

# AEESP Newsletter

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### **AEESP Newsletter Submissions**

Please send news, conference announcements, job postings, letters to the editor, and other contributions to the newsletter to Steve Mylon at [smylonr@gmail.com](mailto:smylonr@gmail.com). The next newsletter will appear in September 2017

## President's Letter

by PETER VIKESLAND  
Virginia Tech



As I write this we have just recently concluded a very successful AEESP Biennial Conference in Ann Arbor. Over 700 people attended the event that was so well organized by Nancy Love and Christian Lastoskie and their team from the University of Michigan, Michigan State University, Wayne State University, Michigan Technological University, the University of Toledo, and the University of Notre Dame.

With AEESP2017 now in the rear-view mirror, we now are in the initial stages of planning for AEESP2019. In Ann Arbor, a key question that was raised by many attendees was how big do we want our biennial conference to be? Staging an event with more than 700 attendees is a logistical challenge and while Michigan was able to do so quite well, it is not clear that many other institutions have sufficient facilities and space to handle such large numbers. In past years, the conference was considerably smaller in scale with a much larger faculty to student ratio. Some have suggested that we tweak the conference to reduce the scale and thus enhance the peer-to-peer conversations that have always been a highlight of the meeting. On the other hand, some suggest that we should continue letting the meeting grow in scale as our community similarly grows. If you have an opinion about the scale of the conference or about things that worked or did not work well in Ann Arbor please let the Board of Directors know so that we can ensure the next biennial meeting is as good as, if not better, than the conferences that preceded it. We have set up a special webpage, [www.aeesp.org/content/aeesp-conference-suggestions](http://www.aeesp.org/content/aeesp-conference-suggestions), so please send us your suggestions. We want AEESP's Research and Education Conference to truly be unique, special, and something AEESP members look forward to attending each time.

This time of year is always a time of transition for the AEESP Board of Directors. We have three incoming members: April Gu from Northeastern University, Joel Ducoste from North Carolina State University, and Shaily Mahendra from UCLA. They will be replacing three of us who are rotating off: Cindy Lee from Clemson who has also served for the last two years as AEESP Treasurer, Dionysios Dionysiou from the University of Cincinnati who has served as the Chief Technology Officer, and myself. It has been my distinct pleasure to serve as President this past year. While the road that we have collectively traveled over the past year was not what I expected it to be, it has been truly heartening to see our community come together in a myriad of different, yet positive ways. Whether it be Marching for Science in a torrential downpour in D.C., writing op-eds, serving on state and federal advisory boards, working within our local and regional communities to address environmental challenges, producing new science and engineering insights, or training the next generation of environmental engineers and scientists our community clearly fills many important roles.



AEESP President Peter Vikesland (Virginia Tech) with AEESP member David Cwiertny (University of Iowa)



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## AEESP Journal *Environmental Engineering Science* Spotlight

**Mark Krzmarzick (Member, AEESP Publications Committee), Catherine A. Peters (EES Deputy Editor), Susan J. Masten (Chair, AEESP Publications Committee), Domenico Grasso (EES Editor-in-Chief)**

The “spotlight” column draws attention to selected articles in *Environmental Engineering Science*, the official journal of the Association of Environmental Engineering and Science Professors (AEESP). Spotlight articles appear regularly in the AEESP newsletter, as well as in the journal as an Editor’s Note. Through publication of high-quality peer-reviewed research, the EES journal helps AEESP achieve its mission of developing and disseminating knowledge in environmental engineering and science. In this entry, we reviewed articles from the December 2016 issue through the March 2017 issue of EES. We decided to shine the spotlight on three articles in the January 2017 Special Issue: “Environmental Engineering Science in the 21st Century”, edited by Peter Vikesland. Congratulations to all whose work is highlighted.

**Boehm, A.B., Ismail, N.S., Sassoubre, L.M., and Andruszkiewicz, E.A. (2017).** Oceans in peril: Grand challenges in applied water quality research for the 21st century. *Environ. Eng. Sci.* 34, 3.

This paper lays out environmental challenges and research needs for oceans. With the high economic value and reliance of society on ocean ecosystems, the authors make the case for increased interdisciplinary research by the environmental engineering community to address microbial, nutrient, and chemical pollution, as well as ocean debris and loss of biodiversity in oceans.

