc and worked with Whelton*]  
Summer Undergraduate Research Fellowship Top 6 Presentation Award, 2020, Purdue University, Danielle Angert  
3<sup>rd</sup> Place Best Presentation Award, Undergraduate Symposium Pitch, 2020, Purdue University, Ethan Edwards  
1<sup>st</sup> Place Best Poster Presentation Award, AWWA Indiana Section, 2019, Erica Wang  
Besozzi Youth Delegate, AWWA Indiana Section, 2019, Erica Wang  
1<sup>st</sup> Place (tie) AWWA Indiana Section Best Poster Presentation Award, 2018, Kyungyeon Ra  
1<sup>st</sup> Place (tie) AWWA Indiana Section Best Poster Presentation Award, 2018, Mabi Teimouri  
Society of Risk Analysis Travel Award, 2017, Mabi Teimouri  
Society of Risk Analysis Merit Research Award, 2017, Mabi Teimouri  
1<sup>st</sup> Place AEESP Outstanding Masters Thesis Award, 2017, Karen Casteloos  
AWWA Water Science and Research Division Best Paper Award, 2017, Matthew Connell  
Black and Veatch / AWWA World of Difference Award, 2016, Jason Hawes  
Top 10 poster presenter at Purdue summer Undergraduate Research Symposium, 2016, Emily Conkling  
1<sup>st</sup> Place poster presentation at the Purdue Ecological Sciences and Engineering Research Symposium, 2016, Jessica Yapturi  
American Society of Civil Engineers (ASCE) Top 10 Faces/Students of the Year, 2014, Rachel Cooley  
Alabama / Mississippi Section AWWA Scholarship, 2013, Matthew Connell  
Alabama / Mississippi Section AWWA Scholarship, 2013, Markus Moore  
3<sup>rd</sup> Place oral presentation award, Alabama Water Resources Conference, 2012, Matthew Tabor

Prof. Whelton involved students and in developing and conducting industry workshop at the AWWA ACE conference (Graduate students: Maryam Salehi, Mabi Teimouri, Kyungyeon Ra) and public education workshops in response to the Camp Fire in Paradise, California (Graduate students: Yoorae Noh, Tolu Odimayomi, Christian Ley; Undergraduate student: Erica Wang).

Through 20 Directed Independent Study courses Prof. Whelton has mentored several undergraduate students. These included topics on environmental chemistry, environmental management, analytical methods for environmental samples, olfactory analysis of water, building water plumbing investigations, waste characterization, and plastic manufacturing and characterization.

Through 9 Directed Independent Study courses Prof. Whelton has mentored several graduate students. On topics such as assessing the toxicity of oil spill dispersants, DBP Generation in building plumbing, data interpretation, stormwater sampling and analysis, and trenchless technology emergence in developing countries.

### **Online Courses Taught**

Building Water Essentials Certificate Program. Co-developed with Professor Caitlin Proctor (Purdue ABE/EEE). Deployed Spring 2021, ongoing, rolling admission. 10 hour online, self-paced course for public health officials. This course provides a baseline understanding of how building water systems are designed, how they operate and when problems arise, and how those problems can be resolved – information that is not readily available for public health officials (and others dealing with the issues) to access in a single package anywhere else. Topics include system components, codes, standards, water quality, flow, and the potential health risks, including water quality investigations and remediation. \$495/person.

Purdue University EdX Platform. Plastics in Infrastructure and the Environment, CE 597. Purdue Affordable masters program. Summer 2021, Summer 2022. Students gain knowledge pertinent in the polymer science and engineering field as well as knowledge applicable to the disciplines of chemistry, biology, environmental science, toxicology, material science, and public health.

### **Short Courses and Workshops Taught, Events Directed**

#### Chaired, Co-Chaired Short Courses and Workshops

University Short-Course: Title: *Polymer Science Basics and Applications in Environmental and Infrastructure Engineering*. Mobile, Alabama. July 25, 2013, 2.5 hour event. Course held at University of South Alabama. Enrollment: 7 participants. Prof. Whelton was the lead organizer and instructor, graduate student M. Salehi helped instruct also.

Workshop: *Pipeline Repair and Replacement Technologies: Material Basics, Interactive Technology Selection, and Field Experiences*. Chicago, Illinois. October 2013, full-day event. Workshop held at the Water Environment Federation Annual Technical Exposition and Conference (WETEC) Conference and Exposition. 47 scientists, engineers, facility operators, and managers from around the globe; 59% of the attendees represented water utilities, 33% represented consulting firms, and the remaining attendees worked in research and development. Prof. Whelton was the Chair and Organizer and Chair, Presentations by Prof. Whelton along with industry professionals Prof. Whelton sought out from consulting, technology companies, and rehabilitation companies.

Workshop: *Learn how Water Main Rehabilitation Technologies Can Help Solve Your Infrastructure Challenges: Materials Education, Utility Lessons Learned, and Interactive Technology Demonstrations*. Boston, Massachusetts. June 8, 2014, full day event. Workshop held at the AWWA annual conference and exposition. Enrollment 40 participants. Prof. Whelton was the Chair and Organizer, Presentations by Prof. Whelton along with industry professionals Prof. Whelton sought out from consulting, technology companies, and rehabilitation companies.

Workshop: *Water Quality Impacts of Plumbing Design, Operation, and Maintenance*, New Orleans, Louisiana. October 24, 2014, 2 hour event. Workshop held at US Green Building Council (USGBC) GreenBuild Conference. Enrollment: 45 participants. Prof. Whelton was a co-organizer and co-chair with architect Rebecca Bryant, Watershed LLC (NSF collaborator), Presentations by Prof. Whelton and Rebecca Bryant.

Workshop: *Water Main Rehabilitation: Materials, Utility Lessons, and Interactive Technology Demonstrations*, Chicago, Illinois. June 24, 2016, full day event. Workshop held at AWWA annual conference and exposition. Enrollment: 55 participants. Prof. Whelton was the Chair and Organizer, Presentations by Prof. Whelton along with industry professionals Prof. Whelton sought out from consulting, technology companies, and rehabilitation companies.

Workshop: *Northern/Central Indiana Local Emergency Planning Committee (LEPC) and Water Utility Surface Water Supply Contamination Response*, West Lafayette, Indiana. July 25, 2016, full day event. Enrollment: 15 participants. Prof. Whelton served as co-Organizer/co-Chair/co-Instructor Indiana Water Utility Action Network (INWARN) and Prof. Linda Lee, Purdue University.

Workshop: *Southern Indiana Local Emergency Planning Committee (LEPC) and Water Utility Surface Water Supply Contamination Response*, Bloomington, Indiana. December 15, 2016, full day event. Enrollment: 28 participants. Prof. Whelton served as co-Organizer/co-Chair/co-Instructor with Indiana Water Utility Action Network (INWARN) and Prof. Linda Lee, Purdue University.

Workshop: *Plumbing Safety*, West Lafayette, Indiana. August 22–24, 2017, full-day events. Enrollment: 50 participants. Prof. Whelton served as the co-chair and primary organizer with Prof. Erin Dreelin at Michigan State University. This workshop was sponsored by the USEPA grant focused on plumbing safety and will involve local, county, state health agencies, technology and device manufacturing corporations, water, infrastructure, and public health trade associations, water utilities, academics from domestic and international institutions, building owners and designers.

Workshop/Public Demonstrations: *Plumbing Safety*, Paradise, California. July 27, 2019, 2 hour event. Participants: Estimated 150. Prof. Whelton served as the primary organizer and this was a collaboration with a local community-based organization (Camp Fire Zone Project), Butte College faculty and staff (Prof. Michael

Loedwyck, Prof. Kristin Millenvich, Julie Jenks), Chico State University faculty (Prof. Jackson Webster), UC Berkeley faculty (Prof. Charlotte Smith), Charlotte Smith & Associates, LLC (Jim Smith), and Purdue University postdoc and undergraduate and graduate students. This event was sponsored by the Paradise Rotary Foundation and involved public demonstrations and engagement about plumbing safety with the public and media.

Workshop: *Sewer Vapor Intrusion and Sewer Repairs*, West Lafayette, Indiana. March 16, 2020, 3.5 hr event. Online enrollment: 10 participants. Prof. Whelton and Prof. Kelly Pennell (University of Kentucky) served as chairs and primary organizers of this government agency only meeting. Agencies represented included NIOSH, California Department of Health (CDPH), USEPA Region 5, Indiana Department of Environmental Management (IDEM), and Pennsylvania Department of Health (PADOH).

Workshop: *Wildfire and Water Systems*, Oakland, California. July 14, 2022, 7 hr event. 15 participants. Prof. Whelton and Susan Teeff (East Bay Municipal Utility District, EBMUD) served as organizers of this utility only meeting. Water systems represented EBMUD (CA), City of Napa (CA), Los Angeles Water and Power (CA), Contra Costa Water District (CA), Portland Water Bureau (OR), Medford Water Commission (OR), City of Louisville (CO), Town of Superior (CO).

#### Invited Workshop Instruction

*Drinking Water Sensory Analysis*. Short Hills Water Treatment Plant. Short Hills, New Jersey. 2001.  
*Flavor Profile Analysis*. Fairfax County Water Authority. Fairfax, Virginia. 2001.  
*New Sensory Methods for Drinking Water Monitoring*. Indiana–American Water Company, Inc. Gary, Indiana. 2001.  
*Water Sensory Analysis*. Blacksburg–Christiansburg–VPI Water Authority. Blacksburg, Virginia. 2001.  
*Beyond Threshold Odor Number (TON)*. AWWA Annual Water Quality Technology Conference. Nashville, Tennessee. November 2001.  
*Water Vulnerability*. US Army Water Vulnerability Workshop. Aberdeen Proving Ground, Maryland. March 2002.  
*New Sensory Analyses Methods*. Joint Virginia AWWA and Water Environment Association Conference Workshop. Virginia Beach, Virginia. September 2002.  
*Methods for Improved Taste–and–Odor Monitoring*. Seminar for US Forces Korea, September 2002. Camp Casey, South Korea. *Water System Security*. US Army Water Issues Workshop. Albuquerque, New Mexico. 2002.  
*US Army Water System Vulnerability Assessments*. US Army Water Issues Workshop. Albuquerque, New Mexico. June 2003.  
*Training on How to Conduct Military Water Security Assessments*. Water System Vulnerability Assessor Training Workshop. August 2003. Fort Lewis, Washington.  
*Attribute Rating, Two–out–of–Five, and Distribution Rating Tests for Analyzing Water Quality*. Annual AWWA Water Quality Technology Conference. Philadelphia, Pennsylvania. November 2003.  
*Military Water Emergency Response*. US Army Water Supply Workshop. Aberdeen Proving Ground, Maryland. December 2003.  
*Protecting Field Drinking Water from Attack: Assessing Vulnerability and Preparedness*. Iraq Redeployment Occ. Health and Safety Workshop. Aberdeen Proving Ground, Maryland. January 2004.  
*Methods for Improving Water Security and Hardening Battlefield Drinking Water Systems*. Seminar for Military Water Security in Support of Operation Iraqi Freedom. San Antonio, Texas. March 2004.  
*Conducting Water System Security Assessments and an Emergency Response*. US Military Water System Security Workshop. Landstuhl, Germany. April 2004.  
*Public Works Security Tabletop Exercise*. Hunter Army Airfield, Georgia. November 2004.  
*Water Vulnerability Assessments for Deployed Units*. Seminar for Water Security Training for Redeploying Soldiers. Walter Reed Army Medical Center, Virginia. November 2004.  
*Public Works Security Tabletop Exercise*. Fort Stewart, Georgia. December 2004.  
*Garrison Command Security Tabletop Exercise*. Fort Stewart, Georgia. December 2004.  
*Taste–and–Odor: Sensory Decision Tree and Experiences*. AWWA Annual Conference and Exposition. San Francisco, California. June 2005.  
*Sensory Analysis of Water: Controlling Geosmin, 2–Methylisoborneol, and Other Odorants*. 7<sup>th</sup> IWA Conference for Off–Flavours in the Aquatic Environment. Cornwall, Ontario, Canada. October 2005.  
*Polymer Engineering and Oxidation: Potable Water Infrastructure Sustainability*. Training Workshop for Summer Undergraduate and Graduate Researchers. Virginia Tech. Blacksburg, Virginia. May 2008.

#### Events Created, Emceed and Directed

[Journalism, Science, and Policy: Communicating Risk and Relevance](#). Academics, politicians, scientists, members of the public and journalists convened February 11, 2021 to attend a virtual panel. The discussion centered on water quality and the symbiosis of scientific research and journalism. Professor Andrew Whelton and Professor Caitlin Proctor hosted and moderated the discussion between three prominent science writers. The panelists included *ProPublica* reporter and co-founder of the Mountain State Spotlight Ken Ward Jr, Pulitzer-prize winning writer Deborah Blum, and *New York Times* bestselling author Seth Siegel. All three writers have a long history of working with scientists and academics to relay research to wide audiences, work all three believe is becoming increasingly essential.

[Wildfire, Water Systems & Public Health: Lessons from Recent Western Wildfires](#). September 7, 2022, 1.5 hr event. Open to the Public. Prof. Whelton served as the organizer. Oregon Health Authority (Cordelia Schimpf), New Mexico Department of Environment (Joe Martinez), and Purdue share lessons learned from wildfires and water systems by virtual event. 500+ people attended. Recorded video is [here](#).

### 3. PUBLICATIONS, PRESENTATIONS, RESEARCH GRANTS AND CONTRACTS

#### Refereed journal papers

Among the authors undergraduate students are indicated with a superscript 'UG', graduate students indicated by a superscript 'G' and post-doctoral researchers by a superscript 'PD'.

1. Adam, CA, Dietrich, AM, Gallagher, DL, **Whelton, AJ**<sup>UG</sup>, Boardman, GD, Edwards, M. 2000. Meeting US EPA's Operator Certification Guidelines in Virginia. *Journal of the American Water Works Association*. **93** (8), 51–61. DOI: <https://doi.org/10.1002/j.1551-8833.2001.tb09266.x>.
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9. **Whelton, AJ**<sup>G</sup>, Dietrich, AM. 2009. Critical Considerations for the Accelerated Aging of High Density Polyethylene Potable Water Materials. *Polymer Degradation & Stability*. DOI: <http://dx.doi.org/10.1016/j.polymdegradstab.2009.03.013>.
10. **Whelton, AJ**<sup>G</sup>, Dietrich, AM, Gallagher, DL. 2009. Contaminant Diffusion, Solubility, and Material Property Differences between HDPE and PEX Potable Water Pipes. *Journal of Environmental Engineering*. **136** (2), 227–237. DOI: [https://doi.org/10.1061/\(ASCE\)EE.1943-7870.0000147](https://doi.org/10.1061/(ASCE)EE.1943-7870.0000147).
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#### **Books and chapters in books**

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30. **[Keynote Opening General Session] \*Whelton, AJ.** A Story of Resilience: The West Virginia Chemical Spill. *Indiana Alliance for Rural Water Annual Conference*. Fort Wayne, Indiana. August 26, 2015.
31. **\*Whelton, AJ.** Plastics in Your Home: Moving Forward. *Indiana Alliance for Rural Water Annual Conference*. Fort Wayne, Indiana. August 26, 2015.
32. **\*Whelton, AJ.** Resilient Urban Infrastructure: Water Contamination Investigation and Recovery. *University of Iowa Department of Civil and Environmental Engineering and Public Policy Center*, Iowa City, Iowa. September 11, 2015.
33. **\*Whelton, AJ.** West Virginia Spill and Surface Water Facility Resilience. *American Council of Engineering Companies (ACEC) Indiana Environmental Business Conference*. Indianapolis, Indiana. September 17, 2015.

34. **\*Whelton, AJ.** Chemical Spills, Drinking Water Contamination, and Recovery: The Role of Science, Ethics, and Policy. Seminar Series for the *School of Health Sciences, Purdue University*. West Lafayette, Indiana. October 20, 2015.
35. **\*Whelton, AJ.** Public Health Consequences of Energy Policies and Practices. *Engineers for a Sustainable World Regional Conference., Purdue University*. West Lafayette, Indiana. October 24, 2015.
36. **\*Whelton AJ.** Planning for a water contamination emergency, research and education needs. *Global Sustainability Institute Summit, Purdue University*. West Lafayette, Indiana. November 12, 2015.
37. **\*Whelton, AJ.** There is Nothing Natural about Drinking Water Disasters: The Need for Scientists, Engineers, and Policy Professionals to Step Forward. *Indiana University School of Public and Environmental Affairs (SPEA)*, Bloomington, Indiana. March 31, 2016.
38. **\*Whelton, AJ.** Planning Ahead for Contamination: Accidents, Mother Nature, and the Unexpected. *Indiana Rural Water Conference*. Columbus, Indiana. April 19, 2016.
39. **\*Whelton, AJ, Casteloos KS<sup>G</sup>, Hawes J<sup>UG</sup>.** Premise Plumbing Decontamination: Research and Technology Needs. *International Emerging Technology Symposium*. International Association of Plumbing and Mechanical Officials (IAPMO). Rosemont, Illinois. May 10, 2016.
40. **\*Whelton, AJ.** Why is Our Plumbing Harming Us? *Purdue University's Doom or Dawn*, West Lafayette, Indiana. October 3, 2016.
41. **\*Whelton, AJ.** Repairing Infrastructure: Potential Implications to Public Health. Standing Committee on Medical and Public Health Research During Large–Scale Emergency Events, Board on Health Sciences Policy, Health and Medicine Division, *The National Academies of Sciences, Engineering, and Medicine*. Washington, D.C. October 18, 2016.
42. **\*Whelton, AJ.** New Research on Plastic Pipes: Water Quality and Air Quality Challenges. *Florida Section AWWA Webinar*. November 1, 2016.
43. **\*Whelton, AJ.** Infrastructure Rehabilitation and New Construction: Pipes, Coatings, Liners and Composites. *Water 2.0 Conference*. Indianapolis, Indiana. November 16, 2016.
44. **\*Whelton, AJ.** The Freedom Industries Chemical Spill, West Virginia and Beyond. *University of Buffalo, Department of Civil and Environmental Engineering*. Buffalo, New York. December 2, 2016.
45. **\*Whelton, AJ, \*Boor B, \*Howarter J, Teimouri M<sup>G</sup>, Ra K<sup>G</sup>, Conkling E<sup>UG</sup>, Zyaykina N, Youngblood J, Jafvert C, Nuruddin MD<sup>G</sup>, Townsend M<sup>UG</sup>.** Understanding Chemical Exposure Risks from Cured in Place Pipe (CIPP) Technology Used for Water Pipe Rehabilitation. *National Institute of Occupational Health (NIOSH)*. Morgantown, West Virginia. February 13, 2017.
46. **\*Whelton, AJ.** Contaminant Release from Storm Water Culvert Rehabilitation Technologies: Environmental & Long–Term Material Integrity Impacts. *American Association of State Highway Transportation Officials (AASHTO) Subcommittee on Bridges and Structures (SCOBS) Annual Meeting*. Spokane, Washington. June 11–15, 2017.
47. **\*Whelton, AJ.** Water Technology Misuse, Flaws, and Disasters: The Need for Reinvention. *Purdue University's Doom or Dawn*, West Lafayette, Indiana. September 27, 2017.
48. **\*Huang, X<sup>G</sup>, Whelton, AJ.** Role of Plastics on Building Water Quality: Current Knowledge and Needs. *USEPA Drinking Water Workshop: Small Systems Challenges and Solutions*. Cincinnati, Ohio August 22–24, 2017.
49. **\*Whelton, AJ, Shannahan, J, Howarter, J, Boor, BE, Youngblood, J, Jafvert, C.** Occupational and Public Health Hazards Associated with Water Pipe Repairs. *National Environmental Health Association Webinar*. October 5, 2017. <http://neha.org/node/59303>
50. **Whelton AJ, Howarter J.** Contaminant Release from Storm Water Culvert Rehabilitation Technologies: Understanding Implications to the Environment and Long–Term Material Integrity. Culverts & Hydraulic Structures Committee (AFF70) *Transportation Research Board Annual Conference*. January 11, 2018. Washington, D.C.