**Mihelcic, J.R., Naughton, C.C., Verbyla, M.E., Zhang, Q., Schweitzer, R.W., Oakley, S.M., Wells, E.C., and Whiteford, L.M. (2017).** The grandest challenge of all: The role of environmental engineering to achieve sustainability in the world’s developing regions’. *Environ. Eng. Sci.* 34, 16.

These authors present ten grand challenges to achieve environmental sustainability in the devel-

oping world for the environmental engineering community. The challenges are diverse, ranging from sanitation needs to global climate change to developing the global competency of early career engineers. Mihelcic et al. lay out opportunities and pathways to addressing these challenges.

**Daigger, G.T., Murthy, S., Love, N.G., and Sandino, J. (2017).** Transforming environmental engineering and science education, research, and practice. *Environ. Eng. Sci.* 34, 42.

These authors propose a necessary paradigm shift from environmental engineering education, research and practice to better position the field for the future. The new paradigm would emphasize integrated solutions that address multiple benefits (akin to the “one-water” concept), a proactive stance to pollution problems that emphasizes green engineering and anticipated impacts, and an integration of environmental engineering practice within society. Daigger et al. lay out new practices and policies that can be used to shift the field towards this paradigm.

## 2017 AEESP Award Recipients

Submitted by Rob Nerenberg (University of Notre Dame)

The 2017 AEESP Awards were presented on June 22, 2017 at the AEESP Awards Ceremony, held as part of the AEESP Research and Education Conference in Ann Arbor, MI. The Awards Ceremony was held at the Henry Ford Museum, which served as the perfect venue for the Ceremony and Evening Banquet to close out the 2017 Conference. Below is a list of the recipients. Congratulations to all award winners!

Thank you to the members of the Awards Committee and sub-committees for thoughtful and thorough evaluation of the nominations: Avery Demond, Kevin Finneran, Caitlyn Butler, Michelle Scherer, Des Lawler, Jeff Cunningham, Lucy Camacho, Aria Amirbahman, David Cwiertny, Wen Zhang, Wenjie Sun, James Stone, Jeff Nason, Srijan Aggarwal, Boris Lau, Lynn Katz, and Rob Nerenberg. Thanks also to AAEES members Dick Magee, Webb Owen, John Tobiasson, and Hector Fuentes, for serving on joint AAEES/AEESP awards committees.

## Student Awards

### CH2M/AEESP Outstanding Doctoral Dissertation Award

This award is given annually to recognize an outstanding doctoral dissertation that contributes to the advancement of environmental science and engineering. This year, two awards were given:

**Dr. William Rhoads** (advised by **Amy Pruden** and **Marc Edwards**), Virginia Tech

**Growth of Opportunistic Pathogens in Plumbing: Building Standards, System Operation, and Design**



Dr. William Rhoads accepts the CH2M/AEESP Outstanding Doctoral Dissertation Award from AEESP President Linda Weavers.

Photo Credit: Marcin Szczepanski (follow on Flickr)

**Dr. Yi Jiang** (advised by **Pratim Biswas** and **John Fortner**), Washington University, Saint Louis

**Crumpled Graphene Oxide: Aerosol Synthesis and Environmental Applications**



Dr. Yi Jiang (center) accepts the CH2M/AEESP Outstanding Doctoral Dissertation Award from AEESP President Linda Weavers (left) with Advisors Pratim Biswas (2nd from left), John Fortner (2nd from right), and AEESP Awards Committee chair Rob Nerenberg (right).

Photo Credit: Marcin Szczepanski (follow on Flickr)

### Paul V. Roberts/AEESP Outstanding Doctoral Dissertation Award

This award is given annually to recognize an outstanding doctoral dissertation that advances the science and practice of water quality engineering for either engineered or natural systems.

**Dr. Kimberly Parker** (advised by **William Mitch**), Stanford University

**Contribution of Halides to Photochemical Reactions in Estuaries and Coastal Waters**



Dr. Kimberly Parker accepts the Paul V. Roberts/AEESP Outstanding Doctoral Dissertation Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)



## MWH/AEESP Master's Thesis Award

This award annually recognizes the first and second most outstanding Master of Science theses that contribute to the advancement of environmental science and engineering.