51. **Whelton, AJ.** Catalyzed by Citizen and Practitioner Requests: Water Pipe Repairs Bring Public Health and Occupational Exposure Risks. *AEESP Distinguished Lecture and Purdue University Conference*. West Lafayette, Indiana. February 2, 2018.
52. **\*Whelton, AJ,** Salehi, M<sup>PD</sup>, Mitchell, J, Rose, J, Nejadhashemi, AP, Beecher, J, Dreelin, E, Shah, A, Syal, M, Aw, T. Building Plumbing Safety: Right Sizing Tomorrow's Water Systems for Efficiency, Sustainability, and Public Health. *American Chemical Society Spring Conference*. New Orleans, Louisiana. March 18–22, 2018.
53. **\*Whelton, AJ; Shannahan, J.** Emerging Issue in Public and Occupational Health: Chemical Emissions and Exposures from Water Pipe Repairs. *Association of State and Territorial Health Officials (ASTHO)*. Fort Collins, Colorado. April 10, 2018.
54. **\*Ra, K<sup>C</sup>, Teimouri Sendesi, SM<sup>C</sup>,** Howarter, J, Jafvert, CT, Donaldson, B, **Whelton, AJ.** Limiting CIPP and Spray-On Liner Culvert Rehabilitation Water Quality Impacts and Construction Specifications. *Northwest Indiana Stormwater Advisory Group Meeting*. LaPorte, Indiana. June 21, 2018.
55. **\*Whelton, AJ.** Chemical Air Contamination and Exposures Associated with Sewer Pipe Repairs. *Indiana Environmental Health Association Conference*. September 24–26, 2018. Evansville, Indiana.
56. **\*Whelton, AJ.** *Plumbing Innovation as a Driver for Improved Public Health*. Plumbing Manufacturers International Conference. Litchfield, Arizona. November 6–8, 2018.
57. **\*Whelton, AJ.** Preserving Water Quality in Building Design. *US Green Building Council GreenBuild–WaterBuild*. Chicago, Illinois. November 13, 2018.
58. **\*Whelton, AJ.** Treatment Plant, Distribution & Premise Plumbing Issues. *Michigan Drinking Water Workshop hosted by the Michigan Environmental Council*. Ann Arbor, Michigan. December 6, 2018.
59. **\*Whelton AJ.** Importance of science in responding to large-scale drinking water contamination disasters: Wildfires, chemical spills, & more. *American Chemical Society Annual Meeting*. San Diego, California. August 2019.
60. **\*Whelton, AJ.** Where we are Today: Cured in Place Pipe Lining (CIPP) Chemical Emissions and Safety. *Indiana ACEC annual meeting*. Indianapolis, Indiana. September 2019.
61. **Whelton, AJ.** Plumbing: Disaster Response and Safe Water for Schools and Homes. Plumbing Manufacturers International Conference. St. Petersburg, Florida. November 2019.
62. **Whelton, AJ.** Widespread Drinking Water Contamination: Coming Back from California's Most Destructive and Deadliest Wildfire in State History. *Indiana Rural Water Association Conference*. French Lick, Indiana. December 2019.
63. **Whelton, AJ,** Youngblood JP, Howarter JA. Lessons Learned from a 3 Year DOT Study for Cured-in-Place-Pipe (CIPP) for Storm Water Applications. *Indiana Stormwater Conference*. West Lafayette, Indiana. February 6, 2020.
64. **\*Whelton, AJ;** Noh, Y, Shannahan, J. Communities Need Health Officials to Protect them from Neighborhood HAZMAT Incidents. *Association of State and Territorial Health Officials (ASTHO) Big Cities Environmental Health Coalition Meeting*. February 11, 2020.
65. **\*Proctor, CR, \*Whelton, AJ.** *Indiana Facility Managers Association (IFMA) Webinar*. May 7, 2020.
66. **\*Whelton, AJ, \*Proctor, CR.** Building Water System Safety in the Era of COVID–19. *PHCPPros Webinar*. May 8, 2020.
67. **\*Whelton, AJ.** Rehabilitation of Building Water Systems. *Plumbing Industry Leadership Coalition meeting*. Washington, D.C. May 14, 2020.
68. **\*Proctor, CR, \*Whelton, AJ.** Building Water System Safety Research: COVID–19. *AWWA Kentucky/Tennessee Section Webinar*. May 15, 2020.
69. **\*Whelton, AJ.** COVID–19's crisis on the impact of plumbing systems. *American Society of Plumbing Engineers (ASPE) Webinar*. May 26, 2020.

70. **\*Whelton, AJ.** COVID-19: Reopening Buildings and Challenges with Building Water Safety. *NEHA Webinar*. May 22, 2020.
71. **\*Whelton, AJ.** Impact of Prolonged Shutdown on Buildings from a Water Quality Perspective. *Water Research Foundation Webinar*. May 28, 2020.
72. **\*Whelton, AJ.** What to do Now: Addressing Building Re-occupancy and Low Water Use. *Association of State and Territorial Health Officials (ASTHO) Webinar*. June 8, 2020.
73. **\*Whelton, AJ.** COVID-19, Building Water Safety, and Fixing Pipes. *CBBEL, Inc. Webinar*. June 18, 2020.
74. **\*Whelton AJ,** Proctor CR. Healthy Building Webinar Series: Water Quality with Purdue. *US Green Building Council (USGBC) Michigan Webinar*. June 25, 2020.
75. **\*Whelton AJ.** Lessons from the Field: Building Water System Interventions. *International Water Association Webinar on COVID-19: Ensuring Safe Water in Sparsely Occupied Buildings*. July 16, 2020.
76. **\*Whelton AJ.** Ready school building water systems and operate them under low water use conditions. *Building Water Safety in Schools Webinar initiated by the Indiana State Department of Health*. July 13, 2020.
77. **\*Whelton AJ.** Water Quality Variances in Multiple Locations of a Home. *Water Quality Association Webinar*. July 29, 2020.
78. **\*Whelton, AJ.** Water Bugs: Building Water Stagnation – Water Quality and Addressing Concerns. *Florida Section AWWA Webinar*. August 5, 2020.
79. **\*Whelton AJ.** Returning Plumbing to Safe Use After Extended Shutdowns or Low Occupancy: Large Buildings, Standards, Considerations, and Gaps. *17<sup>th</sup> annual US EPA Drinking Water Workshop*. September 1, 2020.
80. **\*Whelton AJ,** \*Teefy S, \*Morley K. Wildfire Damage to Drinking Water Distribution Systems and Buildings: Physical and Chemical Impacts and Proposed Project. *Pacific Northwest Section AWWA meeting*. September 24, 2020.
81. **\*Whelton AJ.** After Drinking Water Contamination Disasters, is Policy Enough to Protect Public Health? Department of Civil and Environmental Engineering, University of New Mexico. October 6, 2020.
82. **\*Whelton AJ.** How to ensure the taps you are using are safe after being shutoff for so long? *AEESP Converging COVID19: Creation of Efficient, Healthy, and Resilient Cities*. October 30, 2020.
83. **\*Whelton AJ.** COVID-19 and Building Water Systems Large Buildings, Standards, Considerations, and Gaps. *USEPA Source Water Leadership Forum*. November 14, 2020.
84. **\*Whelton AJ.** Disaster Challenges and Opportunities: Safely and rapidly recovering drinking water systems. *India-Canada IMPACTS WESTalks*. December 2, 2020.
85. **\*Whelton AJ.** It Takes More than Data. Charles E. Via Department of Civil and Environmental Engineering, Virginia Tech. February 12, 2021.
86. **\*Whelton AJ.** Overcoming Decision Gaps Key Considerations for Utility Response Plans. *AWWA Virtual Summit: Water Quality*. December 8, 2020.
87. **\*Whelton AJ,** Proctor C. Water Safety in Buildings: Issues at Hand. *AWWA Virtual Summit: Water Quality*. December 9, 2020.
88. **\*Whelton AJ,** Jankowski C<sup>G</sup>. Considerations for testing building water systems to identify health risks. *AWWA Virtual Summit: Water Quality*. March 3, 2021.
89. **\*Whelton AJ,** Preventing Future Safety and Environmental Problems: Experiences of Polymers in Water Infrastructure Systems. Warren Distinguished Lecture, University of Minnesota. March 23, 2021.

90. **\*Whelton AJ.** Considerations for returning plumbing to safe use after its been chemically contaminated. Royal Society of Public Health. April 14, 2021.
91. **\*Whelton, AJ, Noh Y<sup>G</sup>, \*Shannahan J.** CIPP: Public Health, Worker Health, Infrastructure, and the Environment. *Risk Assessment Discussion Meeting, Center for the Environment, Purdue University.* Virtual Online. April 1, 2021.
92. **\*Whelton, AJ.** Safer Plumbing Design, Use, and Recovering from Disasters. *IAPMO EWTS.* Virtual Online. May 12–13, 2021.
93. **\*Whelton, AJ.** Water Safety, Disasters, and Plastics. Southern Nevada Water Authority, Las Vegas, NV. August 27, 2021.
94. **\*Whelton AJ.** Lessons From the Pandemic: Building Water Safety in Schools, Offices, and Beyond. *Indiana Partners for Pollution Prevention Annual Meeting.* Indianapolis. September 2021.
95. **\*Whelton, AJ.** Lessons from the Pandemic: Building Water Safety in Schools, Offices, and Beyond. Partners for Pollution Prevention. Indianapolis, IN. September 23, 2021.
96. **\*Whelton, AJ.** Considerations for Wildfire Emergency Response and Health: Public Health Decisions in Response to Drinking Water System Contamination. *Presentation for the Canadian Ministry of Health and British Columbia Health, Canada.* Virtual Online. July 2021.
97. **\*Whelton, AJ.** Drinking Water Quality Variations in Green Residential Plumbing and Disasters. *Annual Water Quality Association Conference.* Las Vegas, NV. July 28, 2021.
98. **\*Whelton, AJ.** New Resources for Wildfire Contamination Response and Recovery. *National Environmental Health Association (NEHA) Monthly Meeting.* Virtual Online. July 28, 2021.
99. **\*Whelton, AJ.** Water Safety Considerations for Private Wells After a Wildfire. *NEHA Private Water Network webinar.* Virtual Online. August 2021.
100. **\*Whelton, AJ.** Considerations for response and recovery to contaminated water utility and building water systems. *Environmental Operators Certification Program (EOCP) annual meeting.* Vancouver, CN. Virtual Online. September 8, 2021.
101. **\*Whelton, AJ.** Lessons From the Pandemic: Building Water Safety in Schools, Offices, and Beyond. *Partners for Pollution Prevention Annual Meeting.* Indianapolis, IN. September 23, 2021.
102. **\*Whelton, AJ.** The Role of Science and Policy: Drinking Water Safety After Fires. School of Public Policy, University of California at Riverside. October 21, 2021. Virtual.
103. **\*Whelton, AJ.** New Developments in Building Water Safety. *Plumbing Manufacturers International Meeting.* November 2021. San Diego, CA.
104. **\*Whelton, AJ.** Building Water Safety & Colorado's Most Destructive Fire in History. *LTAP Stormwater Drainage Conference.* February 10, 2022. West Lafayette, IN.
105. **\*Whelton, AJ, Seidel C, Wham B, Fischer E.** The 2021 Marshall Fire Impact on Large Water Utilities. *CONVERGE Forum.* February 17, 2022. Boulder, CO. Virtual.
106. **\*Whelton, AJ.** The Role of Engineers in Protecting Public Health and the Environment. *Howard University Department of Civil and Environmental Engineering.* March 31, 2022. Washington, D.C.
107. **\*Whelton, AJ.** Wildfire Lessons: The Camp Fire and More. *American Chemical Society Silicon Valley Section, Water Quality and Contamination Fate Following Natural Disasters.* March 31, 2022. Virtual.
108. **\*Whelton, AJ.** Post-Wildfire Distribution System Water Quality Impacts and Potential Responses, Project 5106. Water Research Foundation Tailored Collaboration Program. April 5, 2022. Webinar.
109. **[Keynote Opening General Session] \*Whelton, AJ.** The Marshall Fire. *Indiana American Water Works Association Annual Conference* April 12, 2022. Indianapolis, IN.

110. **\*Whelton, AJ.** Taking an Active Role in Defending Public Health and Welfare in a Time of Crisis. Workshop: Engineering for Public Health: A Workshop on Convergent Research, Implementation, Science, and Stakeholder Engagement to Benefit Environmental Health. *AEESP Conference*, St. Louis, Missouri. June 2022.
111. **\*Whelton, AJ.** Right Sizing Tomorrow's Water Systems for Efficiency, Sustainability, & Public Health. *NIST Plumbing Research Workshop*. Gaithersburg, Maryland. November 9, 2022.
112. **\*Whelton, AJ.** Disaster Impacts on Plumbing. *NIST Plumbing Research Workshop*. Gaithersburg, Maryland. November 9, 2022.
113. **\*Whelton, AJ.** American Fires: Water Infrastructure and Community Resilience. Imperial College. London, England. March 3, 2023.
114. **\*Whelton, AJ.** Public health lessons from disasters that affect drinking water utilities and plumbing. Norwegian Institution of Public Health. Oslo, Norway. March 6, 2023.
115. **\*Whelton, AJ.** Plastics in Water Contact Applications: Discoveries, Needs, and Collaborations Needed. University of Pittsburgh, Department of Civil and Environmental Engineering, Pittsburgh, Pennsylvania, March 31, 2023. Seminar.
116. **\*Whelton, AJ.** Contaminated water challenges to households after disasters. Water Quality Association Conference and Exposition. Las Vegas, Nevada. April 18-20, 2023.

*\*The invited National Academies of Science, Engineering, and Mathematics presentations and others associated with industry meetings are listed in the ENGAGEMENT SECTION.*

#### **Contributed conference/symposium presentations**

1. **\*Whelton, AJ<sup>G</sup>**, Dietrich, AM. Temperature Effects on Drinking Water Odor Perception. *AWWA Water Quality Technology Conference*. Nashville, Tennessee. November 2001.
2. **\*Whelton, AJ.** Force Health Protection on the Battlefield and in Garrison, Water System Security. *Society of American Military Engineers Annual Conference*. Baltimore, Maryland. 2004.
3. **\*Whelton, AJ.** Customers as Distribution Sentinels. *AWWA Annual Conference and Exposition*. Orlando, Florida. June 2004.
4. **\*Whelton, AJ<sup>G</sup>**, Dietrich, AM, Tanko, JM. Degradation of High Density Polyethylene due to Oxygen and Chlorine Compounds. *Seminar Series Macromolecular Interfaces with Life Sciences (MILES) Program*. Virginia Tech. Blacksburg, Virginia. 2005.
5. **\*Whelton, AJ<sup>G</sup>**. How Important is the Taste of Minerals to Consumers? *7<sup>th</sup> International Water Quality Assoc. Symposium for Off-Flavours in the Aquatic Environment*. Cornwall, Connecticut. 2005.
6. **\*Whelton, AJ<sup>G</sup>**. Drinking Water: Complaints, Polymers, and Oxidants. *Macromolecular Interfaces with Life Sciences (MILES) Program, Virginia Tech*, Blacksburg, Virginia. 2005.
7. **\*Whelton, AJ<sup>G</sup>**. Utilities and Consumers: Strategies to Assess, Manage, and Respond to Public Perception Issues. *AWWA Annual Conference and Exposition*. San Antonio, Texas. June 2006.
8. **\*Whelton, AJ.** Choosing Which Emergency Exercise is Right for You, You Have Three Options. *AWWA Water Security Congress*. Washington, D.C. 2006.
9. **\*Whelton, AJ<sup>G</sup>**. Evaluating Contaminant Interaction, Degradation, and Leaching of Personal Hydration Systems. *Macromolecular Interfaces with Life Sciences (MILES) Program*. Virginia Tech. Blacksburg, Virginia. 2006.
10. **\*Whelton AJ<sup>G</sup>**. Pilot Study for the Integration of Customer Feedback into Online Early Warning Systems. *AWWA Customer Service Conference*. Austin, Texas. 2007.
11. **\*Whelton, AJ<sup>PD</sup>**, Dietrich AM, Gallagher DL. \*Poster:\* Sustainable Polyethylene Water Infrastructure: Contaminant Diffusivity and Solubility in New and Chlorine Exposed Pipe. *AEESP Biannual Conference*. University of Iowa, Iowa City, Iowa. July 26–29, 2009.

12. **\*Whelton, AJ<sup>PD</sup>**. \*Poster:\* Building a Postdoctoral Association from the Ground–Up: Commitment, Challenges, and Resolution. *National Postdoc Association Conference*. Philadelphia, Pennsylvania. April 2010.
13. **\*Whelton, AJ**. *Plastics 101: Basic Knowledge for Every Civil Engineer*. ASCE Alabama Section Annual Conference. Orange Beach, Alabama. July 27–29, 2011.
14. **\*Whelton, AJ**. Chemical Leaching from Plastic Water Pipe, A Global Perspective. *Alabama / Mississippi AWWA Annual Conference*. Biloxi, Mississippi. October 2–4, 2011.
15. \*Greifenstein, M<sup>G</sup>, **Whelton, AJ**, Stoner, C, Stubner, A, White, D. \*Poster:\* An Investigation Into The Effects Of Temperature and Storage Time On Military Packaged Water In Afghanistan– The Liberation And Migration Of Potential Contaminants From Expeditionary Water Packaging System Polyethylene Terephthalate Water Bottles. *Uniformed Services of the Health Sciences University (USHS) Research Day*. Bethesda, Maryland. May 11, 2012.
16. **\*Webb, AJ, Whelton, AJ**. 2012. Engaging Scientists and Engineers through Immersive Learning. *South Alabama Teaching and Learning Conference*. Mobile, Alabama. March 2012.
17. **\*Whelton, AJ**. Nanoparticle Release from Food and Water Contact Materials: Addressing Safety Concerns. *American Chemical Society Annual Meeting*. Environmental Chemistry Division. Philadelphia, Pennsylvania. August 22, 2012.
18. **\*Whelton, AJ**. Standard Test Method for Environmental Impacts of Stormwater Infrastructure Rehabilitation Materials. *Virginia Department of Transportation*. Charlottesville, VA. September 2012.
19. \*Tabor, M<sup>G</sup>, Salehi, M<sup>PD</sup>, Estaba, J<sup>UG</sup>, **Whelton, AJ**. Influence of Infrastructure Rehabilitation Liners on Rinse Water Quality: Polymer Enhanced Cement Mortar and Polyurea Liners. *Alabama Water Resources Conference*. Orange Beach, Alabama. September 6, 2012.
20. \*Tabor, M<sup>G</sup>, Kelley, K<sup>G</sup>, Salehi, M<sup>PD</sup>, Estaba, J<sup>UG</sup>, Colmenarez, E<sup>UG</sup>, **Whelton, AJ**. \*Poster:\* Polymer Potpourri: Water Quality Impacts caused by Polymeric Water Infrastructure Materials. *Alabama / Mississippi AWWA Conference*. Mobile, Alabama. October 14–16, 2012.
21. \*Allen, R<sup>G</sup>, \*Marr, C<sup>G</sup>, Erdman, C<sup>G</sup>, Dulaney, BE<sup>G</sup>, Lucas, I<sup>G</sup>, Thomley, K<sup>G</sup>, Webb, BM, **Whelton, AJ**. \*Poster:\* Spatial Variability of Water Quality Near MAWSS Pump Station Intake at J.B. Converse Reservoir. *Alabama / Mississippi AWWA Conference*. Mobile, Alabama. October 14–16, 2012.
22. **\*Whelton, AJ**, Stenson, A, Waddell, K<sup>UG</sup>, Nguyen, T<sup>UG</sup>, Kelley, K<sup>UG</sup>, Patel, J<sup>UG</sup>, Colmenarez, E<sup>UG</sup>, Estaba, J<sup>UG</sup>. Determination of Contaminants Responsible for THM Formation by Examining a Lake Water's Natural Organic Matter Composition. *Alabama / Mississippi AWWA Conference*. Mobile, Alabama. October 2012.
23. \*Prado, E<sup>UG</sup>, Navarro, L<sup>UG</sup>, Holley, W<sup>PD</sup>, Holley, H, **Whelton, AJ**. \*Poster:\* Biocide Attack of HDPE Pipe in Power Facility Cooling Water Systems. *University Committee for Undergraduate Research (UCUR) Conference*. Mobile, Alabama. October 2012.
24. \*Salehi, M<sup>PD</sup>, **Whelton, AJ**. \*Poster:\* Environmental Health and Safety of Nanocomposites for Food and Water Contact Applications. *International Seminar on Polymer Science and Technology (ISPT) Conference*. Amirkabir University of Technology, Tehran, Iran. October 21–25, 2012.
25. \*Ladner, DA, Geitner, NK<sup>G</sup>, Steele, MM<sup>G</sup>, Xie, P<sup>G</sup>, Bhattacharya, P<sup>G</sup>, Chen, R, **Whelton, AJ**, Powers, S, Ke, P–C. \*Poster:\* Dendritic polymers as biocompatible oil spill dispersants. *Gulf of Mexico Oil Spill and Ecosystem Science Conference*. New Orleans, Louisiana. January 21–23, 2013.
26. **Whelton, AJ**, Stenson, A, Kelley, K<sup>G</sup>, Connell, M<sup>G</sup>, \*Cooley, R<sup>UG</sup>. "Poster": Minimizing Chemical Exposure in Green Buildings: Crosslinked Polyethylene (PEX) Installation Decisions. *Annual University of South Alabama Research Forum*. Mobile, Alabama. March 16, 2013.
27. \*Kelley, K<sup>G</sup>, Stenson, A, **Whelton, AJ**. Towards a Safer and Greener Environment: The Role of PEX Pipe on Drinking Water Odor and Organic Quality. *AWWA Annual Conference and Exposition*. Denver, Colorado. June 10–13, 2013.