**First Place:** **Karen Castelo**s (advised by **Andrew Whelton**), Purdue University

**Techniques and Technologies for Decontaminating Chemically Contaminated Premise Plumbing Infrastructure**



*Karen Castelo (2nd from right) accepts the MWH/AEESP Master's Thesis Award from AEESP President Linda Weavers (right), with Advisor Andrew Whelton (2nd from left) and AEESP Awards Committee Chair Rob Nerenberg (left).*

*Photo Credit: Marcin Szczepanski (follow on Flickr)*

**Second Place:** **Teigan Gulliver** (advised by **Junko Munakata Marr** and **Linda Figueroa**), Colorado School of Mines

**Degradation of PHB and PE Microbeads in Aerobic and Anaerobic Biological Wastewater Treatment Microcosms**



*Teigan Gulliver (2nd from right) accepts the MWH/AEESP Master's Thesis Second Place Award from AEESP President Linda Weavers (right), with Advisors Junko Munakata Marr (center), Linda Figueroa (2nd from left) and AEESP Awards Committee Chair Rob Nerenberg (left).*

*Photo Credit: Marcin Szczepanski (follow on Flickr)*

## Graduate Research Award in Computational Hydraulics & Hydrology

This award is given annually by AAEEES and is cosponsored by Innovyze to recognize an M.S. or Ph.D. student whose research contributes to knowledge in the area of computational hydraulics and hydrology.

Dr. **Qian Zhang** (advised by William Ball) Johns Hopkins University

## Education, Research, Practice and Outreach Awards

### AEESP Award for Outstanding Teaching in Environmental Engineering and Science

This award is given annually to recognize excellence in classroom performance and related activities.

**Lee Blaney**, University of Maryland Baltimore County

Since joining UMBC in August of 2011, Lee has placed a strong emphasis on teaching excellence. According to one of Lee's reference letters, "his scores have been consistently in the top tier of the Department and College." Lee also has had extensive participation in undergraduate research, mentoring (such as Engineers Without Borders), and STEM with minority students. His dedication and passion for teaching, along with his demonstrated success, makes Lee an ideal recipient for this award.



*Lee Blaney (center) accepts the AEESP Award for Outstanding Teaching in Environmental Engineering and Science from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).*

*Photo Credit: Marcin Szczepanski (follow on Flickr)*

## Steven K. Dentel/AEESP Award for Global Outreach

This award, established in 2014, is given annually to recognize outstanding contributions and leadership by a faculty member through involvement in environmental engineering and science outreach activities to the global community.

**Francis de los Reyes, III**, North Carolina State University

Francis de los Reyes has been highly engaged in international research and education throughout his career, including engagement in the Philippines, Belgium, South Africa, Malawi, China, India, the UK, and Brazil. Since 2011, he has been developing a novel device for emptying pit latrines in developing countries. One support letter states “If you review Dr. de los Reyes’s accomplishments in global outreach, they demonstrate the continued efforts of someone passionately serving the global community, and performing outreach activities in a multitude of education, research, and mentoring activities that ultimately advance the health and well-being of global communities.”



Francis de los Reyes, III (center) accepts the Steven K. Dentel/AEESP Award for Global Outreach from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)

## 2017 Excellence in Environmental Engineering Education (E4) Award

This award, jointly administered by AEESP and AAEEES, is given annually by the American Academy of Environmental Engineers and Scientists (AAEES) to an individual who has made a significant contribution to the profession in the area of educating practitioners.

**James Mihelcic**, University of South Florida, has made major contributions towards educating practitioners. He is internationally recognized for integrating concepts of sustainability into environmental research, education, and engineering practice. He is the lead author of the textbook “Environmental Engineering: Fundamentals, Sustainability, Design,” which is widely used in environmental engineering programs. Jim also is internationally known for training engineers and conducting research in the area of sustainable development and global water, sanitation, and hygiene. Finally, he is active member in the environmental community of academics and practitioners, serving as board member and then president of AEESP, and as a board of trustees member and executive committee member of AAEEES.

GIVEN AT AAEEES AWARD CEREMONY



James Mihelcic (left) accepts a 2017 AEESP Fellow medal from Past President Peter Vikesland (right).