28. \*Greifenstein, M<sup>G</sup>, Stoner, C, Stubner, A, Hout, J<sup>G</sup>, White, D, **Whelton, AJ**. \*Poster:\* Temperature and Storage Duration Influence on Hygienic Quality of Polyethylene Terephthalate Bottled Military Packaged Water. *National Environmental Health Association Conference*. Washington, D.C. July 9–11, 2013.
29. \*Ladner, DA, Geitner, NK<sup>G</sup>, Steele, MM<sup>G</sup>, Xie, P<sup>G</sup>, Bhattacharya, P<sup>G</sup>, Chen, R, **Whelton, AJ**, Powers, S, Ke, P–C. \*Poster:\* Dendritic polymers as biocompatible oil spill dispersants. 2013. *AEESP Biannual Conference*. Golden, Colorado. July 15, 2013.
30. \*Salehi, M<sup>G</sup>, **Whelton, AJ**. Polymers in Water and Energy Systems: Pipes and Oil Spills. *Clemson University, Department of Environmental Engineering and Earth Sciences*. Clemson, South Carolina. January 15, 2014. Sent graduate student in place.
31. \*Salehi, M<sup>G</sup>, Boettcher, A, Powers, S, **Whelton, AJ**. \*Poster:\* Toxicity of a Promising Oil Spill Dispersant to *Daphnia magna*. *Gulf of Mexico Oil Spill and Ecosystem Science Conference*. Mobile, Alabama. January 22, 2014.
32. \*Tu, Y<sup>G</sup>, Xie, P<sup>G</sup>, Ulmer, R, Goins, R, Ladner, DA, Geitner, NK<sup>PD</sup>, Ke, P–C, Ding, F, Salehi, M<sup>G</sup>, Powers, S, **Whelton, AJ**. Dendritic polymers as oil spill dispersants: Effectiveness and toxicity compared to Corexit 9500. *Gulf of Mexico Oil Spill and Ecosystem Science Conference*. Mobile, Alabama. January 29, 2014.
33. \*Tabor, ML<sup>G</sup>, Newman, D<sup>PD</sup>, Boettcher, A, White, KD, Steward, E, **Whelton, AJ**. An Investigation of Water Quality and Aquatic Toxicity Concerns of CIPP Rehabilitated Infrastructure. *Alabama Water Environment Association Annual Conference*. Orange Beach, Alabama. April 6–9, 2014.
34. **\*Whelton, AJ**. Tap Water Quality in Plumbing Systems: Chemical Migration from PEX Plumbing Pipe and In–Home Drinking Water Quality following the Elk River Chemical Spill. *AWWA Annual Conference and Exposition*. Boston, Massachusetts. June 8, 2014.
35. \*Salehi, M<sup>G</sup>, Tu, Y<sup>G</sup>, Geitner, N<sup>PD</sup>, Xie, P<sup>G</sup>, Ladner, D, Powers, S, Boettcher, A, **Whelton, AJ**. *Daphnia Magna* Toxicity and Oil Dispersion Effectiveness of Hyperbranched Polyethyleneimine Compared to Corexit 9500: Technology Status and Path Forward. *American Chemical Society National Meeting*. San Francisco, California. August 10–14, 2014.
36. \*Rosen, J, McGuire, MJ, Eaton, A, **Whelton, AJ**. Chemical Spill of Crude MCHM into the Elk River. *2014 New England Water Works Association Conference*. Rockport, Maine. September 21–24, 2014.
37. \*Gill, JP<sup>G</sup>, **Whelton, AJ**. Why Plastic Water Pipes, Liners, and Coatings Fail and How to Recognize the Warning Signs. *Alabama /Mississippi AWWA Conference*. Point Clear, Alabama. November 16–20, 2014.
38. \*McMillan, L<sup>G</sup>, Kelley, K<sup>G</sup>, Connell, M<sup>G</sup>, Gill, J<sup>G</sup>, White, KD, Salehi, M<sup>G</sup>, **Whelton, AJ**. Consequences of Contaminated Water Stagnation and Flushing for Plastic and Metal Residential Plumbing Systems: West Virginia. *Alabama /Mississippi AWWA Conference*. Point Clear, Alabama. November 16–20, 2014.
39. **\*Whelton, AJ**. Perspectives from an Outsider, Community Engagement, Pre– and Post– Flush Plumbing System Water Testing Results. *AWWA Water Quality Technology Conference*. New Orleans, Louisiana. November 16–20, 2014.
40. \*Rodriguez, R<sup>UG</sup>, Boettcher, A, Powers, S, **Whelton, AJ**, Edelbrock, J<sup>UG</sup>, Rikard, S. Impact of Corexit 9500 on the Early Life Stages of the Eastern Oysters, *Crassostrea virginica*. *Bays and Bayous Symposium*. Mobile, Alabama. December 2–3, 2014.
41. **\*Whelton, AJ**, Rosen J, Patterson M. Licorice and Lessons Learned. *Society of Risk Assessment Conference*. Denver, Colorado. December 7–10, 2014.
42. **\*Whelton, AJ**. Understanding Tap Water Chemical Levels in Affected Homes: Detection limits, breakdown products, in–home locations. *Society of Risk Assessment Conference*. Denver, Colorado. December 7–10, 2014.
43. \*Rosen, J, **Whelton, AJ**. Expert Evaluation of Chemical Spill of Crude MCHM into the Elk River, the West Virginia Testing Assessment Project (WV TAP). *Society of Risk Assessment Conference*. Denver, Colorado. December 7–10, 2014.

44. **\*Whelton, AJ.** Scientific challenges associated with building plumbing systems and water infrastructure contamination events. *U.S. Environmental Protection Agency*, Cincinnati, Ohio. February 10, 2015.
45. **\*Salehi, M<sup>G</sup>**, Stenson, A, **Whelton, AJ.** How Some Plastic Plumbing Pipes Can Cause Problems: Tap Water Chemicals, Odors, and Microbial Regrowth Potential. *Indiana Section AWWA Conference*. Indianapolis, Indiana. February 10–12, 2015.
46. **\*Patterson, J**, Dourson, M, Rosen, J, **Whelton, AJ.** 2015. \*Poster:\* MCHM Spill in the Elk River – Toxicology and Risk Assessment. *Society of Toxicology Conference*. San Diego, California. March 20–22, 2015.
47. **\*Rodriguez, R<sup>UG</sup>**, Powers, S, **Whelton, AJ**, **Edelbrock, J<sup>UG</sup>**, Rikard, S, Boettcher, A, Impact of Corexit 9500 on the Early Life Stages of the Eastern Oyster, *Crassostrea virginica*. *National Shellfisheries Association Conference*. Monterey, California. March 22–26, 2015.
48. **\*Salehi, M<sup>G</sup>**, Stenson, A, **Whelton, AJ.** Considerations for Sustainable Plumbing Decisions. *8th Annual Midwest Graduate Student Summit*. West Lafayette, Indiana. April 11–12, 2015.
49. **\*Novy, C<sup>G</sup>**, Beebe, DA, **Whelton, AJ.** Environmental Fate and Aquatic Toxicity of Chemicals Spilled into the Elk River, West Virginia. *Alabama Water Environment Association Conference*. Orange Beach, Alabama. April 12–15, 2015.
50. **\*Novy, C<sup>G</sup>**, Beebe, D, **Whelton, AJ.** \*Poster:\* Environmental Contamination and Daphnia Magna Toxicity Caused by the Freedom Industries Elk River Chemical Spill, West Virginia. *University of South Alabama Research Forum*. Mobile, Alabama. Spring 2015.
51. **\*Boyd, S<sup>UG</sup>**, **Ghosal, R<sup>UG</sup>**, Dey, R, **Whelton, AJ**, Stenson, A. \*Poster:\* ESI–MS Analysis of PEX pipe contact water. *University of South Alabama Research Forum*. Mobile, Alabama. Spring 2015.
52. **\*Novy, C<sup>G</sup>**, Beebe, A, **Whelton, AJ.** \*Poster:\* Environmental Concentrations and Aquatic Toxicity of a Chemical Mixture Spilled into a Drinking Water Supply in Charleston, West Virginia. *NSF Lessons Learned Workshop for the Dan and Elk River Spills*. Shepherdstown, West Virginia. May 27–29, 2015.
53. **\*Huang, X<sup>G</sup>**, **Casteloos, K<sup>G</sup>**, **Kelly, D<sup>UG</sup>**, **Whelton, AJ.** \*Poster:\* Lessons Learned from Water Supply and Infrastructure Contamination Incidents Caused by Chemical Spills in North America, 2014–2015. *NSF Lessons Learned Workshop for the Dan and Elk River Spills*. Shepherdstown, West Virginia. May 27–29, 2015.
54. **\*Whelton, AJ**, Stenson, AC, **Kelley, KM<sup>G</sup>**, **Connell, M<sup>G</sup>**, Dey, R, **Moore, MP<sup>G</sup>**. 2015. Plastic Water Main and Service Connection Pipes: Oxidative Resistance, Leaching, And Microbial Regrowth Differences. *AWWA Annual Conference. and Exposition*. Anaheim, California. June 8–10, 2015.
55. **\*Huang, X<sup>G</sup>**, **Casteloos, K<sup>G</sup>**, **Kelly, D<sup>UG</sup>**, **Whelton, AJ.** \*Poster:\* Lessons Learned from Water Supply and Infrastructure Contamination Incidents Caused by Chemical Spills in North America, 2014–2015. *AEESP Biannual Conference*. New Haven, Connecticut. June 13–16, 2015.
56. **\*Salehi M<sup>G</sup>**, **Connell M<sup>G</sup>**, **Kelley KM<sup>G</sup>**, Stenson A, **Whelton AJ.** PEX and PP Plumbing Pipe Impacts on Tap Water Quality. *AEESP Biannual Conference*. New Haven, Connecticut. June 13–16, 2015.
57. **\*Whelton, AJ**, \*Haas, C. Lessons Offered from the 2014 Freedom Industries Chemical Spill, West Virginia USA: Research and Education. *AEESP Biannual Conference*. New Haven, Connecticut. June 13–16, 2015.
58. **\*Whelton, AJ.** Lessons Offered from the 2014 Freedom Industries Chemical Spill, West Virginia USA: Research and Education. *AEESP Biannual Conference*. New Haven, Connecticut. June 13–16, 2015.
59. **\*Whelton, AJ**, \*Haas CN. Rapid Permeation of Environmental Engineering and Science Discoveries into Public Policy Decisions through Social Media Platforms. *AEESP Biannual Conference*. New Haven, Connecticut. June 13–16, 2015.
60. **\*Eckleman, M**, **Whelton, AJ**, Stenson, A. Chemical Toxicity Along the Life Cycle of Residential Piping. *AEESP Biannual Conference*. New Haven, Connecticut. June 13–16, 2015.

61. **\*Whelton, AJ.** Need for safer chemicals and rapid screening tools: The 2014 Freedom Industries chemical spill, West Virginia, USA. *250th American Chemical Society National Meeting*. Boston, Massachusetts. August 16–20, 2015.
62. **\*Whelton, AJ.** Interaction of Crude Oil and Hydraulic Fracturing Chemicals with Water Distribution Pipes. *AWWA Water Quality Technology Conference*. Salt Lake City, Utah. November 15–19, 2015.
63. **\*Casteloes, KS<sup>G</sup>, Brazeau, RH, Whelton, AJ.** Decontaminating Chemically Contaminated Residential Premise Plumbing Systems by Flushing. *Indiana AWWA Annual Conference and Exposition*. Indianapolis, Indiana. January 30–February 2, 2016.
64. **\*Salehi, M<sup>G</sup>, Whelton, AJ.** Heavy Metals on Plastic Plumbing Pipe Surfaces: Occurrence and Implications. *Indiana AWWA Annual Conference and Exposition*. Indianapolis, Indiana. January 30–February 2, 2016.
65. **\*Whelton, AJ.** Key Decisions during Drinking Water Contamination Incident Investigations and Recovery. *Indiana AWWA Annual Conference and Exposition*. Indianapolis, Indiana. January 30–February 2, 2016.
66. **\*Meyer, M, \*Whelton, AJ.** Post Construction Best Management Practices (BMP) for Reducing Stormwater Pollution: Trends, Challenges, and a Planning Ahead. *102<sup>nd</sup> Annual Purdue University Roads School*. West Lafayette, Indiana. March 8–10, 2016.
67. **\*Horzmann, KA<sup>G</sup>, Whelton, AJ, Freeman, JL.** Acute developmental toxicity of crude MCHM in zebrafish (*Danio rerio*) and observed neurobehavioral alterations. *Society of Toxicology Conference*. New Orleans, Louisiana. March 13–17, 2016.
68. **\*Prendergast, K<sup>UG</sup>, Casteloes, KS<sup>G</sup>, Whelton, AJ.** \*Poster:\* Surfactant–Polymer Interactions with Plastic Drinking Water Conveyance Materials. *Purdue University Undergraduate Research Symposium*. West Lafayette, Indiana. April 12, 2016.
69. **\*Omur–Ozbek, P, Akalp, D<sup>G</sup>, Whelton, AJ.** Tap Water and Indoor Air Contamination due to an Unintentional Chemical Spill in Source Water in West Virginia, USA. *ISEC*. Istanbul, Turkey, May 24–29, 2016.
70. **\*Wang, M<sup>G</sup>, Salehi, ME<sup>G</sup>, Whelton, AJ, Zhou, Z.** Effects of Water Temperature and TOC Leached from PEX Pipes on the Occurrence of Bacteria in Household Water Distribution Systems. *American Society of Microbiology Conference*. Boston, Massachusetts. June 16–20, 2016.
71. **\*Salehi, M<sup>G</sup>, Whelton, AJ.** Accumulation of Heavy Metals on Plastics: Premise Plumbing Removal and Analysis of an Entire Plastic Premise Plumbing System. *AWWA Annual Conference and Exposition*. Chicago, Illinois. June 11–14, 2016.
72. **\*Coleman, J<sup>UG</sup>, Hawes, J<sup>UG</sup>, Teimouri, M<sup>G</sup>, Salehi, M<sup>G</sup>, Whelton, AJ.** Role of Water pH and Temperature on Chemical Leaching from PEX Pipes. *AWWA Annual Conference and Exposition*. Chicago, Illinois. June 11–14, 2016.
73. **\*Hawes, J<sup>UG</sup>, Casteloes, KS<sup>G</sup>, Conkling, E<sup>UG</sup>, Whelton, AJ.** Water Heater Cleaning Following Chemical Contamination Incidents: Examining Effectiveness and Evaluating a Recent Model. *AWWA Annual Conference and Exposition*. Chicago, Illinois. June 11–14, 2016.
74. **\*Akalp, D<sup>G</sup>, Whelton, AJ, Omur–Ozbek, P.** The West Virginia Chemical Spill: Volatilization of 4–Methylcyclohexanemethanol (MCHM) from Drinking Water to Indoor Air. *AWWA Annual Conference and Exposition*. Chicago, Illinois. June 11–14, 2016.
75. **\*Conkling, EN<sup>UG</sup>, Teimouri, M<sup>G</sup>, Whelton, AJ.** “Poster”: Developing Methods to Characterize Cured–in–Place Pipe (CIPP). *Summer Undergraduate Research Fellowship (SURF) Symposium*. Abstract. Purdue University, West Lafayette, Indiana. August 4, 2016. <http://docs.lib.purdue.edu/surf/2016/presentations/3>.
76. **\*Hua, I, \*Mashtare, M, Whelton, AJ.** Educate, Train, and Inspire the Next Generation of Waste Management and Innovation Professionals at Purdue University. *Solid Waste Assoc. of North America WASTECON*. Indianapolis, Indiana. August 22–25, 2016.