Photo Credit: Marcin Szczepanski (follow on Flickr)

## Charles R. O’Melia/AEESP Distinguished Educator Award

This award recognizes the significant contributions of Professor O’Melia to environmental engineering education and is awarded to an environmental engineering or science professor who has a record of excellent classroom teaching and graduate student advising; significant research achievements; and an outstanding record in mentoring of former students and colleagues.

**Mitch Small**, Carnegie-Mellon University

Dr. Mitch Small is a highly dedicated educator and researcher in the field of environmental modeling, risk assessment and systems analysis. He consistently has received outstanding evaluations for his teaching, and has successfully advised over 50 PhD students, many of which have gone on to successful careers in professional practice, academics, and government. He is widely recognized as a national leader in the development of integrated assessment for civil-environmental engineering decision-making. He also has provided years of service to the profession of Civil and Environmental Engineering, through his participation on regional and national committees, editing of professional journals, service to professional societies, and service to the US Environmental Protection Agency.



Mitchell Small (center) accepts the Charles R. O’Melia Distinguished Educator Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)



## AEESP Frontier in Research Award

This award is given annually to recognize an environmental engineering or science professor who has advanced the environmental engineering and science field through recognized research leadership and pioneering efforts in a new and innovative research area.

**Trina McMahon**, University of Wisconsin-Madison

Trina has demonstrated outstanding research leadership and pioneering efforts in two distinct research areas. She is an internationally recognized scholar in metagenomics and metatranscriptomics of biological wastewater treatment systems, and also a leader in the field of molecular microbial ecology of natural aquatic systems. As stated by a nominator, “Trina espouses all of the characteristics of excellence in a STEM faculty member and is one of the true gems of environmental engineering research and education.”

**NOT PRESENT TO RECEIVE AWARD**

## AEESP Outstanding Publication Award

This award is given annually to recognize the author(s) of a “landmark environmental engineering and science paper that has withstood the test of time and significantly influenced the practice of environmental engineering and science.” At least one of the authors must be living and previous winners are ineligible for a period of three years. The selected recipient will receive a plaque.

**Dr. Chad Jafvert**, Purdue University

**Dr. Richard Valentine**, University of Iowa

For their paper:

“Reaction scheme for the chlorination of ammoniacal water,” *Environmental Science & Technology*, 1992, 26 (3), pp 577–586



Richard Valentine (center) and Chad Jafvert (2nd from right) accepts the AEESP Outstanding Publication Award from AEESP President Linda Weavers (right) with AEESP Past President Peter Vikesland (2nd from left) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)

This paper provides the first comprehensive model of the chlorine – ammonia reaction system. The model has often been used by researchers interested in modeling chloramination and the decay of chloramine species in water distribution systems. The model also was the first to correctly describe the reactions involved in breakpoint chlorination, a process used to disinfect water for over a century. This work has stood the test of time and continues to be a significant contribution to our field.

## Perry L. McCarty/AEESP Founders' Award

This award, established in 1991 and endowed in 2014, is given annually to recognize a member of AEESP who has made “sustained and outstanding contributions to environmental engineering education and practice.”

**Paul Bishop**, University of Rhode Island

Paul Bishop has been making contributions to the science and practice of environmental engineering for nearly 50 years. He is best known for his work on biofilms. He served as the Environmental Engineering Program Director at NSF, and has also been heavily involved with ABET. As stated in a nomination letter “... Professor Paul Bishop has compiled an exemplary list of accomplishment related to environmental engineering education and research. He is an inspiring teacher, and has accumulated an impressive body of research and scholarship. He is highly honored and is a dedicated contributor to the professional community.”



Paul Bishop (center) accepts the Perry L. McCarty/AEESP Founders' Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)

## Fredrick George Pohland Medal

This award honors a member of AEESP and/or the American Academy of Environmental Engineers and Scientists (AAEES) who has made sustained and outstanding efforts to bridge environmental engineering research, education, and practice.