77. \*Salehi, M<sup>G</sup>, Wang, M<sup>G</sup>, Zhou, Z, **Whelton, AJ**. "Poster": Changes in Potable Water Chemical and Microbiological Quality in a Newly Commissioned Residential Green Building. *Big 10 GRAD EXPOSITION*. Purdue University, West Lafayette, Indiana. September 25, 2016.
78. \*Ra, K<sup>G</sup>, Teimouri, M<sup>G</sup>, Conkling, EN<sup>UG</sup>, Howarter, J, Boor, B, Zyaykina, N, **Whelton, AJ**. "Poster": Environmental Contamination and Occupational Exposure Risks of CIPP Rehabilitation. *Big 10 GRAD EXPOSITION*. Purdue University, West Lafayette, Indiana. September 25, 2016.
79. \*Yapturi, J<sup>UG</sup>, Huang, X<sup>G</sup>, Kelly, D<sup>UG</sup>, Cerrato, SA<sup>UG</sup>, Ladner, DA, **Whelton, AJ**. "Poster": Evaluation of a Rapid Bench-Scale Test to Determine Crude Oil Contamination and Recovery of Plastic Water Distribution Pipes. *Ecological Sciences and Engineering Symposium*. Purdue University, West Lafayette, Indiana. September 29, 2016.
80. \*Huang, X<sup>G</sup>, Andry, S<sup>UG</sup>, Kelly, D<sup>UG</sup>, Ladner, DA, **Whelton, AJ**. Scientific Considerations for Responding to and Recovering from Crude Oil Contaminated Water Piping Networks. *AWWA Water Quality Technology Conference*. Indianapolis, Indiana. November 12–16, 2016.
81. \*Hawes, J<sup>UG</sup>, Casteloes, KS<sup>G</sup>, Conkling, E<sup>UG</sup>, **Whelton, AJ**. Procedures for Decontaminating Premise Plumbing Rapidly and Safely and Research Needs. *AWWA Water Quality Technology Conference*. Indianapolis, Indiana. November 12–16, 2016.
82. \*Salehi, M<sup>G</sup>, **Whelton, AJ**. Plastic Pipes can be Sinks and Sources of Metals at the Tap. *AWWA Water Quality Technology Conference*. Indianapolis, Indiana. November 12–16, 2016.
83. \*Houserova, D<sup>UG</sup>, McGehee, JL, Jackson, BA, Harris, BD<sup>UG</sup>, Brown, TA, Buchel, B, Krajewski, LC<sup>G</sup>, **Whelton, AJ**, Stenson, AC. "Poster": High-Resolution Mass Spectrometry in NOM Characterization and DBP Formation Prediction. *Eastern Analytical Symposium and Exhibition*, Somerset, New Jersey. November 2016.
84. \*Teimouri, M<sup>G</sup>, Ra, K<sup>G</sup>, Conkling, E<sup>UG</sup>, Boor, BE, Howarter, JA, Jafvert, C, Youngblood, J, Zyaykina, N, **Whelton, AJ**. Rapid Response to CIPP Air Monitoring Study. Seminar for the *Division of Environmental and Ecological Engineering, Purdue University*. West Lafayette, Indiana. January 24, 2017.
85. \*Teimouri, M<sup>G</sup>, Conkling, EN<sup>UG</sup>, Ra, K<sup>G</sup>, Howarter, J, Boor, B, Zyaykina, N, **Whelton, AJ**. Cured in Place Pipe: Results from a RAPID response study to investigate chemical emissions into the workspace and environment. *Indiana AWWA Annual Conference*. Indianapolis, Indiana. January 29–February 2, 2017.
86. **\*Whelton, AJ**. Plastics in Water Infrastructure Repair and New Construction, Thinking Forward. *Flint Water Summit*, Flint, Michigan. March 7–9, 2017.
87. Conkling, EN<sup>UG</sup>, Teimouri, M<sup>G</sup>, \*Ra, K<sup>G</sup>, **Whelton, AJ**. "Poster": Developing Methods to Characterize Cured-in-Place Pipe (CIPP). *Summer Undergraduate Research Fellowship (SURF) Symposium*. Minority Serving Institution Outreach Program, Purdue University, West Lafayette, Indiana. March 26, 2017.
88. \*Huang, XN<sup>G</sup>, Zhao, S<sup>G</sup>, Abu-Omar, MM, **Whelton, AJ**. "Poster": Application of biomass derived ligand to remove heavy metals from contaminated plastic drinking water pipe. *Office of Interdisciplinary Graduate Programs (OIGP) Spring Poster Session*, Purdue University, West Lafayette, Indiana. May 3, 2017.
89. **\*Whelton, AJ**. Lawyers, A Federal Agency, and Catalyzed Research: The West Virginia Chemical Spill 3 Years Later. *AEESP Biannual Conference*. Ann Arbor, Michigan. June 20–22, 2017.
90. \*Teimouri, M<sup>G</sup>, Ra, K<sup>G</sup>, Conkling, E<sup>UG</sup>, Boor, B, Howarter, J, Jafvert, C, Youngblood, J, Zyaykina, N, Townsend, M<sup>UG</sup>, **\*Whelton, AJ**. Water Pipe Repair Can Cause Toxic Air. *AEESP Biannual Conference*. Ann Arbor, Michigan. June 20–22, 2017.
91. \*Salehi, M<sup>G</sup>, Jafvert, C, Howarter, J, **Whelton, AJ**. Investigation of the Factors that Influence Lead Accumulation onto Polyethylene: Implication for Potable Water Plumbing Pipes. *AEESP Biannual Conference*. Ann Arbor, Michigan. June 20–22, 2017.
92. \*Teimouri, M<sup>G</sup>, Ra, K<sup>G</sup>, Conkling, E<sup>UG</sup>, Boor, B, Nuruddin, M<sup>G</sup>, Howarter, J, Jafvert, C, Youngblood, J, Zyaykina, N. \*Poster: Towards Understanding and Reducing Risk with In-Situ Water Pipe Repair Technologies. *Society of Risk Analysis Conference*. Alexandria, Virginia. December 10–14, 2017.

93. **\*Whelton, AJ, Salehi, M<sup>G</sup>, Abouali, M, Wang, M<sup>G</sup>, Zhou, Z, Nejadhashemi, AP, Mitchell, J, Caskey, S<sup>G</sup>.** Water Chemistry and Microbiology Changes as Plumbing Ages. *Society of Risk Analysis Conference*. Alexandria, Virginia. December 10–14, 2017.
94. **\*Whelton, AJ.** Rising to Meet 21st Century Drinking Water Challenges *USGBC GreenBuild Conference*. Boston, Massachusetts. November 7, 2017.
95. **\*Ra, K, Teimouri, Sendesi, SM<sup>G</sup>, Donaldson, B, Whelton, AJ.** CIPP and Spray-On Liner Culvert Rehabilitation: CIPP and Spray-On Liner Culvert Rehabilitation: A Review of Water Quality Impacts and Current Construction Specifications. *Transportation Research Board Annual Conference*. Washington, D.C. January 8, 2018.
96. **\*Ra, K, Teimouri Sendesi, SM<sup>G</sup>, Howarter, J, Jafvert, CT, Donaldson, B, Whelton, AJ.** \*Poster:\* Understanding and Reducing Impacts of Storm Water Culvert Rehabilitation Technologies to the Environment. *Indiana AWWA Annual Conference*. Indianapolis, Indiana. January 24, 2018.
97. **\*Teimouri Sendesi, SM<sup>G</sup>, Ra, K, Conkling, EN<sup>UG</sup>, Zyaykina, N, Boor, BE, Howarter, JA, Youngblood, JP, Jafvert, CT, Whelton, AJ.** \*Poster:\* Monitoring Chemical Emission from Cured-in-Place-Pipe installation. *Indiana AWWA Annual Conference*. Indianapolis, Indiana. January 24, 2018.
98. **\*Wang, T<sup>G</sup>, Kim, J<sup>G</sup>, Whelton, AJ.** \*Poster:\* Flint Water Crisis: Management of Plastic Bottle and Filter Waste. *AEESP Distinguished Lecture and Purdue University Conference*. West Lafayette, Indiana. February 2, 2018.
99. **\*Salehi, M<sup>PD</sup>, Jafvert, JT, Howarter, JA, Whelton, AJ.** \*Poster:\* Investigation of the Factors that Influence Lead Accumulation onto Polyethylene: Implication for Potable Water Plumbing Pipes. *AEESP Distinguished Lecture and Purdue University Conference*. West Lafayette, Indiana. February 2, 2018.
100. **\*Wang, T<sup>G</sup>, Kim, J<sup>G</sup>, Whelton, AJ.** Flint Water Crisis: Management of Plastic Bottle and Filter Waste. *Global Waste Management Symposium*. Indian Wells, California. February 11–14, 2018.
101. **\*Teimouri Sendesi, SM<sup>G</sup>, Ra, K<sup>G</sup>, Conkling, EN<sup>UG</sup>, Boor, BE, Nuruddin, M<sup>G</sup>, Howarter, JA, Youngblood, JP, Kobos, LM<sup>G</sup>, Shannahan, JH, Jafvert, CT, Whelton, AJ.** \*\*Poster\*: Chemical Emission from In-Situ Pipe Repairs. *Health and Disease: Science, Technology, Culture, and Policy Research Poster Session*. West Lafayette, Indiana. March 1, 2018.
102. **\*Ra, K<sup>G</sup>, Teimouri Sendesi, SM<sup>G</sup>, Howarter, J, Jafvert, CT, Donaldson, B, Whelton, AJ.** \*Poster:\* Understanding and Reducing Impacts of Storm Water Culvert Rehabilitation Technologies to the Environment. *Health and Disease: Science, Technology, Culture, and Policy Research Poster Session*. West Lafayette, Indiana. March 1, 2018.
103. **\*Ra, K<sup>G</sup>, Teimouri Sendesi, SM<sup>G</sup>, Howarter, J, Jafvert, CT, Donaldson, B, Whelton, AJ.** Limiting CIPP and Spray-On Liner Culvert Rehabilitation Water Quality Impacts and Construction Specifications. *Joint Transportation Research Program Roads School Conference*. West Lafayette, Indiana. March 5–8, 2018.
104. **\*Teimouri Sendesi, SM<sup>G</sup>, Ra, K<sup>G</sup>, Conkling, EN<sup>UG</sup>, Boor, BE, Nuruddin, M<sup>G</sup>, Howarter, JA, Youngblood, JP, Kobos, LM<sup>G</sup>, Shannahan, JH, Jafvert, CT, Whelton, AJ.** Chemical Air Emissions and Exposures during Pipe Rehabilitation Using Cured-in-Place-Pipe (CIPP). *Joint Transportation Research Program Roads School Conference*. West Lafayette, Indiana. March 5–8, 2018.
105. **\*Teimouri Sendesi, SM<sup>G</sup>, Ra, K<sup>G</sup>, Conkling, EN<sup>UG</sup>, Boor, BE, Nuruddin, M<sup>G</sup>, Howarter, JA, Youngblood JP, Shannahan JH, Jafvert CT, Whelton AJ.** Worksite Emissions from a Cured-in-Place Pipe (CIPP) Installation Process. *American Industrial Hygiene Association Conference*. Philadelphia, Pennsylvania. May 21, 2018.
106. **\*Salehi, M<sup>PD</sup>, Abouali, M<sup>PD</sup>, Mitchell, J, Nejadhashemi, AP, Wang, M<sup>G</sup>, Zhou, Z, Whelton, AJ.** The Link Between Fixture Water Use and Drinking Water Quality at a Net Zero Energy Residential Building. *American Water Works Association Annual Conference and Exposition*. Las Vegas, Nevada. June 12, 2018.
107. **Odimayomi, T<sup>G</sup>, Salehi, MS<sup>PD</sup>, Ley, C<sup>G</sup>, Mitchell, J, Beecher, J, Rose, J, Lee, J, Nejadhashemi, PA, Dreelin, E, Gim, Aw T, Shah, A, Syal, M, Singh, G<sup>PD</sup>, Julien, R<sup>G</sup>, Dean, K<sup>G</sup>, Kropp, I<sup>G</sup>, Whelton, AJ.** Monitoring Drinking Water Chemical Quality Changes at a Residential Net Zero Energy Building. *American Water Works Association Annual Conference and Exposition*. Las Vegas, Nevada. June 13, 2018.

108. \*Ra, K<sup>G</sup>, Teimouri Sendesi, SM<sup>G</sup>, Howarter, J, Jafvert, CT, Donaldson, B, **Whelton, AJ**. \*Poster\*: Understanding and Reducing Impacts of Storm Water Culvert Rehabilitation Technologies to the Environment. *American Water Works Association Annual Conference and Exposition*. Las Vegas, Nevada. June 13, 2018.
109. \*Teimouri Sendesi, SM<sup>G</sup>, Ra, K<sup>G</sup>, Conkling, EN<sup>UG</sup>, Boor, BE, Nuruddin, M<sup>G</sup>, Howarter, JA, Youngblood, JP, Kobos, LM<sup>G</sup>, Shannahan, JH, Jafvert, CT, **Whelton, AJ**. \*Poster\*: Materials Created and Released into Air during the Cured-in-Place Pipe (CIPP) Installation Process. *American Water Works Association Annual Conference and Exposition*. Las Vegas, Nevada. June 13, 2018.
110. Ley, C<sup>G</sup>, Salehi, M<sup>PD</sup>, **Whelton, AJ**. \*Poster\*: Microbial Community Structure Changes as a Building Transitions Between In-Situ Rainwater Treatment and Municipal Drinking Water. *American Water Works Association Annual Conference and Exposition*. Las Vegas, Nevada. June 13, 2018.
111. Salehi, M<sup>PD</sup>, Ley, C<sup>G</sup>, Robinson, P, Sturgis, J, **Whelton, AJ**. \*Poster\*: Monitoring water organism loads using laser based elastic light scatter technology. *American Water Works Association Annual Conference and Exposition*. Las Vegas, Nevada. June 13, 2018.
112. \*Mitchell, J, Whelton, AJ. Predicting Drinking Water Safety Inside Buildings in a Technology Changing World. *National Environmental Health Association Annual Education Conference*. Anaheim, California. June 27, 2018.
113. \*Shannahan, J, Whelton, AJ. Occupational, Public Health, and Environmental Concerns: Chemical Emissions from Sanitary Sewer and Storm Sewer Water Pipe Repairs. *National Environmental Health Association Annual Education Conference*. Anaheim, California. June 26, 2018.
114. Rinnger, E<sup>UG</sup>, Whelton, AJ, Odimeyomi, T<sup>G</sup>, Salehi, M. \*Poster\*: Indoor Premise Plumbing: The Relationship Between Water Stagnation, Chlorine Decay, and Total Organic Carbon Levels. *Purdue University Summer Undergraduate Research Symposium*. West Lafayette, Indiana. August 2, 2018.
115. Tariq, M<sup>UG</sup>, Ley, C<sup>G</sup>, Salehi, M, **Whelton, AJ**. Short-term organic carbon release and chlorine disinfectant decay for crosslinked polyethylene (PEX) plumbing pipes. *Purdue University Summer Undergraduate Research Symposium*. West Lafayette, Indiana. August 2, 2018.
116. Ley, C<sup>G</sup>, Aw, TG, Ra, K<sup>G</sup>, Odimeyomi, T<sup>G</sup>, Salehi, M, Singh, G<sup>PD</sup>, **Whelton, AJ**. Examining Variation In Microbial Drinking Water Metrics in A Net-Zero Water Building. *American Water Works Association Water Quality Technology Conference*. Toronto, Canada. November 11–15, 2018.
117. **Whelton, AJ**. Maximizing the Benefits of Culvert Lining By Minimizing Chemical Emission. *Transportation Research Board Annual Conference*. Washington, D.C. January 14, 2019.
118. Jafvert, CJ, **Whelton, AJ**. Evidence-Based Practices for Successful Lining Projects. *Transportation Research Board Annual Conference*. Washington, D.C. January 14, 2019.
119. Wang, QE<sup>UG</sup>, Huang, X<sup>G</sup>, Ra, K<sup>G</sup>, Odimeyomi, T<sup>G</sup>, **Whelton, AJ**. \*Poster\*: Heavy Metal Deposition onto New PEX and CPVC Pipes. *Indiana Section American Water Works Association Annual Conference*. Indianapolis, Indiana. January 2019.
120. **Whelton, AJ**, Shannahan, J. Evaluation of the Health Risks Associated with Emissions from the Cured-In-Place Pipe Procedure. *Health Sciences Seminar Series, Purdue University*. West Lafayette, Indiana. April 2019.
121. **Whelton, AJ**, Shah, AD, Yu, D, Proctor, C<sup>PD</sup>. After the Wildfire: Response and Recovery to Large Scale Infrastructure Damage in Paradise, California. *EEE Graduate Seminar, Purdue University*. West Lafayette, Indiana. April 2019.
122. Proctor, C<sup>PD</sup>, **Whelton, AJ**, Shah, AD, Yu, D. After the Wildfire: Responding to and Recovering from Large-Scale Infrastructure Damage in Paradise, California. *25th EES Symposium at University of Illinois at Urbana-Champaign (UIUC)*. Urbana-Champaign, Illinois. April 2019.
123. Lee, J, Mitchell, J, Nejadhashemi, P, **Whelton, AJ**. Development of Premise Plumbing's Integrated Hydraulic and Water Quality Modeling. *ASCE World Environmental & Water Resources Congress*. Pittsburg, Pennsylvania. May 2019.

124. Kobos, L<sup>G</sup>, Teimouri Sendesi, SM<sup>G</sup>, Whelton, AJ, Shannahan, J. Assessment of Cured-In-Place Pipe Worksite Emissions and Toxicity. *Society of Toxicology Conference*. Baltimore, Maryland. May 2019.
125. Wang, QE<sup>UG</sup>, Huang, X<sup>G</sup>, Ra, K<sup>G</sup>, Odimayomi, T<sup>G</sup>, **Whelton, AJ**. \*Poster\*: An Initial Comparison of Heavy Metal Deposition onto New PEX and CPVC Pipes. *American Water Works Association Annual Conference and Exposition*. Denver, Colorado. June 2019.
126. Odimayomi, T<sup>G</sup>, Noh, Y<sup>G</sup>, Dasika, S<sup>G</sup>, Shah, AD, **Whelton, AJ**. \*Poster\*: Disinfectant Byproduct Generation within Residential Building Plumbing. *American Water Works Association Annual Conference and Exposition*. Denver, Colorado. June 2019.
127. Ra, K<sup>G</sup>, Odimayomi, T<sup>G</sup>, Ley, C<sup>G</sup>, Aw, TG, **Whelton, AJ**. Drinking Water Quality Changes at a Middle School Under Low vs. Normal Water Use Conditions. *American Water Works Association Annual Conference and Exposition*. Denver, Colorado. June 2019.
128. Ley, CJ<sup>G</sup>, **Whelton, AJ**, Freeman, JL. A Chemical Mixture Conundrum: Leaching & Toxicological Assessment of Water in Contact with Crosslinked Polyethylene (PEX) Pipes. *American Water Works Association Annual Conference and Exposition*. Denver, Colorado. June 2019.
129. Salehi, M, **Whelton, AJ**. The Relationship between Drinking Water Quality in a Single Family Home and the Service Line. *American Water Works Association Annual Conference and Exposition*. Denver, Colorado. June 2019.
130. **Whelton, AJ**. Lessons from public, industry, and media engagement: Infrastructure repairs, safety, and the environment. *AEESP Biannual Conference*. Phoenix, Arizona. June 2019.
131. Odimayomi, T<sup>G</sup>, Noh, Y<sup>G</sup>, Dasika, S<sup>G</sup>, Shah, AD, **Whelton, AJ**. \*Poster\*: Formation of Disinfectant Byproducts within a Residential Premise Plumbing System. *AEESP Biannual Conference*. Phoenix, Arizona. June 2019.
132. Noh, Y<sup>G</sup>, Troy, CD, Jafvert, CT, Boor, BE, **Whelton, AJ**. \*Poster\*: Indoor Air Contamination: The entry of cured-in-place-pipe (CIPP) contaminants into buildings through plumbing trap blowback and other pathways. *AEESP Biannual Conference*. Phoenix, Arizona. June 2019.
133. Ley, CJ<sup>G</sup>, **Whelton, AJ**, Freeman, JL. \*Poster\*: Leaching and Toxicological Assessment of Drinking Water in Contact with Crosslinked Polyethylene (PEX) Pipes. *AEESP Biannual Conference*. Phoenix, Arizona. June 2019.
134. Ra, K<sup>G</sup>, Odimayomi, T<sup>G</sup>, Ley, C<sup>G</sup>, Aw, TG, **Whelton, AJ**. Lessons Learned from an Intensive Investigation at a 7-Year Old LEED School. *AEESP Biannual Conference*. Phoenix, Arizona. June 2019.
135. Salehi, M, Odimayomi, T<sup>G</sup>, Ley, C<sup>G</sup>, Ra, K<sup>G</sup>, Huang, X, Dasika, S, **Whelton, AJ**. Tap Water Quality at a Residential Green Building: Intensive One-Year Monitoring Study. *Kentucky/Tennessee Water Professionals Conference*. Louisville, Kentucky. August 2019.
136. Ley, C<sup>G</sup>, Wasel, O<sup>G</sup>, Freeman, J, Whelton, AJ. \*Poster\*: Leaching and Toxicological Assessment of Drinking Water in Contact with Cross-linked Polyethylene (PEX) Pipes. Center for the Environment Meeting. Purdue University, West Lafayette, IN. October 2019.
137. Edwards, E<sup>UG</sup>, Proctor, C<sup>PD</sup>, Shah, A, **Whelton, AJ**. \*Poster\*: Efficacy of Activated Carbon Pitcher Filters in Elevated Benzene Removal. *Center for the Environment Symposium*. Purdue University, West Lafayette, Indiana. October 2019.
138. Wang, E<sup>UG</sup>, Odimayomi, T<sup>G</sup>, Ley, C<sup>G</sup>, Noh, Y<sup>G</sup>. Public Engagement after the Most Destructive and Deadliest Wildfire in California's History: Drinking Water and Plumbing Safety. *Purdue University Undergraduate Research Symposium*. West Lafayette, Indiana. November 18, 2019.
139. [\[accepted, meeting cancelled due to pandemic\]](#) 7 poster and oral presentations at the AWWA ACE conference in Orlando, Florida. June 2019 with 6 students and 1 postdoc about CIPP and building water systems.
140. [\[accepted, meeting cancelled due to pandemic\]](#) 3 oral presentations at the *National Environmental Health Association Annual Educational Conference and Exhibition*. New York City, New York. July 13–16, 2019 with 1 student about CIPP and disaster response to building water systems.