**Dan Oerther**, Missouri University of Science and Technology

Dan has worked extensively to bridge research, education, and practice. As Dr. Sam Jeyanayagam — Vice President and Senior Principal Technologist at CH2M — noted in his letter of support, “[Dan] has repeatedly demonstrated his ability to effectively link theoretical concepts and research findings to practical applications, a skill possessed by only a few in our institutions of higher education.”

**NOT PRESENT TO RECEIVE AWARD**

## Distinguished Service Awards

### AEESP Committee Chairs

**Patrick Gurian**, Drexel University

**Distinguished Service Award for Service as Government Affairs Committee chair**



**Berat Haznedaroglu**, Bogazici University, Turkey

Patrick Gurian (center) accepts an AEESP Distinguished Service Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)

**Distinguished Service Award for service as IRC Committee chair**

**NOT PRESENT TO RECEIVE AWARD**

**Robin Autenrieth**, Texas A&M University

**Distinguished Service Award for service as AEESP Foundation chair**

**NOT PRESENT TO RECEIVE AWARD**

## AEESP Board Members

**Peter Vikesland**, Virginia Tech

**Distinguished Service Award as President and AEESP Board Member**



Patrick Gurian (center) accepts an AEESP Distinguished Service Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)

**Dion Dionysiou**, University of Cincinnati

**Distinguished Service Award for service as Chief Technology Officer and AEESP Board Member**



Dion Dionysiou (center) accepts an AEESP Distinguished Service Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)



Cindy Lee, Clemson University

**Distinguished Service Award for service as AEESP Treasurer and Board Member**



Cindy Lee (center) accepts an AEESP Distinguished Service Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)

## Others

Menachem Elimelech, Yale University

AEESP Distinguished Lecturer Award

**NOT PRESENT TO RECEIVE AWARD**

Nancy Love, University of Michigan

**Distinguished Service Award for service as chair of 2017 Conference**



Nancy Love (center) accepts an AEESP Distinguished Service Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left) her two sons.

Photo Credit: Marcin Szczepanski (follow on Flickr)

Christian Lastoskie, University of Michigan

**Distinguished Service Award for service as co-chair of 2017 Conference**



Christian Lastoskie (center) accepts an AEESP Distinguished Service Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)

Bill Cooper, University of California Irvine

**Distinguished Service Award for Extensive Contributions to the AEESP Community as NSF Program Director**



Bill Cooper (center) accepts an AEESP Distinguished Service Award from AEESP President Linda Weavers (right) and AEESP Awards Committee Chair Rob Nerenberg (left).

Photo Credit: Marcin Szczepanski (follow on Flickr)



## Dr. José Cerrato of UNM receives NSF CAREER Award.

Dr. José Cerrato of the Center for Water and the Environment and the Civil Engineering Department at the University of New Mexico has received an NSF CAREER Award for his project, "Understanding Reactivity in American Native Impacted Uranium Mines (URANIUM): Research, Education and Outreach." Dr. Cerrato's project integrates research, education, and outreach activities to identify governing biogeochemical mechanisms affecting the contamination and remediation of metals in organic-rich sediments in abandoned uranium (U) mine

wastes in northwest and central New Mexico. The knowledge from this project will help inform reclamation strategies, investigating resources that could be recovered from these wastes to potentially benefit affected communities. Partnership with Native American communities in New Mexico will facilitate information exchange, access to sites, and collaborative training opportunities for students.

Dr. Cerrato is the third current faculty member in the Environmental and Water Resources Engineering group at UNM to receive an NSF CA-

REER Award, joining Dr. Andrew Schuler and Dr. Mark Stone. Dr. Schuler's CAREER Award was "Microbial Storage Products and Density: Overlooked Fundamentals and Promising Opportunities in Biological Solids Separation" and Dr. Stone's CAREER Award was "Evaluating the Impacts of River Engineering and Stream Restoration Projects on the Ecosystem Service of Floodwave Attenuation." All three faculty are members of the Civil Engineering Department and the Center for Water and the Environment, which is an NSF-funded research center.

## ASU Creates Environmental Engineering Major

Arizona State University is excited to announce that it is offering a new Bachelor of Science in Engineering (B.S.E.) degree in Environmental Engineering starting in the 2017–2018 academic year. Student interest in the program is strong as evident by enrollment in the first freshmen class and first sophomore class both exceeding 20 students. We anticipate our first graduates in May 2020 and will seek ABET accreditation.

The Environmental Engineering (EVE) program is designed to leverage existing strengths at ASU and in the School of Sustainable Engineering and the Built Environment, which offers degrees in Environmental Engineering, Civil Engineering, Construction Engineering, and Construction Management. The EVE program will include new courses that cover fundamental concepts in environmental engineering including contaminant transport and phase partitioning, environmental chemistry, and applied microbiology; a re-designed environmental engineering processes lab course; and engineering design courses that span water, air, soil, and health. The EVE program will incorporate cross-cutting themes in the curriculum including sustainability, public health, and big data to illustrate for students the interdisciplinary nature of environmental engineering problems. The EVE program will also include existing courses from Civil Engineering, such as fluid mechanics and hydrology, because of the shared interest in the interactions between the built and natural environments. The EVE program will require an environmental engineering practicum that can include an internship, undergraduate research, or other applied experience. Finally, the EVE program will be multi-school including courses from the School for Engineering of Matter, Transport & Energy (Chemical Engineering Program) and the Polytechnic School (Environmental and Resource Management Program). The curriculum is envisioned to prepare graduates to solve environmental engineering challenges of today and challenges in the future.

The B.S.E. degree in Environmental Engineering builds on the significant strengths of the Environmental Engineering faculty at ASU that includes nationally and internationally recognized experts on drinking water and wastewater treatment, water reuse, water quality, resource recovery, and environmental biotechnology and microbiology. The Environmental Engineering faculty at ASU currently participate in five research centers, including the Swette Center for Environmental Biotechnology, the Center for Environmental Security, the NSF Water and Environmental Technology Center and NSF-sponsored Engineering Research Centers in Nanoenabled Water Treatment and Bio-inspired and Bio-mediated Geotechnics. Environmental Engineering faculty are housed in state-of-the-art facilities, particularly the Biodesign Institute and the Interdisciplinary Science and Technology Building 4. Environmental Engineering faculty also interact with the School of Sustainability and the Global Institute of Sustainability.

## Charles Haas to Receive 2017 NWRI Clarke Prize: Drexel University Professor Developed Methods to Estimate Risk of Illness Caused by Pathogens in Drinking Water



The National Water Research Institute (NWRI) is pleased to announce that Charles N. Haas, Ph.D., will receive the NWRI Athalie Richardson Irvine Clarke Prize for pioneering and applying methods to assess and minimize health risks caused by exposure to disease-causing microorganisms (referred to as pathogens) in water and wastewater. Haas is the LD Betz Professor of Environmental Engineering and Head of the Department of Civil, Architectural, and Environmental Engineering at Drexel University in Philadelphia, Pennsylvania.

"I am humbled and honored to receive this award," said Haas. "The Clarke Prize is great recognition for the line of research I have developed in microbial risk assessment. I am thankful for this high honor."

Haas will receive the Clarke Prize on October 19, 2017, at the Twenty-Fourth Annual NWRI Clarke Prize Lecture and Award Ceremony in Irvine, California. NWRI presents the prize – which consists of a medallion and \$50,000 award – every year to recognize research accomplishments that solve real-world water problems and to highlight the importance and need to fund this type of research.

"Professor Haas' accomplishments are exceptional and impact a broad number of scientific fields," said NWRI Executive Director Kevin

Hardy. "His research has led to a better understanding of what is safe when it comes to our water, how we address emerging pathogens, and how we control risks to human health, thereby upholding NWRI's mission to ensure safe, reliable sources of water are available now and for future generations."

Trained in both engineering and microbiology, Haas used his cross-disciplinary education to explore the disinfection and inactivation of pathogens in water since receiving a doctorate in Environmental Engineering from the University of Illinois at Urbana-Champaign in 1978. At that time, public health agencies and regulators did not have a practical or effective scientific method to inform whether treatment processes were adequately eliminating the risk of exposing the public to pathogens in municipal water supplies. They instead relied on limited approaches, such as testing water for indicators of such contamination and/or the absence of reported waterborne disease outbreaks, to determine that water treatment plants were achieving their goals in reducing or eliminating pathogens.