141. Wang, E<sup>UG</sup>, Odumayomi, T<sup>G</sup>, Ley, C<sup>G</sup>, Noh, Y<sup>G</sup>, **Whelton, AJ**. Camp Fire Drinking Water and Plumbing Safety. *Indiana AWWA Annual Conference*. Indianapolis, Indiana. January 28, 2020.
142. \*Odumayomi, T<sup>G</sup>, Proctor, C<sup>PD</sup>, Sabbaghi, A, Wang, E<sup>UG</sup>, Peterson, K, Yu, D, Lee, J, Shah, AD, **Whelton, AJ**. Perceptions and Experiences from Survivors of the 2018 Camp Fire Drinking Water Contamination Disaster in Butte County, California. *Indiana AWWA Annual Conference*. Indianapolis, Indiana. January 28, 2020.
143. \*Proctor, C<sup>PD</sup>, **Whelton, AJ**. Drinking Water After Wildfire: Network Contamination and Community Impacts. *University of Michigan Borchardt Conference*. Ann Arbor, Michigan. February 25, 2020.
144. Edwards, E<sup>UG</sup>, Proctor, C<sup>PD</sup>, Shah, AD, **Whelton, AJ**. Efficacy of Activated Carbon Pitcher Filters in Elevated Benzene Removal. *University of Michigan Borchardt Conference*. Ann Arbor, Michigan. February 25, 2020.
145. \***Whelton, AJ**. Moving Towards Predicting Building Water Safety: Plumbing Design, Use, and Disasters. *IAPMO Emerging Water Technology Symposium (EWTS)*. San Antonio, Texas. May 12–13, 2020.
146. \***Whelton AJ**, Shah, AD. Wildfires Directly Impact Water Quality: Discoveries and Opportunities. Water Palooza. December 3, 2020.
147. \*Noh, Y<sup>G</sup>, Boor, BE, Jafvert, C, Troy, C, **Whelton, AJ**. Modeling styrene intrusion pathways into buildings during cured-in-place-pipe (CIPP) installation and its safety evaluation. *Society of Risk Analysis Conference*. Austin, Texas. December 13-17, 2020.
148. \*Montagnino E<sup>G</sup>, Proctor CR, Ley C<sup>JG</sup>, Ra K<sup>G</sup>, **Whelton AJ**. Over the weekend: Normal office building water stagnation prompts drinking water copper exceedances. *ACS Spring Meeting*. April 5, 2021. Virtual Online.
149. \*Palmegiani M<sup>G</sup>, **Whelton, AJ**, Lee J. New Developments in Premise Plumbing: Hydraulic and Water Quality Modeling. June 7-11, 2021 World Environmental and Water Resources (EWRI) Congress. Virtual Online.
150. \***Whelton AJ**. Disaster Public Health Decisions for Drinking Water Systems Contamination. NEHA Annual Educational Conference. June 2021. Virtual.
151. \*Gustafson L<sup>UG</sup>, Jankowski C<sup>G</sup>, Proctor C, Ley C<sup>G</sup>, Montagnino E<sup>G</sup>, Isaacson K<sup>G</sup>, Shah A, Maiga N<sup>UG</sup>, **Whelton AJ**. \*Poster\*: Investigating the impact of water softeners on building drinking water and wastewater quality. June 16, 2021. AWWA ACE 2021. Virtual.
152. \*Day R<sup>UG</sup>, Ra K<sup>G</sup>, Montagnino E<sup>G</sup>, Golden A<sup>UG</sup>, Ley C<sup>G</sup>, Proctor C, **Whelton AJ**. \*Poster\*: Towards Standard Procedures for Building Water System Flushing Plans: Field Experience, Knowledge-Gaps, and Recommendations. June 16, 2021. AWWA ACE 2021. Virtual
153. \*Palmegiani M<sup>G</sup>, AJ Whelton, Lee J, \*Poster\*: New Developments in Premise Plumbing: Integrated Hydraulic and Water Quality Modeling. June 16, 2021. AWWA ACE 2021. Virtual.
154. Isaacson K<sup>\*</sup>, Shah A, Proctor C, Edwards E<sup>UG</sup>, Wang E<sup>UG</sup>, Noh Y<sup>G</sup>, **Whelton AJ**. Drinking Water Contamination from Thermal Degradation of Plastics. June 16, 2021. AWWA ACE 2021. Virtual.
155. \***Whelton AJ**. Water safety attitudes, risk perception, experiences, and education for households impacted by the 2018 Camp Fire. June 18, 2021. NACCHO AEC 2021. Virtual.
156. \***Whelton AJ**. Considerations for returning plumbing to safe use after its been chemically contaminated. June 18, 2021. NACCHO AEC 2021. Virtual.
157. \*Isaacson K<sup>G</sup>, Shah A, Proctor C, Edwards E<sup>UG</sup>, Wang E<sup>UG</sup>, Noh Y<sup>G</sup>, **Whelton AJ**. Water Contamination by Thermally Degraded Plastic Drinking Water Pipes. June 18, 2021. NACCHO AEC 2021. Virtual.
158. \***Whelton AJ**, Noh Y<sup>G</sup>, Shannahan J. Neighborhood HAZMAT Incidents Caused by the Sewer Pipe Repair Practice. NACCHO AEC. June 22, 2021. Virtual.
159. \*Noh Y<sup>G</sup>, Shannahan J, **Whelton AJ**. Emergency responder and public health considerations for plastic sewer lining chemical waste exposures in indoor environments. NACCHO AEC. June 22, 2021. Virtual.

160. \*Ra K<sup>G</sup>, **Whelton AJ**. Case study - School water testing revealed widespread copper and legionella contamination – What to do next? NACCHO AEC. July 1, 2021. Virtual.
161. \*Angert D<sup>UG</sup>, **Whelton AJ**, Proctor CP. Case study – Chemical and microbiological water safety in a large residential building that was shutdown for the Summer 2020. NACCHO AEC. July 1, 2021. Virtual.
162. **\*Whelton AJ**, Proctor C, Ley C<sup>G</sup>, Ra K<sup>G</sup>, Angert D<sup>UG</sup>, Montagnino E<sup>G</sup>, Noh Y<sup>G</sup>, Palmegiani M<sup>G</sup>, Day R<sup>UG</sup>, Golden A<sup>UG</sup>. Some results and reflections: Water quality during reduced occupancy due to COVID-19 and select intervention methods. *Building Water SLAM*. July 7, 2021. Virtual.
163. **\*Whelton AJ**. Building Water Safety: New Developments and Resources. NEHA AEC. July 14, 2021. Virtual.
164. Del Real K<sup>UG</sup>, Jankowski C<sup>G</sup>, Proctor C, **\*Whelton AJ**. Chlorine decay in residential water softeners. *Purdue University Summer Undergraduate Research Forum*. July 30, 2021. Virtual.
165. **\*Whelton AJ**. Wildfires Contaminate Drinking Water Distribution Systems and Building Plumbing. University of Alaska's Foundations for Improving Resilience in the Energy Sector Against Wildfires on Alaskan Lands (FIREWALL) Workshop, Research Directions in Wildfire Resilience Session. September 15, 2021. Virtual.
166. Morales, AC<sup>G</sup>, Tomlin, J<sup>G</sup>, Noh, Y<sup>G</sup>, **Whelton, AJ**, Laskin A. Discovery of atmospheric microplastics in urban emissions. *Submitted 2022 PacificChem Conference*. Honolulu, Hawaii.
167. Morales, AC<sup>G</sup>, Tomlin, J<sup>G</sup>, West CP, Rivera-Adorno F, Noh, Y<sup>G</sup>, Moffet RC, China S, O'Callahan BT, El-Khoury PZ, **Whelton, AJ**, Laskin A. Comprehensive Chemical Characterization of Nanoplastic Particles from Urban Emission Source. *Analytical Chemistry Conference*. Turkey Run, IN. September 2021.
168. **[Invited] \*Whelton AJ**. Repairing damaged sewers with cured-in-place-pipe sewer lining. US EPA Region 5 and Partners Vapor Intrusion Meeting. Virtual. November 8, 2021.
169. \*Jankowski C<sup>G</sup>, Isaacson K<sup>G</sup>, Pieper JP<sup>UG</sup>, Del Real K<sup>UG</sup>, Gustafson L<sup>UG</sup>, Shah AD, **Whelton AJ**. Water Softener Hydrocarbon Contamination and Decontamination by Flushing. Indiana AWWA Annual Conference. Indianapolis, Indiana. April 11-14, 2022.
170. **\*Whelton, AJ**, Seidel C, Wham B, Fischer E. Response of Large Water Utilities to the Marshall Wildfire. NSF CONVERGE FORUM. National Hazards Research Center. Virtual. February 17, 2022.
171. \*Gustafson L<sup>UG</sup>, Jankowski C<sup>G</sup>, Del Real K<sup>UG</sup>, Palmegiani M<sup>G</sup>, Larsen M<sup>G</sup>, Ra K<sup>G</sup>, Ehde A<sup>G</sup>, Noh Y<sup>G</sup>, Proctor CR, **Whelton AJ**. When You Install a New Water Softener, How Much Chemical Does it Leach into Your Drinking Water? *Indiana AWWA Annual Conference*. Indianapolis, Indiana. April 12, 2022.
172. **\*Whelton AJ**. Water Contamination Response and Recovery: Lessons from the Field and Gaps You should Expect. *Indiana AWWA Annual Conference*. Indianapolis, Indiana. April 12, 2022.
173. **\*Whelton, AJ**, Isaacson K<sup>G</sup>, Jankowski C<sup>G</sup>, Larsen M<sup>G</sup>. Challenges responding to and recovering from the Marshall Fire by small drinking water systems and private well owners. NSF CONVERGE FORUM. National Hazards Research Center. Virtual. Apr 28, 2022.
174. **[Invited] \*Whelton, AJ**, Legionella management in potable water systems, especially low flow systems. Webinar: Legionella and Its Impacts on Public and Occupational Health: Why the Water Sector Should Care. Water Environment Federation (WEF). April 28, 2022.
175. **[Invited] \*Whelton, AJ**, Plumbing safety under routine and disaster conditions: New Research. IAPMO EWTS. San Antonio, Texas. May 10-11, 2022.
176. **[Invited] \*Whelton, AJ**, Webinar: Wildfires and their Effects on Drinking Water Systems. Canadian Interior Health Authority. May 17, 2022. Available at <https://youtu.be/avUUhTvueew>.
177. **\*Whelton, AJ**, Wildfires - Heat Damaged Plastic Pipes as Generators of Drinking Water Contamination? National Fire Protection Association (NFPA). Boston, Massachusetts. June 6-9, 2022.
178. **\*Whelton, AJ**, What to Expect when Responding to Sewer Pipe Repair Sites Where Plastic is Being Cooked. National Fire Protection Association (NFPA). Boston, Massachusetts. June 6-9, 2022.

179. \*Noh Y<sup>G</sup>, **Whelton, A.J.** KEY to Chemical Exposure from New Plastic Lining Manufacture: Understanding the CIPP Wastes and Public Health Communication. *American Water Works Association (AWWA) annual conference and exposition*. San Antonio, Texas. June 12-16, 2022.
180. \***Whelton, A.J.** Outdoor Plastic Liner Manufacturing for Water and Sewer Repairs: Chemical Exposure and Safety Lessons. *American Water Works Association (AWWA) annual conference and exposition*. San Antonio, Texas. June 12-16, 2022.
181. \*Isaacson K<sup>G</sup>, Shah, AD, **Whelton, A.J.** Post-Wildfire Drinking Water Contamination from Thermal Degradation of Plastics. *American Water Works Association (AWWA) annual conference and exposition*. San Antonio, Texas. June 12-16, 2022.
182. **Whelton, A.J.** Post-Wildfire Distribution System Water Quality Impacts and Potential Responses - WaterRF Project 5106. *American Water Works Association (AWWA) annual conference and exposition*. San Antonio, Texas. June 12-16, 2022.
183. \*Noh, Y<sup>G</sup>, **Whelton A.J.** Plastic Pollution and Potential Human Health Impacts - Results from Plastic Lining Technology. AEESP conference. St. Louis, Missouri. June 28-30, 2022.
184. \*Ehde A<sup>G</sup>, Larsen M<sup>G</sup>, Jankowski C<sup>G</sup>, Ley CJ<sup>G</sup>, Palmegiani M<sup>G</sup>, Fleming C<sup>UG</sup>, Schmidt W, **Whelton AJ**, Proctor CR. Drinking Water Quality as a Function of Stagnation in Controlled Pilot-Scale Systems. AEESP conference. St. Louis, Missouri. June 28-30, 2022.
185. \*Larsen M<sup>G</sup>, Noh Y<sup>G</sup>, Palmegiani M<sup>G</sup>, Proctor CR, **Whelton AJ**. Impact of Epoxy Manufacturing and Installation Conditions on Drinking Water Quality. AEESP conference. St. Louis, Missouri. June 28-30, 2022.
186. \*Ra K<sup>G</sup>, Ley C<sup>G</sup>, Montagnino E<sup>G</sup>, Angert D<sup>UG</sup>, Proctor CR, **Whelton AJ**. Stagnation Impact on Building Drinking Water Safety: Pandemic and microplastics. AEESP conference. St. Louis, Missouri. June 28-30, 2022.
187. \*Gustafson L<sup>UG</sup>, Jankowski C<sup>G</sup>, Del Real K<sup>UG</sup>, Palmegiani M<sup>G</sup>, Larsen M<sup>G</sup>, Ra K<sup>G</sup>, Isaacson K<sup>G</sup>, Pieper JP<sup>UG</sup>, Ehde A<sup>G</sup>, Shah AD, Proctor CR, **Whelton AJ**. The Impact of New Water Softeners on Drinking Water Quality and their Recovery after Hydrocarbon Contamination. NEHA AEC. Spokane, Washington. June 28–July 1, 2022.
188. \***Whelton AJ**, Isaacson K<sup>G</sup>, Shah AD. After the Fire: How Can We Determine if the Drinking Water at the Faucet is Safe? NEHA AEC. Spokane, Washington. June 28–July 1, 2022.
189. \*Ra, K., Ley, C., Montagnino, E. Angert, D., Proctor, C.R., **Whelton, A.J.** Stagnation Impact on Building Drinking Water Safety: Pandemic and microplastics. *Association of Environmental and Ecological Science Professors biannual conference*. St. Louis, Missouri. June 28-30, 2022.
190. \*Noh, Y., **Whelton, A.J.** Plastic Pollution and Potential Human Health Impacts - Results from Plastic Lining Technology. *Association of Environmental and Ecological Science Professors biannual conference*. St. Louis, Missouri. June 28-30, 2022.
191. \*Larsen, M., Noh, Y., Palmegiani, M., Proctor, C.R., **Whelton, A.J.** Impact of Epoxy Manufacturing and Installation Conditions on Drinking Water Quality. *Association of Environmental and Ecological Science Professors biannual conference*. St. Louis, Missouri. June 28-30, 2022.
192. \*Ehde, A., Larsen, M., Jankowski, C., Ley, C., Palmegiani, M., Fleming, C., Schmidt, W., **Whelton, A.J.**, Proctor, C.R.. Drinking Water Quality as a Function of Stagnation in Controlled Pilot-Scale Systems. *Association of Environmental and Ecological Science Professors biannual conference*. St. Louis, Missouri. June 28-30, 2022.
193. \*Diop R<sup>G</sup>, Zyaykina N, **Whelton AJ**, Jafvert C, \*Poster\*: Understanding of Environmental Issues Associated with Air-Cooled Blast Furnace Slag. August 22-25, 2022. American Chemical Society 2022 Fall Meeting, Chicago, IL,
194. \***Whelton AJ**. Disasters & Plumbing Contamination Decisions: Wildfires, Floods, Chemical Spills & More. *American Society of Plumbing Engineers Conference and Exposition*. Indianapolis, Indiana. September 16-21, 2022.



195. **\*Whelton AJ**, Mitchell J. A 6 Year USEPA Backed Program: Finding, predicting, and resolving building water system chemical and microbiological contamination. American Public Health Association (APHA) Annual Meeting & Exposition. Boston, Massachusetts. November 7, 2022.
196. **\*Whelton AJ**. Public health lessons from drinking water contamination disasters of utility and plumbing: Chemical spills, wildfires, and more. American Public Health Association (APHA) Annual Meeting & Exposition. Boston, Massachusetts. November 9, 2022.
197. **\*Whelton AJ**. A Leap Forward: New Tools and Knowledge for Predicting, Finding, and Resolving Building Water System Contamination. *American Water Works Association (AWWA) Water Quality Technology Conference*. Cincinnati, Ohio. November 16, 2022.
198. **[Accepted] \*Whelton AJ**. Six-year USEPA backed program: Finding, predicting, and resolving building water system chemical and microbiological contamination. *American Chemical Society Spring Meeting*. Indianapolis, Indiana. March 26-30, 2023.
199. **[Accepted] \*Whelton AJ**. New scientific discoveries have made reducing environmental, occupational, and public health risks for polymer composite sewer pipe repairs possible. *American Chemical Society Spring Meeting*. Indianapolis, Indiana. March 26-30, 2023.
200. **[Accepted] \*Whelton AJ**. Public health lessons from drinking water contamination disasters of utility and plumbing: Chemical spills, wildfires, and more. *American Chemical Society Spring Meeting*. Indianapolis, Indiana. March 26-30, 2023.
201. **[Submitted] \*Whelton AJ**. A 6 Year USEPA Backed Program: Finding, predicting, and resolving building water system chemical and microbiological contamination. *Indiana American Water Works Association (AWWA) Annual Conference*. Indianapolis, Indiana. April 10-14, 2023.
202. **[Submitted] \*Whelton AJ**. New scientific discoveries have made reducing environmental, occupational, and public health risks for polymer composite sewer pipe repairs possible. *AEESP*. Boston, Massachusetts. June 20-23, 2023.
203. **[Submitted] \*Kuo, J. Whelton, AJ**. Emergency Response and Recovery Planning for Wildfire Affecting Reservoirs with Plastics due to Contamination with VOCs and SVOCs. *American Water Works Association (AWWA) annual conference and exposition*. Toronto, Ontario. June 2023.

#### 4. GRANTS AND CONTRACTS AWARDED

1. Mobile Area Water and Sewer System (MAWSS) / Identification of Big Creek Lake Contaminants Responsible for Drinking Water Disinfectant Byproduct (DBP) Formation at the E.M. Stickney and H.E. Myers Water Treatment Plants, 5/1/11–6/1/12, \$78,000, Role: Principal Investigator, \$78,000, Co-investigators: Alexandra Stenson (Chemistry), University of South Alabama
2. University of South Alabama Faculty Development Council / Impact of PEX Potable Water Plumbing Pipe on Green Building Drinking Water Quality, 5/1/12–5/1/13, \$5,000, Principal Investigator, Co-investigators: None
3. U.S. Environmental Protection Agency Science to Achieve Results (STAR) Program / Dendritic Polymers as Biocompatible Dispersants for Oil Spill Mitigation, 6/1/12–6/1/16, \$500,000, Role: Co-Principal Investigator, \$204,000, Co-investigators: David Ladner (PI overall grant) (Environmental Engineering and Earth Sciences), Clemson University, Pu-Chun Kee (co-PI) (Physics) Clemson University, Sean Powers (co-PI) (Marine Sciences), University of South Alabama
4. U.S. National Science Foundation / Towards a Safer and Greener Indoor Environment: Chemical Liberation from Polyethylene Plumbing Pipes, 9/1/12–8/1/17, \$357,067, Role: Principal Investigator, \$329,000, Co-investigators: Alexandra Stenson (Chemistry), University of South Alabama
5. Virginia Department of Transportation / Standardized Test Method to Quantify Environmental Impacts of Stormwater Pipe Rehabilitation Materials, 10/1/12-8/1/14, \$146,761, Role: Principal Investigator, \$146,761, Co-investigators: Kevin White (co-PI) (Civil Engineering), University of South Alabama, Eric Steward (co-PI) (Civil Engineering), University of South Alabama, Anne Boettcher (co-PI) (Biology), University of South Alabama



6. Southern Company Services, Inc. / Biocide Induced Plastic Pipe Degradation in Energy Generation Cooling Water Systems, 7/1/13–5/1/16, \$50,000, Role: Principal Investigator, \$50,000, Co-investigators: None
7. U.S. National Science Foundation / RAPID GOALI Chemical Contamination and Remediation of Plastic Drinking Water Infrastructure during the West Virginia American Water Drinking Contamination Incident, 2/7/14–1/15/15, \$69,999, Role: Principal Investigator, \$69,000, Co-investigators: None
8. State of West Virginia Bureau of Public Health / West Virginia Testing Assessment Project: Support for Freedom Industries Chemical Spill Investigation; Subaward for Laboratory and Field Support, Media Engagement, 3/1/14–4/1/14, \$730,000, PI, \$40,000, Co-investigators: None
9. National High Magnetic Field Laboratory, Florida State University, Ion Cyclotron Resonance Program, ICR User Program Environmental and Petrochemical Applications / Ion Cyclotron Equipment Usage Proposal for PEX Pipe Leaching Investigation, 7/1/14–8/1/14, Instrument access; Nationally competitive program, co-PI, proposal/access approved, Co-investigators: Alexandra Stenson (PI overall application) (Chemistry), University of South Alabama
10. American Water Works Association (AWWA) Water Industry Technical Action Fund and Water Research Foundation (WaterRF) / Interaction of Fracking and Crude Oil Contaminants with Water Distribution Pipes, EO 2014–07, 11/1/14–6/1/16, \$50,000, PI, \$50,000, Co-investigators: None
11. Indiana Department of Transportation / Storm Water Pollution and Best Management Practice Guidance for Indiana, 4/1/15–12/1/15, \$35,600, PI, \$35,600, Co-investigators: None
12. U.S. National Science Foundation / RAPID: Chemical Air Emissions from Cured-In-Place-Pipe (CIPP) Activity, 3/1/16–3/1/17, \$49,999, PI, \$49,999, Co-investigators: Brandon Boor (Civil Engineering), Purdue University)
13. U.S. Federal Highway Administration / Contaminant Release from Storm Water Culvert Rehabilitation Technologies: Understanding Environmental and Long-Term Material Integrity Implications, 3/1/16–3/1/19, \$630,000, PI, \$530,000, Co-investigators: John Howarter (co-PI) (Materials Engineering / Environmental and Ecological Engineering), Chad Jafvert (co-PI) (Civil Engineering / Environmental and Ecological Engineering), Jeffrey Youngblood (co-PI) (Materials Engineering), Nadya Zyaykina (co-PI) (Civil Engineering / Environmental and Ecological Engineering). Purdue University
14. Ralph W. and Grace M. Showalter Trust / Formation and Removal of Toxic Disinfection By-Products from Residential and Commercial Plastic Pipes during Drinking Water Distribution, 7/1/16–9/1/17, \$78,000, Co-PI, \$0, Mentoring PI, Co-investigators: Amisha Shah (PI) (Civil Engineering / Environmental and Ecological Engineering), Purdue University
15. GoFundMe.com / Water Pipe Safety Study, 8/1/16–12/1/16, \$1,350, PI, \$1,350, Co-investigators: Brandon Boor (co-PI) (Civil Engineering), John Howarter (co-PI) (Materials Engineering / Environmental and Ecological Engineering), Nadya Zyaykina (co-PI) (Civil Engineering / Environmental and Ecological Engineering), Purdue University
16. U.S. Environmental Protection Agency National Priorities Program / Right Sizing Tomorrow's Water Systems for Efficiency, Sustainability, and Public Health, 1/12/17–1/11/20, \$1,989,000 from EPA plus \$1,191,000 industry cost-sharing, PI, \$1,051,975 (plus \$1,191,000 industry cost-sharing), Co-investigators: J. Mitchell (co-PI) Biological and Agricultural Engineering, Michigan State University; J. Rose (co-PI) Fisheries and Wildlife, Michigan State University; A. Pouyan (co-PI) Biological and Agricultural Engineering, Michigan State University, J. Lee (co-PI) Civil and Environmental Engineering, San Jose State University
17. Indiana Department of Transportation (INDOT) / Blast Furnace Slag Usage and Guidance for Indiana, 5/15/17–2/18/18, \$49,598, PI, \$49,598, Co-investigators: None
18. City of Desoto Public Utilities, Texas / Evaluation of the Effects of PEX Plumbing Pipe on Drinking Water Odor [Whelton cancelled contract because Sponsor failed to complete activities needed for Purdue to begin onsite visit]. 9/7/17–3/18/18, \$40,000, PI, \$40,000, Co-investigators: None
19. U.S. National Institute of Safety and Health (NIOSH)– University of Illinois at Chicago Center / Safety Evaluation of Cured-in-Place-Pipe, 8/1/17–5/1/18, \$15,000, coPI, \$0, Co-investigators: J. Shannahan (PI), Health and Human Sciences, JP Youngblood (coPI) Materials Engineering, Purdue University

20. Center for the Environment, Purdue University / A Chemical Mixture Conundrum: Leaching and Toxicological Assessment of Drinking Water in Contact with Crosslinked Polyethylene (PEX) Pipes, 5/1/2018–5/1/2019, \$15,000, PI, \$7,500, Co–investigators: J. Freeman (PI), Health and Human Sciences, Purdue University
21. Paradise Irrigation District / Field Support in Response to the 2018 Camp Fire, 2/5/19–5/1/2/17/19, \$12,000, PI, \$12,000, Co–investigators: A Shah (coPI) (Civil Engineering / Environmental and Ecological Engineering), D Yu (coPI) (Civil Engineering / Political Science), C Proctor (coPI), Purdue University, J Lee (coPI) (Civil and Environmental Engineering), Manhattan College
22. Paradise Irrigation District / Public Meeting Support in Response to the 2018 Camp Fire, 3/1/19–3/22/19, \$10,000, PI, \$10,000, Co–investigators: J Lee (coPI) (Civil and Environmental Engineering), Manhattan College
23. Roosevelt Warms Spring Foundation / Plastics in water supply: Chemical leaching from new epoxy linings, 2/1/2019–2/1/2022, \$62,000, PI, \$62,000, Co–investigators: John Howarter (co–PI) (Materials Engineering / Environmental and Ecological Engineering), C. Proctor (co–PI) (Civil Engineering / Environmental and Ecological Engineering), Purdue University
24. Paradise Irrigation District / Drinking Water and Plumbing After the Camp Fire, 6/24/19–6/29/19, \$9,892, PI, \$9,892, Co–investigators: A Shah (coPI) (Civil Engineering / Environmental and Ecological Engineering), D Yu (coPI) (Civil Engineering / Political Science), C Proctor (coPI), Purdue University.
25. Indiana Department of Transportation (INDOT) / Minimizing Blast Furnace Slag (BFS) Leachate Through Improved Product Acceptance Criterion and Siting Considerations, 7/1/19–11/1/20, \$152,199, PI, \$152,199, Co–investigators: Nadya Zyaykina (co–PI) (Civil Engineering / Environmental and Ecological Engineering), Chad Jafvert (co–PI) (Civil Engineering / Environmental and Ecological Engineering), Purdue University
26. U.S. National Institute of Health / National Institute of Environmental Health Sciences (NIEHS) / Assessment of Cured–In–Place Pipe Installation Emissions and Toxicity; R03 program, 7/1/19–6/30/21, \$150,000, coPI, \$60,000, Co–investigators: J. Shannahan (PI) (Health Sciences), Purdue University
27. U.S. National Science Foundation / RAPID: Shutdowns and Consequences: Extreme Plumbing Stagnation and Recommissioning, 4/1/20–3/1/21, \$200,000, PI, \$175,000, Co–investigators: C. Proctor (coPI), P. Robinson (coPI) (Biomedical Engineering), Purdue University
28. U.S. National Science Foundation / EAGER: Initiating a Transformative Building Water System Research Collaborative in Rapid Response to the COVID-19 Pandemic, 8/1/20–7/31/22, \$165,000, PI, \$115,000, Co–investigators: C. Proctor (coPI) (Biomedical/EEE/CE/MSE Engineering), Purdue University
29. U.S. National Science Foundation / Supplement to EAGER: Initiating a Transformative Building Water System Research Collaborative in Rapid Response to the COVID-19 Pandemic, \$20,473.
30. U.S. Environmental Protection Agency Region 5 / Public Health Workgroup on Developing Practices for Responding to Chemical Incidents Associated with Cured-in-Place-Pipe Construction Projects, 10/1/20–5/1/21, \$15,000, PI, \$15,000, Co–investigators: J. Shannahan (coPI) (HHS), Purdue University
31. Water Research Foundation/ Post-Wildfire Distribution System Water Quality Impacts and Potential Responses, 5/2021-5/2023, \$225,000, PI, \$150,000, Co–investigators: AD Shah (coPI) (EEE/CE), Purdue University. Sponsoring Utility: East Bay Municipal Utility District; Project Partners: Los Angeles Department of Water and Power, Contra Costa Water District, San Jose Water Company, City of Napa, Portland Water Bureau, Paradise Irrigation District, City of Santa Rosa
32. Water Research Foundation/ Supplement to Post-Wildfire Distribution System Water Quality Impacts and Potential Responses, \$25,000.
33. U.S. National Science Foundation / Towards an Improved Understanding of Plastic Pollutant Generation and Minimization Processes for Cured-in-Place-Pipe Manufacture, 8/1/21–7/31/24, \$330,000, PI, \$300,000, Co–investigators: Jeffrey Youngblood (MSE), Brandon Boor (CE), Jonathan Shannahan (HHS), Purdue University

34. U.S. Naval Facilities Engineering Command / Onsite Technical Assistance in Response to Drinking Water Contamination, 12/11/21-12/22/21, \$28,742.50, PI, \$24,000, Co-investigators: Caitlin Proctor (ABE/EEE), Amisha Shah (CE/EEE), Purdue University
35. Town of Louisville, Colorado / Onsite Technical Assistance in Response to Colorado Wildfires, 1/5/22-1/18/21, \$28,000, PI, \$28,000. Co-investigators: None
36. U.S. National Science Foundation / RAPID: Water Contamination Response and Recovery for the 2021 Colorado Wildfires, 1/7/22–1/15/24, \$200,000, PI, \$180,000, Co-investigators: Jeffrey Youngblood (MSE), Amisha Shah (CE/EEE), Amy Marconnet (ME), David Johnson (IE/POLY), Purdue University

#### *Proposals Under Review*

Confidential

### **5. TECHNOLOGY TRANSFER**

#### **Healthy Plumbing Coalition (Center), formed 2021 - Present**

Membership finalized April 2021, consortium initiated. Copper Development Association, IntelliHOT, Inc. DELTA, Inc.

#### **Center for Plumbing Safety, initiated 2017 - Present**

Initiated collaboration with companies, municipalities, nonprofit organizations spurred by a \$2M national priorities research study lead by Purdue (Whelton PI), and partners with multiple other institutions. Website setup by [www.PlumbingSafety.org](http://www.PlumbingSafety.org), which is described below.

#### **U.S. and international patents, including those applied for, awarded, and licensed**

Patent awarded Methods and Systems for Treating Emissions Released During Closed Molding Processes, patent number 11,486,530. USPTO. AJ Whelton, JA Howarter, BE Boor, M Teimouri, E Conkling.

Provisional Patent application PRF No. 2017–WHEL–67875: Method and System for Analyzing Emissions Released During Closed Molding Processes. AJ Whelton, JA Howarter, BE Boor, M Teimouri, E Conkling. 4/16/17. Provisional granted by USPTO 62486529. <https://patents.google.com/patent/US20210102655A1/en>

#### **Other industry and government interactions**

##### **Consulting and Collaborations**

- Southern Company Services, Inc. Atlanta, Georgia. 2013–2016.
- American Water, Vorhees, New Jersey. 2013–2016.
- Corona Environmental Consulting, LLC Scituate, Massachusetts. February 2014–2017.
- Lubrizol Corporation, Countryside, Illinois. January 2015–2017.
- Whirlpool Corporation, Bar Harbor, Michigan. November 2015–Present.
- TERA, Cincinnati, Ohio. December 2015–September 2016.
- National Sanitation Foundation International, Ann Arbor, Michigan. 2015–2016.
- Kennedy's LLP, London, United Kingdom, 2017–2018.
- WGBH Boston, Boston, Massachusetts, 2017.
- The Moses Legal Team, PA, Florida, 2021–2022.

##### **Cured-in-Place Pipe Occupational and Public Safety**

Interactions with the California Department of Public Health about Prof. Whelton's team cured-in-place-pipe (CIPP) pipeline repair practice research discoveries precipitated the agency to issue a follow-up to their July 2017 statewide safety alert (in September 2017) and then revise and reissue their statewide warning in May 2020 with Prof. Whelton team's recommendations. In September 2020 the Florida Department of Health issued and posted their own information designed for county health departments. The files were downloaded and posted on Prof. Whelton's [www.CIPPSafety.org](http://www.CIPPSafety.org) website:

- September 2017, California Department of Public Health, Additional CIPP Considerations Announcement: <https://engineering.purdue.edu/CIPPSafety/resources/CDPH-CIPP-Additional-Considerations-2017.pdf>
- May 2020, California Department of Public Health, CIPP Safety Alert: <https://engineering.purdue.edu/CIPPSafety/resources/CIPP-Safety-Alert-2020-Update-ADA.pdf>
- September 2020, Florida Department of Health, Cured-in-Place-Pipe Factsheet: [http://www.floridahealth.gov/environmental-health/hazardous-waste-sites/documents/final\\_fdoh\\_cipp.pdf?\\_ga=2.112450372.1791339482.1601759328-2032196033.1594315315](http://www.floridahealth.gov/environmental-health/hazardous-waste-sites/documents/final_fdoh_cipp.pdf?_ga=2.112450372.1791339482.1601759328-2032196033.1594315315).

#### COVID-19 Pandemic Caused Building Water Stagnation and Health Risks

In response to the COVID-19 pandemic, Prof. Whelton team's resources and website [www.PlumbingSafety.org](http://www.PlumbingSafety.org) were explicitly cited by US state health and environmental agencies in their statewide and citywide issued COVID-19 guidance. Some of, not all, the documents are listed below.

- City of Iowa City, Iowa. Flush water pipes prior to reopening facilities after long term closures. [https://content.govdelivery.com/accounts/IAIOWA/bulletins/28c6c80?\\_ga=2.233198551.853664955.1589250785-1265206820.1589250785](https://content.govdelivery.com/accounts/IAIOWA/bulletins/28c6c80?_ga=2.233198551.853664955.1589250785-1265206820.1589250785)
- State of Oregon, Oregon Health Authority (April 2020) – Guidance for Reopening Building Water Systems after Prolonged Shutdown <https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/Documents/reopening-guidance.pdf>
- State of Minnesota, Department of Health (April 2020) – Ensuring Water Quality in Building Premise Plumbing: Guidance for Building Owners and Operators During and After COVID-19 <https://www.health.state.mn.us/communities/environment/water/docs/com/buildowner.pdf>
- State of Indiana, Department of Health (April 2020) – Building Water System Startup Guidance <https://www.in.gov/isdh/files/Building%20Water%20Startup%20Guidance%20FINAL.pdf>
- State of Indiana, Department of Environmental Management (April 2020) – IDEM Guidance for Flushing Water Systems <http://www.valparaisoutilities.org/DocumentCenter/View/1152/IDEM-Guidance-for-Flushing-Water-Systems-42820>
- State of Washington, Department of Health (April 2020) – Shock Chlorination Guidance for Building Water Systems Restoring Water Service to Shutoff Buildings <https://www.doh.wa.gov/Portals/1/Documents/1600/coronavirus/ShockChlorinationGuidanceforBuildingWaterSystems.pdf>
- State of Washington, Department of Health (May 2020) – COVID-19 Guidance for Legionella and Building Water System Closures [https://www.doh.wa.gov/Portals/1/Documents/1600/coronavirus/LegionellaandBuildingWaterSystemClosuresCOVID-19.pdf?\\_ga=2.2053752.853664955.1589250785-1265206820.1589250785](https://www.doh.wa.gov/Portals/1/Documents/1600/coronavirus/LegionellaandBuildingWaterSystemClosuresCOVID-19.pdf?_ga=2.2053752.853664955.1589250785-1265206820.1589250785)
- State of Ohio EPA and Ohio Department of Health (March 2020) – Guidance for Premise Plumbing Water Service Restoration <https://epa.ohio.gov/Portals/28/documents/pws/guidance-for-premise-plumbing-water-service-restoration.pdf>

In response to the COVID-19 pandemic, the following trade associations explicitly linked Prof. Whelton's team's resources and website [www.PlumbingSafety.org](http://www.PlumbingSafety.org) in their COVID-19 guidance. The websites are listed below.

- Canadian Water and Wastewater Association (CWWA) <https://cwwa.ca/re-opening-buildings-fact-sheet-final-amend1-2/>
- International Association of Plumbing and Mechanical Officials (IAPMO) <https://www.iapmo.org/whats-new/covid-19-industry-resources/>

- National Environmental Health Association (NEHA)  
<https://www.neha.org/covid-19>
- Association for State Drinking Water Administrators (ASDWA)  
<https://www.asdwa.org/2020/04/13/covid-19-resources-for-building-water-systems/>
- American Society of Plumbing Engineers (ASPE)  
<https://www.aspe.org/coronavirus-covid-19-preparedness-resources/>

In response to the COVID-19 pandemic, several documents issued by the American Waterworks Association (AWWA) as well as state and county governments and Sloan Valve Company were informed through conversations with Prof. Whelton and his team, but did not formally list Purdue University or Prof. Whelton on their guidance documents.

Pertaining to wildfire drinking water contamination response and recovery the U.S. Environmental Protection Agency Office of Water (4608-T) invoked our work in their (2021) factsheet entitled Addressing Contamination of Drinking Water Distribution Systems from Volatile Organic Compounds (VOCs) After Wildfires EPA 817-F-21-011, October 2021 [https://www.epa.gov/system/files/documents/2021-09/addressing-contamination-of-drinking-water-distribution-systems-from-volatile-organic-compounds-after-wildfires\\_508.pdf](https://www.epa.gov/system/files/documents/2021-09/addressing-contamination-of-drinking-water-distribution-systems-from-volatile-organic-compounds-after-wildfires_508.pdf)

## 6. ENGAGEMENT / SERVICE

### Service to University Employers

Major committee assignments in the Division, School, and/or University

University of South Alabama, University Freshman Orientation, Civil Engineering, faculty representative, Summer 2011, 2012, 2013.

University of South Alabama, Civil Engineering Fundamentals of Engineering Exam Review Instructor, Fall 2011, 2012, Spring 2012, 2013.

University of South Alabama, Civil Engineering Graduate Society, *Faculty Advisor*, May 2013–August 2014.

University of South Alabama, College of Engineering *Safety Committee*, Chair, January 2012–August 2014.

University of South Alabama, University Level *Writing Committee*, Member, August 2011–August 2014.

Purdue University, Environmental and Ecological Engineering *Seminar Committee*, Member, August 2014–May 2015.

Purdue University, Environmental and Ecological Engineering *Faculty Search Committee*, Member, August 2014–October 2015; General position search; HHS/EEE position search.

Purdue University, Ecological Sciences and Engineering *Admissions Committee*, Member, October 2016–Present.

Purdue University, Environmental and Ecological Engineering *Graduate Affairs Committee*, Member, July 2016–May 2017.

Purdue University, Environmental and Ecological Engineering *Space and Facilities Committee*, Member, August 2014–July 2016.

Purdue University, Environmental and Ecological Engineering *EEE 250 Course Assessment Committee*, Chair, September 2016–December 2016.