Haas explored this issue and published his first groundbreaking findings on estimating the risk of human exposure to low doses of microorganisms in the *American Journal of Epidemiology* in 1983. In this article, he concluded it was impossible to rule out that a single microorganism, when ingested, has the potential to cause infection or disease in humans. In other words, how do we know using a treatment process that removes 99.99 percent of all viruses is good enough? What exactly is "safe" when it comes to exposure to pathogens?

One of his first efforts to understand what constituted microbiologically "safe" water was through work with the U.S. Environmental Protection Agency (USEPA) to understand the minimum level of treatment needed to reduce outbreaks of the waterborne disease, giardiasis, of which at least 50 cases had been recorded since the late 1960s. Haas put his groundbreaking findings to practical application, developing a "dose response" function for the pathogen *Giardia*. Simply stated, a dose response indicates the number of disease-causing organisms (dose) needed to cause a negative reaction to human health (response). Using this function, the USEPA was able

to estimate the level of protection needed to prevent giardiasis, which was then included in the newly developed Surface Water Treatment Rule (1989).

Ensuing research laid the groundwork for Haas' most widely cited book, *Quantitative Microbial Risk Assessment* (1999), the first complete guide for measuring and evaluating the risks to humans posed by disease-causing organisms in food, water, air, and other environmental pathways. As used today, quantitative microbial risk assessment (QMRA) involves hazard identification, dose response, exposure assessment, and risk characterization. This valuable tool has influenced the development of public health guidance and policies by prominent organizations both nationally and internationally. The USEPA has cited Haas' research in the Surface Water Treatment Rule and its iterations (including the Long Term 2 Enhanced Surface Water Treatment Rule) and Ground Water Rule (2006). Haas also used his expertise in QMRA to help the World Health Organization (WHO) develop both the Guidelines for Drinking Water and Guidelines for the Safe Use of Wastewater, Excreta, and Greywater. Today, Haas is known as the "Father of QMRA."

"There is no other individual I know who has contributed more or has had the impact of Chuck Haas at advancing quantitative science within the engineering profession," said colleague Joan Rose, Ph.D., the Homer Nowlin Endowed Chair for Water Research at the University of Michigan, and recipient of the 2016 Stockholm Water Prize. "Chuck has always pushed traditional boundaries, not only for himself, but for others to think about new interfaces. He continues to promote the idea that we can answer the question of 'What is safe?'"

Over the course of his 39-year career, Haas has authored or co-authored more than 200 publications. Notably, he published a study in February 2017 that suggests sewage workers downstream of hospitals and Ebola treatment centers could potentially contract the virus via inhalation, a risk not currently accounted for by the Centers for Disease Control and Prevention or the WHO. He also served on an NWRI Expert Panel to provide advice to the State of California on developing water recycling criteria for indirect potable reuse



through surface water augmentation and determining the feasibility of developing criteria for direct potable reuse.

Haas will present the 2017 Clarke Prize Lecture, tentatively titled “An Engineer to Microbiologists, and a Microbiologist to Engineers,” during the Award Ceremony on October 19. The Award Ceremony precedes the annual NWRI Clarke Prize Conference on Urban Water Sustainability, scheduled for October 20.

Established in 1993 in honor of NWRI’s co-founder, the late Athalie Richardson Irvine

Clarke, the Clarke Prize is one of only a dozen water prizes awarded worldwide. Recent past recipients of the Clarke Prize include microbiologist Dr. Mark D. Sobsey of the University of North Carolina at Chapel Hill (2016), environmental engineer Dr. John C. Crittenden of Georgia Institute of Technology (2015), and civil and environmental engineer Dr. David L. Sedlak of the University of California, Berkeley (2014).

More information about the NWRI Clarke Prize Conference and Award Ceremony can be found at [www.clarkeprize.com](http://www.clarkeprize.com).