Purdue University, Bisland and Purdue Doctoral *College of Engineering Fellowship Review/Selection Committee*, Member from EEE, March 2017

Purdue University, Ecological Sciences and Engineering Teaching Excellence Award Selection Committee, Member, April 2018.

Purdue University, Environmental and Ecological Engineering *Academic Affairs Committee*, Member, August 2019–2020.

Purdue University, College of Engineering COVID-19 *Research Restart Committee*, Member, March 2020–June 2020.

Purdue University, Academic Advisor, Joint AWWA–WEF student chapter, July 2017 – Present.

Purdue University, Lyles School of Civil Engineering, Graduate Program Committee, Environmental Area Coordinator/Representative, August 2018–Present.

Purdue University, *College of Engineering, Library Committee* – EEE Representative, August 2018–Present.

Purdue University, Lyles School of Engineering, *Faculty Hiring Committee*, Member. December 2020 – Present.

Purdue University, Environmental and Ecological Engineering Graduate Committee, Member. August 2020 – Present.

Purdue University, Lyles School of Civil Engineering, Online Masters Committee, Member. 2019 – Present.

Purdue University, College of Engineering Diversity and Inclusion Committee, Member, February 2021 – Present.

Purdue University, Lyles School of Civil Engineering Diversity and Inclusion Committee, Member, August 2021 – Present.

Purdue University, Division of Environmental and Ecological Engineering Visiting Assistant Professor Search Committee, Member, January 2022 – August 2022.  
Purdue University, Lyles School of Civil Engineering, Ad-hoc HBCU Engagement Group, 2021– Present.

#### Administrative duties

Purdue University, Civil Engineering, *Faculty undergraduate advisor*, 2015–Present.  
Purdue University, Environmental and Ecological Engineering, *Faculty undergraduate advisor*, 2014–Present.  
Purdue University, *West Virginia Chemical Spill, Event Organizer and Host*. Community, Communications, and Science: The Freedom Industries Chemical Spill Public Forum at Purdue University. November 12, 2014. Invited speakers Dr. Rahul Gupta, MPH, MD, Executive Director, Kanawha–Charleston Health Department, Charleston, West Virginia; Ms. Krista Bryson, Ohio State University, Columbus, Ohio; Ms. Maya Nye, President, People Concerned About Chemical Safety, Charleston, West Virginia; Mr. Rob Goodwin, West Virginia Clean Water Hub, Charleston, West Virginia.  
Purdue University, *College of Engineering, Minority Engineering Program*, 9<sup>th</sup> grade Environmental and Ecological Engineering speaker. 2014.  
Purdue University, *Ecological Sciences and Engineering*. Student Research Poster Competition Judge. 2014.  
Purdue University, Politics, Public Opinion, and Science, College of Agriculture, Panelist, October 18, 2017.  
Purdue University, Policies to Protect the Public from Exposure to Chemicals, College of Engineering, Panelist, January 26, 2018.  
Purdue University, Future Engineering Faculty and Professionals: Mentoring Graduate Students, College of Engineering, Panelist, April 3, 2018.  
Purdue University, College of Engineering Distinguished Lecturer Protecting Drinking Water Panel, Moderator, February 21, 2019.

#### **Service to national / international organizations**

Invited participant for the *Expert Chemical Agent Panel*. Environmental Protection Agency and National Sanitation Foundation International (NSFI). 2003.  
Invited participant for the *Expert Syndromic Surveillance Consultancy Forum*. Environmental Protection Agency National Homeland Security Research Center and Centers for Disease Control. 2004.  
Invited *expert for the Water Contaminant Information Tool (WCIT)* Review Panel. Environmental Protection Agency. 2005.  
Invited proposal reviewer and project advisory committee member, *Water Research Foundation*. Project 4379 – Workshop Research Needs about Opportunistic Pathogens in Premise Plumbing, 2011–2012.  
Invited *expert for the Nuclear Power Facility Plastic Pipe Task Group*, Nuclear Engineering Standards Coordinating Council (NESCC) directed by the National Institute for Standards and Technology. 2011–2012.  
Invited *expert for the International Life Sciences Institute (ILSI)*, Expert Group of *Measurement Methods for the Release of Engineered Nanomaterials from Food and Absorption by the Body*. December 11–12, 2013. Pew Charitable Trusts. Washington, D.C.  
Invited to *brief the U.S. Chemical Safety and Hazard Investigation Board (CSB)* regarding the 2014 Freedom Industries, Inc. Chemical Spill. October 10, 2014. Washington, D.C.  
Invited panelist at the *U.S. National Science Foundation Lessons Learned Workshop for the Dan and Elk River Spills*. 2015. Discuss the role of science during and following the 2014 Elk River, West Virginia chemical spill. Shepherdstown, West Virginia.  
Invited to provide feedback to the *U.S. Department of Homeland Security* about research and preparedness activities needed for improved infrastructure protection. 2016. West Lafayette, Indiana.  
Invited to review and provide feedback to the *U.S. Chemical Safety and Hazard Investigation Board* regarding their Freedom Industries Root Cause Investigation Draft Report. 2016. Washington, D.C.  
Invited to brief the Standing Committee on Medical and Public Health Research During Large–Scale Emergency Events, Board on Health Sciences Policy, Health and Medicine Division, *The National Academies of Sciences, Engineering, and Medicine*. Washington, D.C. USA. October 18, 2016.  
Invited proposal reviewer for *U.S. National Science Foundation (NSF)* Chemical, Bioengineering, Environmental and Transport Systems (CBET) Program Proposal Review Panels (April 2016, May 2016), and Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS) Program Proposal Review Panel (May 2017), ECO-CBET Program Proposal Review Panel (March 2021), CAREER (October 2021).  
Invited panelist to U.S. Green Building Council (USGBC) Green Build Conference. to a Building Drinking Water Quality Session. Boston, Massachusetts. November 7–10, 2017.  
Invited proposal reviewer and project advisory committee member, *Water Research Foundation*. Project 5033 – Demonstrating the Effectiveness of Flushing for Reducing the Levels of Legionella in Service Lines and Premise Plumbing, 2019–Present.

*Public comment for the National Primary Drinking Water Regulations: Proposed Lead and Copper Rule Revisions*, Docket ID No. EPA-HQ-OW-2017-0300. David Cwierny (University of Iowa), Andrew Whelton, Joan Rose (Michigan State University). Submitted February 12, 2020.

Invited to brief the *National Academies of Sciences, Engineering, and Medicine*. Board on Population Health and Public Health Practice and Board on Health Sciences Policy workshop entitled *Implications of the California Wildfires for Health, Communities, and Preparedness*. Held in Sacramento CA. Implications for Health: Responding to and Recovering from Wildfire Caused Drinking Water System Contamination. The National Academies of Sciences, Engineering, and Medicine. Washington, D.C. USA. June 4, 2019.

Invited to brief the *National Academies of Sciences, Engineering, and Medicine*, Board of Water Science and Technology. Reopening after COVID-19: Ensuring Safe Water Supplies at the Building Scale. The National Academies of Sciences, Engineering, and Medicine. Washington, D.C. USA. May 27, 2020.

Invited guest panelist at *World Plumbing Council* annual meeting. Plumbing System Implications Related to the COVID-19 Pandemic. December 9, 2020.

Reviewed, by request, the U.S. EPA 2021 guidance on wildfire water contamination investigations.

Technical comment provided to the National Academies of Science, Engineering, and Mathematics committee on *The Chemistry of Urban Wildfires*. August 2021.

Invited guest panelist at the Institute for Journalism & Natural Resources: Wildfire in the West Workshop, April 2021.

Invited guest panelist at the University of Alaska's Foundations for Improving Resilience in the Energy Sector Against Wildfires on Alaskan Lands (FIREWALL) Workshop sponsored by National Science Foundation grant Navigating the New Arctic. Research Directions in Wildfire Resilience. September 2021.

Invited speaker at the Canadian Interior Ministry of Health BC Small Systems Center about wildfire response and recovery for drinking water systems, May 2022.

Invited speaker at the U.S. Whitehouse Office of Science and Technology, Climate and Environment, September 2022.

Invited expert for reviewing U.S. Environmental Protection Agency Water System Remediation Action Plan Guide, January 2023.

#### **Service to state organizations**

Invited to testify to the *State of Indiana, Senate Environmental Affairs Committee*, January 2015, regarding scientific issues pertaining to the Freedom Industries chemical spill in West Virginia. Senate Bill 312, Tank Registration and Water Threat Minimization Act.

Participation on the Camp Fire State of California Governor's Office of Emergency Services (CalOES) Water Task Force, January 2019–March 2019.

Invited to testify to the *State of Oregon, House of Representatives, Committee on Water*, February 2020, regarding pipe choices for drinking water systems pertaining to their performance under routine and disaster conditions. House Bill 4043.

Reviewed, by request, the 2021 Washington State Department of Health public guidance on reopening building water systems after prolonged shutdown.

#### **Service to professional organizations**

Invited panelist at the *Society of Environmental Journalist Conference*. 2014. Discuss the role of science and the media during and following the 2014 Elk River, West Virginia chemical spill. New Orleans, Louisiana.

Co-leader of *National Workshop* on flushing guidance for consumer premise plumbing and service lines to avoid or address a drinking water advisory. Participants include CDC, EPA, National Association of City and County Health Officials (NACCHO), National Environmental Health Association (NEHA), U.S. Department of Defense, large water companies in the national capital region area. 2015. Washington, D.C.

Invited panelist at the *Society of Environmental Journalist Conference*. 2018. Discuss the technologies for water infrastructure repair and public health and safety issues that need to be addressed. Flint, Michigan.

Session Moderator, AEESP biannual conference, Tempe, Arizona, 2019.

Panelist at the American Water Works Association Annual Conference and Exposition special session *Water Quality in Building Plumbing: Protecting Water Quality on the Customer's Premises*. June 2019. Denver, Colorado. [Prof. Whelton was the session organizer]

Review service for multiple journals: *Utility Policy*, *ASCE Journal of Environmental Engineering*, *AWWA Water Science*, *Chemosphere*, *EcoHealth*, *Environmental Science and Technology*, *Environmental Science: Water Research and Technology*, *Journal of Food Engineering*, *Polymer Degradation & Stability*, *Resources Conservation and Recycling*, *Water Research*, *Water, Environmental Pollution*, *Water Science and Technology*, *Environmental Science and Pollution Research*.

Chair, *AWWA University Student Activities Committee (USAC)*. Appointed May 6, 2020, 3-year term.



Subcommittee Leader, AWWA ACE Lightning Session 2021, *AWWA Premise Plumbing Committee*. July 2020 – December 2020.

Member, IAPMO Returning Building Water Systems to Service Guidance Document Development Team, July 2020 – December 2020.

Associate Editor, *AWWA Water Science* journal, November 2018–Present.

Member, *AWWA Premise Plumbing Committee, Copper Subcommittee*. 2020 – Present.

Panelist at the Water Environment Federation webinar on Building Water Systems, 2022.

*Invited panelist* at the AEESP Conference at special session *Translating Research into Active Engagement*. June 2022. St. Louis, Missouri.

*Member, Geotechnical Extreme Events Reconnaissance (GEER) Field Team in Response to the Marshall Fire*. 2022. The GEER Association is supported by the National Science Foundation.

*Panelist* at the AEESP biannual conference, Workshop on Convergent Research, Implementation Science, and Stakeholder Engagement to Benefit Environmental Health, St. Louis, Missouri, 2022.

### **Service to industrial and nonprofit organizations**

*Co-host of Citizen Scientist Workshops as part our EPA STAR Project*. Community Group Participants: Be Ready Alliance for Community Emergencies (Pensacola, Florida); Hijra House (Biloxi, Mississippi); Vietnamese Fisher Folk and Families (Biloxi, Mississippi); Mobile Baykeeper (Mobile, Alabama); Dauphin Island Estuarium (Dauphin Island, Alabama). August 20, 2013. Leader was Clemson University.

*Invited panelist at town hall meetings* sponsored by the Ohio Valley Environmental Coalition (OVEC) in response to the West Virginia Drinking Water Crisis. February 2014. Meetings held at Marshall University in Huntington, West Virginia and Putnam County, West Virginia.

*Invited panelist at the Association of Environmental Engineering and Science Professors* biannual meeting workshop: 'Defining Role of AEESP in Outreach and Communication, Ann Arbor, Michigan, June 2017.

Host and organizer of *Plumbing Safety workshop* as part our EPA National Priorities Project.

*Invited panelist and presenter at the Society of Environmental Journalists* annual conference. Water Infrastructure: Plants, Pipes, and Problems. Flint, Michigan, October 2018.

*Invited presenter* to the Michigan Drinking Water Workshop hosted by the Michigan Environmental Council. Ann Arbor, Michigan. December 6, 2018.

*Invited panelist* to the IntelliHOT, Inc. webinar on How to safely open buildings after COVID–19 shutdown: Restoring safe potable water. Panelist. May 21 and 26, 2020.

*Invited panelist* to the public discussion about healthy and resilient cities influenced by the COVID-19 panelist by the *Association of Environmental Engineering and Science Professors*, October 30, 2020.

*Invited panelist* to the WATTS Healthcare Online LIVE training event about plumbing design, operation, and safety. December 15, 2020.

*Invited member* to the IAPMO Plumbing Code Water Quality Practices code group, 2020 – 2021.

*Invited participant* Association of Environmental Engineering and Science Professors Strategic Planning Group, February 2021.

*Member* of Water Quality Research Foundation Proposal Review and Study Advisory Committee. 2019 – Present.

*Invited speaker* to the Community Forum on Wildfires and Health in response to 2020 Oregon wildfires. Beyond Toxics (Eugene, Oregon). August 2021.

*Invited Technical Advisor*, National Environmental Health Association 2021 – Pres.

*Volunteer reviewer and feedback for undergraduates seeking to apply to graduate schools*, National Convention, Society of Hispanic Professional Engineers, November 2021.

*Invited proposal reviewer* for the Water Research Foundation Tailored Collaboration Program, 2022.

*Invited project advisory committee member*, Water Research Foundation: Demonstrating the Effectiveness of Flushing for Reducing the Levels of Legionella in Service Lines and Premise Plumbing project 5033, Site Visit Trondheim, Norway, March 2023

*Invited presenter* at community meeting about rapid response research discoveries related to the chemical spill and chemical fires in East Palestine, Ohio, March 12, 2023.

### **Service to academic organizations**

Representative of the US Army Center for Health Promotion and Preventive Medicine for the Virginia Tech National Science Foundation grant Materials Use: Science, Engineering and Society #0223992. 2003.

Participant in Bay Area Women's Coalition meeting for improved building construction practices in Pritchard, Alabama. Mobile, Alabama. October 2012.

Advisory Board Member, Virginia Tech, Postdoctoral Association. 2009–2010.

Member, Virginia Tech, Department of Civil and Environmental Engineering Graduate Student Professional Development Committee. 2006.

Member, Virginia Tech, National Science Foundation MILES IGERT Program, Science Museum Exhibit Development Team. 2007.  
Science Policy Club at Virginia Tech. Virtual presentation about the Role of Policy on Protecting Public Health. April 29, 2021.

### **International activities**

Participation in the joint Royal Academy of Engineering, Chinese Academy of Engineering, National Academy of Engineering Global Grand Challenges Summit, London, England. September 16–18, 2019.  
The 2020 COVID–19 peer-reviewed journal manuscript about building water safety led by Prof. Whelton involved a collaboration with Professor Michele Prevost (Polytechnique Montreal, Canada).  
Helped design the 2020 webinar proposal (that was accepted) led by Prof. Stuart Khan (University of New South Wales, Australia) and submitted to the International Water Association (IWA) on building water safety in response to the COVID–19 pandemic. Participated in June 2020 webinar as the US expert for building water safety with Dr. Susanne Lee (UK), Michele Prevost (Canada), and Stuart Khan (Australia).  
Co-organized and co-initiator of the 2020 National Science Foundation funded Building Water System Collaborative in response to the COVID-19 pandemic, involving leading researchers from outside the U.S.  
Participated in the 2020 World Plumbing Council annual meeting panel about drinking water safety in buildings during the COVID-19 pandemic.  
Participated in the Royal Society of Public Health webinar on COVID and drinking water safety in buildings.  
Meeting with British Columbia Ministry of Health, City of Vancouver to discuss drinking water contamination and response to wildfire, July 2021.  
Presented a webinar to the Canadian Interior Ministry of Health on wildfires and water systems, May 2022.

### **Service to K–12 activities**

The Basics of Military Drinking Water – Gunpowder Day. Hereford Middle School. Monkton, MD. May 2002.  
Free Radicals and Drinking Water. Virginia Tech. July 2005.  
Oxidation, Polyethylene, and Drinking Water. July 2006.  
Polymer Oxidation in Environmental Engineering. Virginia Tech, Blacksburg, Virginia. NSF Summer Undergraduate Research Program (SURP), Let's Think Radically Summer Camp. Blacksburg, Virginia. July 2008.  
Water Treatment for Turbidity Removal from Mobile Bay, Alabama. Davidson Middle School Summer Camp, University of South Alabama. Mobile, Alabama. June 2011.  
Mobile Regional Science Fair, Volunteer Judge, University of South Alabama, Mobile, Alabama. March 2013.  
Why Environmental Engineering is So Cool. Purdue University Minority Engineering Program (MEP) High School Outreach Event. 9th graders ITW David Speer Academy Chicago, Illinois. West Lafayette, Indiana. November 2014.  
Dilution and Pollution. Ben & Maxine Miller Child Development Laboratory School, West Lafayette, Indiana. Fall 2016.  
Brass Instruments. Ben & Maxine Miller Child Development Laboratory School, West Lafayette, Indiana. Spring 2017.  
Dilution and Pollution. Ben & Maxine Miller Child Development Laboratory School, West Lafayette, Indiana. Fall 2017.  
Brass Instruments. Ben & Maxine Miller Child Development Laboratory School, West Lafayette, Indiana. Spring 2018.  
Dilution and Pollution. Ben & Maxine Miller Child Development Laboratory School, West Lafayette, Indiana. Spring 2018.  
Pollution, Dilution, and Mixing Demonstration. Ben & Maxine Miller Child Development Laboratory School. Purdue University, West Lafayette, Indiana. 2016, 2017, 2018.

### **Journal peer-review**

*Nature Nanotechnology, Natural Hazards, Environmental Science and Technology Letters, Environmental Science and Technology, ACS EST Water, AWWA Water Science, ASCE Journal of Environmental Engineering, Journal of Water and Health, Water Science and Technology, Environmental Science: Water Research and Technology, Environmental Science: Processes and Impacts, Environmental Pollution, Journal of Hazardous Materials, Journal of Environmental Health, International Journal of Hygiene and Environmental Health, Water Supply, PLOS Water, Science of the Total Environment, Journal of Environmental Chemical Engineering, Chemosphere, Journal of the American Water Works Association, Journal of Environmental Quality, Water Research, Critical reviews in Environmental Science and Technology, Transportation Research Record, ASCE Journal of Professional Issues in Engineering Education and Practice*

*Fire Technology, Polymer Degradation and Stability, Polymer Testing, Journal of Cleaner Production, Journal of Composite Materials, Building and Environment, Inhalation Toxicology, Journal of Applied Toxicology, ACS Sustainable Chemistry & Engineering, Resources, Conservation, and Recycling, Journal of Environmental Chemical Engineering, Journal of Applied Polymer Science*

## 7. OTHER RELEVANT INFORMATION

### **Public and media engagement**

Feature video of Prof. Whelton's work by the U.S. National Science Foundation

*Engineers investigate possible impacts of the Elk River chemical spill*  
National Science Foundation feature video, Science Nation, 3:12 min.  
[RAPID response chemical spill research](#) online April 2015

This video highlights the role of science and engineering in protecting the environment and public health. It also underscores the critical role of university community to work with the public and government to rapidly apply their expertise to disasters.

### Notable Mentions by Others

In 2014, a public video was developed and published online by Ohio State University student Krista Bryson featuring Prof. Whelton's research team's efforts in West Virginia. The video explained to West Virginia's residents how to flush their plumbing systems and minimize chemical exposure. Video is posted online at [West Virginia Water Crisis: Exclusive \\*Crucial\\* Information about Flushing](#). 2,000 views during the early days of the West Virginia drinking water contamination incident response in January 2014.

*Testimony to U.S. Senate Environment and Public Works Committee by Eric Olson, NRDC mentioned Prof. Whelton's chemical spill research project while highlighting the need for more study. February 4, 2014.*  
[Subcommittee on Water and Wildlife of the U.S. Senate Committee on Environment and Public Works, hearing entitled Examination of the Safety and Security of Drinking Water Supplies Following the Central West Virginia Drinking Water Crisis.](#)

*Science Magazine* Editorial by Profs. Julie Zimmerman and Paul Anastas, Yale University. January 2015.  
[Mentioned Prof. Whelton's chemical spill research]

*ASEE PRISM Magazine* report by Homes-Douglas, P. Off-Campus Crusaders. March–April 2016.  
<http://www.asee-prism.org/off-campus-crusaders-mar-apr/> [Mentioned Prof. Whelton's chemical spill research]

*Journal of the American Medical Association (JAMA).* Editorial by Dr. Kenneth Kizer entitled [Extreme Wildfires—A Growing Population Health and Planetary Problem](#). [Mentioned Prof. Whelton team's work on wildfires and water contamination]

Press Releases Issued by Funding Agencies, National Academies of Science, Engineering, and Mathematics, and Purdue University

*US National Science Foundation.* [NSF awards rapid response grants to study West Virginia chemical spill](#). January 30, 2014.

Purdue University. [Report: culvert repairs pose environmental risks, require safeguards](#). December 17, 2014.

Purdue University. [Research provides guidance to clean plumbing systems in buildings after water contamination](#). August 10, 2015.

Purdue University. [Project focuses on reducing pathogen threat in low-flow water systems](#). January 12, 2017.

*US Environmental Protection Agency.* [EPA provides \\$4 million to two universities for drinking water research](#). January 12, 2017.

Purdue University. [Materials emitted by a water pipe-repair method may pose health risks, new safeguards and research needed](#). July 27, 2017.

Purdue University. [Review of common construction practice finds environmental contamination, need for improved oversight and monitoring](#). May 15, 2018.

Purdue University. [Flint, Michigan lead crisis should have buried the city in water bottles. So, why didn't it?](#) December 4, 2018.

Purdue University. [Study: Your home's water quality could vary by the room – and the season](#). February 19, 2020.

Purdue University. [Water quality could change in buildings closed down during COVID-19 pandemic, engineers say](#). April 13, 2020.

*US National Science Foundation.* [Water quality could be altered in buildings closed during COVID-19 pandemic](#). April 21, 2020.

National Academies of Science, Engineering, and Mathematics (NASEM). [As Commercial Districts Come Back to Life, Water Stagnation Will Pose Health Risks](#). June 11, 2020.

Purdue University. [Expert: Effects of COVID-19 on K-12 school building water systems](#). July 21, 2020.

Purdue University. [Purdue short course covers building water system basics, offers guide for bringing idled systems back, operating safely](#). November 5, 2020.

Purdue University. [Panel probes relationship between scientists and journalists, highlighting areas for growth](#). February 15, 2021.

Purdue University. [Answers to faster recovery from a wildfire are in the water](#). March 15, 2022.

Purdue University. [Engineering the Unknown: EEE students help communities restore water quality](#). June 2022.

Purdue University. [Something's in the air: It's nanoplastic pollution](#). October 6, 2022.

Prof. Whelton's led teams have focused on infrastructure, disasters, and recovery and their results and impacts have been broadly discussed nationally and internationally. These have been in print, radio, online, and television media. Information shown below are not replicated stories but unique reports about his team's work, findings, and implications.

#### Radio

*NPR All Things Considered*  
*Indiana Public Radio / WYMI*  
*California Public Radio / KAZU*  
*West Virginia Metro News w/ Hoppy Kercheval*  
*Top of Mind w/ Julie Rose / BYU Radio*  
*ABC Radio Melbourne w/ Shelley Ware (Australia)*  
*Wisconsin Public Radio*

*NPR Here and Now*  
*Indiana Public Radio / WBAA*  
*West Virginia Public Radio*  
*620WTMJ-Milwaukee*  
*KNX1070 Los Angeles John Nuno*  
*American University Radio/WAMU*  
*All Sides with Ann Fisher at WOSU*

#### Print

*The New York Times*  
*USA Today*  
*Indy Star*  
*Sacramento Bee*  
*US News and World Report*  
*Charleston Daily Mail*  
*Mobile Press Register*  
*The Exponent*  
*Statesman Journal*  
*Popular Science*  
*Washington Post*

*The Wall Street Journal*  
*Chicago Tribune*  
*Business Insider*  
*Associated Press*  
*West Virginia Gazette*  
*The Herald Dispatch*  
*New Haven Independent*  
*Journal Sentinel*  
*Santa Cruz Sentinel*  
*Purdue Exponent*

#### Online

*Scientific American*  
*Esquire*  
*Salon*  
*Huntington News*  
*Circle of Blue*  
*Derby Informer*  
*Inside Climate News*  
*Ensia*  
*SourceableNet*  
*ARLNow*  
*Consumer Reports*  
*STAT*  
*Energy & Environment News*  
*Honolulu Civil Beat*

*The Huffington Post*  
*Bloomberg*  
*Think Progress*  
*The Columbia Chronicle*  
*MSNBC*  
*Chico News and Review*  
*Nature*  
*GRIST*  
*Arlington Cardinal*  
*Street Roots*  
*EoS*  
*CalMatters*  
*Greenwire*  
*Pew Charitable Trusts STATELINE*

#### Television

*CBS Evening News with Scott Pelley*  
*West Virginia Decision Makers Sunday Morning*  
*HuffPost Live*  
*CBS WOWK*  
*NBC Local 15 WMPI*  
*WISHTV8*  
*FOX59*  
*CBS Affiliate WTVR*

*CBSN*  
*CNN*  
*ABC WCHS8*  
*NBC WTAP*  
*NBC WSAZ*  
*FOX 10TV-WALA*  
*KXTV ABC10*  
*Alabama Public Television*

CBS WHIO7  
CBS KHON4  
NBC 9NEWS Denver  
PBS Home Diagnosis with Corbett Lundsford

ABC KITV4  
Hawaii News Now  
BBC WORLD News

Industry and trade association media

C&E (Chemical & Engineering) News  
Contractor Magazine  
Water Quality and Products  
International Water Association (IWA)  
Building Green.com  
Angie's List  
Laboratory Equipment  
Waterworld

Chemistry World  
Plastics News  
Safety and Health News  
Environmental Building News  
Civil Engineering Magazine  
Green Building Advisor  
WaterOnline  
Safety and Health Magazine

Blogs

ASDWA Blog  
Union of Concerned Scientists Blog  
National Resources Defense Council (NRDC) Blog  
International Water Quality Association (IWA) Blog  
Forest Hills Connection

West Virginia Water Crisis Blog  
The Plastic Ocean Project Blog  
My World's on Fire

Podcasts

The Water Values  
[The Collective Tap](#)  
[WQA Radio – Water Quality Variance in Homes](#)  
[Full Steam Ahead: A PODCAST About Purdue](#)  
[National Science Foundation Science Nation](#)

Geek Speak  
[Purdue Engineering](#)  
[Mass Construction Show](#)  
[Animalcast PODCAST](#)

**Websites for Discovery Permeation, Public and Industry Education**

To project scientific discoveries into the public domain and make them accessible to different public health, industry, and general public stakeholders, Prof. Whelton has established websites for different efforts. These sites are gaining popularity in the sectors they were designed to impact.

***CIPPSafety.org Website***

The [www.CIPPSafety.org](http://www.CIPPSafety.org) website features Purdue research discoveries pertaining to a pipe rehabilitation process called the cured-in-place-pipe (CIPP) technique. These topics include worker and public safety, toxicology, best practices, environmental pollution, and technology. The site has been used to educate health officials as recently as Spring 2020 through online education. The following records document the number of unique visitors to the website: Current Total: 29,851 [as of January 4, 2023].

***PlumbingSafety.org Website***

The [www.PlumbingSafety.org](http://www.PlumbingSafety.org) website features Purdue research discoveries pertaining to the safety of building water systems for residential and commercial buildings. This includes featured Purdue studies, but also posted presentations delivered, scientific opinions on federal and state legislation, and disaster response actions. The following records document the number of unique visitors to the website: Current Total: 65,608 [as of January 4, 2023].

In response to the 2019 COVID-19 outbreak, multiple state health departments and drinking water primacy agencies, as well as public health associations listed this website on their list of resources to their stakeholders.

*Videos Whelton and his Team Created and Posted Publicly*

Why Flush Building Water Systems? April 2020. YouTube. <https://www.youtube.com/watch?v=LvwRsTnj63g>

Why Are Calculations Needed to Design Building Water System Flushing Plans? April 2020. YouTube. <https://www.youtube.com/watch?v=9OHxICsaaBg>

Wildfire attack of water distribution systems: Prepare, respond, and recover. September 20, 2020. YouTube. [https://www.youtube.com/watch?v=rbjp\\_CJFZgw&feature=youtu.be](https://www.youtube.com/watch?v=rbjp_CJFZgw&feature=youtu.be)

Lessons from the Field: Variability of Single Family Home Drinking Water Quality. January 2021. YouTube. <https://www.youtube.com/watch?v=fsJa67DAkMs>

Lessons from the Field: Transitioning to Building Rainwater Plumbing Systems. May 2021. YouTube. <https://www.youtube.com/watch?v=GoKvmSiQqAQ>

Lessons from the Lab: Thermal Degradation of Plastic Pipes and Drinking Water Contamination. May 2021. YouTube. <https://www.youtube.com/watch?v=ZYSP-A0L39Q>

Lessons from the Field: Chemistry and Microbiology Discoveries in a 7 Year Old Green School Building. May 2021. YouTube. <https://www.youtube.com/watch?v=JuRGxF0HZHM>

Prof. Whelton also responds to individual requests from health officials, private businesses, and through his [awhelton@purdue.edu](mailto:awhelton@purdue.edu) email address, but also [cippsafety@purdue.edu](mailto:cippsafety@purdue.edu) and [plumbingsafety@purdue.edu](mailto:plumbingsafety@purdue.edu) email addresses.

### **Memberships in Academic, Professional and Scholarly Societies**

American Water Works Association (AWWA), Member, 1998-Present.

- National Security and Emergency Preparedness Committee, 2005-Present; Taste-and-Odor Committee, 2002-Present. University Student Activities Committee, 2013-Present, Scholarship Award Reviewer 2017-Pres; Water Main Rehab Committee, 2013-Present.
- Virginia Section. Member, Security and Emergency Preparedness Committee, 2005-2007; Member, Research Committee, 2005.
- Technical Session Moderator, AWWA Water Security Congress, Public Health Surveillance Track. Washington, D.C., 2006.
- Alabama / Mississippi Section, Volunteer judge for taste test. 2011. 2012, Scholarship Award Committee Member, 2013-2015.
- Technical Session Co-organizer, AWWA ACE 2019, Beyond the Meter: Plumbing. Denver, CO, 2019.
- Poster Symposium Co-organizer and Moderator, AWWA ACE 2019, Beyond the Meter: Plumbing. Denver, CO, 2019.
- Poster Symposium Co-organizer and Moderator, AWWA ACE 2021, Beyond the Meter: Plumbing. San Diego, 2021.
- Chair, University Student Activities Committee, elected 2020. 3 – year term.
- Leader, Adhoc Education Subcommittee, Premise Plumbing, July 2020 – June 2021
- Member, AWWA Speaker Selection Committee for annual AEESP lecture, 2021
- Technical Session, Moderator, AWWA Water Quality Technology Conference. Wildfires and Water Systems Track. Cincinnati, Ohio. 2022.
- WQTC Young Professional Distinguished Lecture Selection Committee, 2021 – Present

American Chemical Society (ACS), 2008-Present.

American Association for the Advancement of Science (AAAS), 2019-Present.

American Society of Plumbing Engineers (ASPE), 2020-Present.

American Public Health Association (APHA), Member, 2022-Present

American Society of Civil Engineers (ASCE), Member, 2009-2012.

American Society for Testing and Materials (ASTM), F17 Plastic Pipe and Fittings Committee, 2009-2011.

Association of Environmental Engineering and Science Professors (AEESP), 2009-Present, Member.

- Students Services Committee. 2011-2012, Chair; 2012-2013, Vice-Chair.
- Co-led July 2011 Academic Job Search Workshop that involved 35 graduate student and postdoctoral participants as well as 30 junior and senior faculty.
- Volunteer reviewer for AEESP Academic Job Application Review (AJAR) Program, 2012, 2014.
- Invited participant, AEESP Strategic Planning Committee Session, 2021.

International Water Quality Association (IWA), Member, 2009-2012.

National Association of City and County Health Officials (NACCHO), 2021 Virtual Annual Education Conference [not member]

- Moderator, Session Public Health's Supporting Role when Drinking Water Systems are Chemically Contaminated, 2021
- Moderator, Session HAZMAT Incidents Caused by Sewer Cured-in-Place-Pipe (CIPP) Projects: Lessons for Health Officials and Emergency Responders, 2021
- Moderator, Session Building Water Safety Updates, 2021

Standard Methods for the Examination of Water and Wastewater Committee, Section 2170 FPA. Member, 2007. Water Environment Federation (WEF), Member, 2010-2013.

### **Legal involvement**

Mobile Area Water and Sewer System (MAWSS) vs. Steak'N Shake and Golden Corral. Expert Witness Deposition: Fall 2013.

Mobile Area Water and Sewer System (MAWSS) vs. Plains Southcap, LLC. Expert Witness Deposition: Fall 2013.  
Testified: Fall 2013.  
Good vs. Eastman Chemical Company, American Water Works Service Company, West Virginia American Water,  
Gary Southern, Dennis Ferrell. Fact Witness Deposition: Jun. 11, 2015. US Federal District Court of West  
Virginia.  
Loft vs. Insituform and City of Deerfield Beach, Florida. Expert Consultation. Expert Witness Deposition: May 20,  
2022 and July 8, 2022. Broward County, Florida.

**Other awards and honors**

U.S. Army CHPPM Headquarters Office Commander's Coin, 2002  
U.S. Army CHPPM Western Office Commander's Coin, 2003  
Fort Stewart and Hunter Army Airfield, GA Commander's Coin, 2004  
Nominated as one of five "Got Science" Champions by the Union of Concerned Scientists, 2014



## **Testimony of Andrew J. Whelton to the Senate of the Commonwealth of Pennsylvania**

Senate Veterans Affairs and Emergency Preparedness Committee

Chair: Senator Doug Mastriano

Minority (Ranking member) Chairwoman: Senator Katie Muth

Commonwealth Ave, Harrisburg, Pennsylvania 17120

March 20, 2023

Dear Chairman Mastriano, Ranking Member Murth, and Honorable Senators and Members of the Committee: Committee Members:

This testimony pertains to the Norfolk Southern February 3, 2023 chemical spill and chemical fires, and this is submitted in my individual capacity. I am expressing my personal views based on 20 years of experience as a civil and environmental engineer. I am not representing the views of Purdue University, my College or my Department.

I am often called into nationally significant disasters to provide community, local, state, and executive level support. Some disasters were the 2014 Freedom Industries Chemical Spill, 2018 Camp Fire, 2021 Marshall Fire, and 2021 jet fuel contamination in Hawaii, among others. In 2022, my insights were sought by President Biden's Administration and previously by Canadian communities and the Ministry of Health in response to wildfires. Last month I briefed the Norwegian Institute for Public Health and leading researchers in the United Kingdom.

The disaster in East Palestine prompted significant impacts to the people and economies of Ohio and Pennsylvania. While only 4,500 people live in East Palestine, contamination impacted a total of five states who represent 37 million people.

In February 2023, I provided technical advice to community members in East Palestine who had air and water safety questions. In late February, Pennsylvania residents in and around Darlington contacted me for air, soil, and water safety advice.

Due to the lack of available information, a volunteer Purdue University team responded to the area February 25 to 27. The initial goal was to help residents understand drinking water safety risks. This goal changed when it was discovered that extensive chemical contamination remained in the nearby waterways posing an acute health risk to the public and cleanup workers.

On March 1<sup>st</sup> I asked the U.S. Occupational Safety and Health Administration (OSHA) Director Douglas Parker to take action and protect workers from harm.

On March 7<sup>th</sup>, I submitted a letter to the U.S. Senate Environment and Public Works Committee as well as to Ohio Governor DeWine, Ohio's U.S. Senators, and the U.S. Environmental Protection Agency notifying them that Purdue University teams had identified chemicals related to the spill that officials were not testing for in creek water.

On March 12, I shared additional new study results at a United for East Palestine community meeting. The figure below showed that federal, state, and county government agencies were inconsistently testing air and water samples. For example, the private well water in Ohio was not tested for 2-butoxyethanol, but this chemical exceeded 10,000 parts per billion or ppb in the creeks according to Ohio EPA's own data. 2-Ethylhexanol was detected in the creeks, but also

was not tested for in the wells. While 100+ wells had been tested in Ohio, officials now need to go back and properly test for the chemicals associated with the spill. For another example, acrolein was detected by the U.S. EPA in the air, but was not tested for in water samples by either Ohio EPA or the health department. According to the Pennsylvania DEP website, only three chemicals of concern (vinyl chloride, ethylene glycol, and ethanol) were tested for in private wells, indicating a variety of chemicals linked to the disaster were not screened.

It is unclear who is advising these agencies about what to test for. This should be urgently addressed.

This past weekend, March 17-18, I returned to help the community sampled homes, soils, creek water, and well water. These samples are now being processed at Purdue University.

In closing, I encourage Pennsylvania leaders to support their citizens and businesses by thorough environmental sampling and analysis. I also encourage leaders to prioritize answering the specific questions asked by the people and businesses impacted.

University experts can provide rapid and thorough assistance. Researchers are uniquely trained on investigating complex phenomena with the environment and health.

Thank you for the opportunity to share this information with you today.

Our review of available data has found inconsistent testing by government agencies for chemicals of concern			
Outdoor Air	Surface Water	Municipal Water	Private Well Water
Acrolein	Not tested	Not tested	Not tested
Not tested	Butyl acrylate	Butyl acrylate	Butyl acrylate (not confirmed)
Not tested	2-Ethylhexanol	Not tested	Not tested
Not tested	2-Ethylhexyl acrylate	2-Ethylhexyl acrylate	2-Ethylhexyl acrylate (not confirmed)
Not tested	2-Butoxyethanol	Not tested	Not tested
Vinyl chloride	Vinyl chloride	Vinyl chloride	Vinyl chloride
Benzene	Benzene	Benzene	Benzene
Xylenes	Xylenes	Xylenes	Xylenes
Naphthalene	Naphthalene	Naphthalene	Naphthalene
1,3-Butadiene	Not tested	1,3-Butadiene	1,3-Butadiene
1,1,2-Trichloroethane	1,1,2-Trichloroethane	1,1,2-Trichloroethane	1,1,2-Trichloroethane
Trichloroethylene	Not tested	Trichloroethylene	Not tested
Phosgene	Not tested	Not tested	Not tested
Ethylene glycol (Not tested)	Not tested	Not tested	Not tested
n-Butyl ether (Not tested)	Not tested	Not tested	Not tested
Purdue Surface Water Detections (Mar 7 Letter to US Senate): Acrolein, n-Butyl ether, Butyl acrylate, 2-Butoxyethanol, 1,3-Butadiene, 2-Ethylhexyl acrylate, Ethylene glycol			
PURDUE UNIVERSITY		March 12, 2023	

**Figure.** Evidence shows inconsistent testing by government agencies. Slide from March 12, 2023 community meeting presentation by Andrew Whelton about emerging research discoveries. U.S. EPA has been responsible for air testing, Ohio EPA has been responsible for surface water and municipal water testing, and county health departments have been responsible for private well water testing. File is available at [www.PlumbingSafety.org](http://www.PlumbingSafety.org)