*A 501c3 nonprofit, the National Water Research Institute (NWRI) was founded in 1991 by a group of Southern California water agencies in partnership with the Joan Irvine Smith and Athalie R. Clarke Foundation to promote the protection, maintenance, and restoration of water supplies and to protect the freshwater and marine environments through the development of cooperative research work. NWRI’s member agencies include Inland Empire Utilities Agency, Irvine Ranch Water District, Los Angeles Department of Water and Power, Orange County Sanitation District, Orange County Water District, and West Basin Municipal Water District. Please visit [www.nwri-usa.org](http://www.nwri-usa.org) for more information.*

## **The 14th annual Marquette University Anaerobic Treatment Short Course**

A limited number of scholarships are available for graduate students to attend the 14th annual Marquette Water Quality Center short course on anaerobic treatment of high-strength industrial waste (see <http://www.marquette.edu/ANT> for details). Scholarships cover the course registration fee. The short course will be held September 12-13, 2017 at the Marquette University Raynor Library (Milwaukee, Wisconsin, USA). The event is designed for students, industry managers, operators, consulting engineers and regulators. Information will be presented regarding anaerobic microbiology and chemistry, anaerobic digestion operation and design, biogas utilization and construction/start-up guidelines. Case studies of operating anaerobic treatment systems will be presented for Redhook Brewery, Jack Link’s Beef Jerky, Mars Chocolate North America, and other industries. A tour of an operating anaerobic digester facility is included. Speakers include Goksel Demirer (Middle East Technical University-Turkey), Daniel Zitomer (Marquette University) and Dennis Totzke (Applied Technologies, Inc.). To apply for a scholarship, graduate students should complete the registration form at <http://www.marquette.edu/ANT> and email it to Daniel Zitomer ([daniel.zitomer@mu.edu](mailto:daniel.zitomer@mu.edu)).

## **Get to Know Your AEESP Foundation**

We just capped off another successful AEESP meeting in Ann Arbor, where many of our colleagues and students were honored with awards. You may recognize the Paul V. Roberts Dissertation Award, the Charles O’Melia Educator Award, the Perry L. McCarty Founders Award, and the Steven Dentel Global Outreach Award, among others. These are wonderful recognitions of excellence. But did you know that these awards are managed and endowed through the AEESP Foundation? In addition, the Foundation manages the Distinguished Lecture Award which Meny Elimelech (Yale) just finished, and Pedro Alvarez is about to embark on. Each year, upwards of 15 campuses benefit from leaders in our field. The Foundation was started a decade ago to improve the state of knowledge in environmental engineering and science through the support and encouragement of excellence in education, outreach, and scientific research. Check us out at [www.aeespfoundation.org](http://www.aeespfoundation.org), and let us know how you want to become involved in fundraising for both existing and new opportunities, such as the Walter J. Weber Frontiers in Research Award. Or just let us know what other programs you think we should consider. It is your foundation. We’re looking forward to hearing from you!

Peter Adriaens, Foundation Chair

## AEESP Membership

Membership in AEESP offers important benefits to educators, researchers, students, professionals, corporations and organizations engaged in the environmental engineering and science profession. All who are eligible for membership are welcome to join the Association and to participate in the full range of benefits and opportunities. Membership categories and fees are described below, with complete definitions provided in the AEESP Bylaws. Applying online is easy! We welcome your participation!

### Regular and Student Membership

Regular Membership in AEESP is open to persons of full-time faculty or instructional rank (instructors, lecturers, assistant, associate, full professors) in environmental engineering or environmental science at academic institutions that offer baccalaureate, diploma, or graduate degrees in environmental engineering, environmental science or related fields.

Rank	Annual Fee
Full Professors	\$100
Associate Professors	\$75
Assistant Professors	\$50
Students and Post-docs	\$15

Applying for Regular membership is made by submitting a completed application form and a brief two page curriculum vitae online with payment. Alternatively, application materials may be mailed to the Business Office with a check enclosed.

### Affiliate Membership

Affiliate Membership is open to individuals who are not eligible for regular membership including:

- Individuals primarily employed outside academia who also hold academic appointments in an environmental engineering or related academic program (e.g. adjunct faculty).
- Individuals primarily employed outside academia who have made contributions to education in environmental engineering or related fields.
- Educators in environmental engineering or related fields who are employed at junior colleges or other educational institutions that do not offer the degrees specified above.
- Individuals who were members at one time and who have retired from active teaching.

Application for Affiliate membership is the same as for regular membership. The annual dues for Affiliate members are \$60.

### Sustaining Membership

Sustaining Membership is open to individuals and organizations whose concern for education in environmental engineering and related fields stimulates them to assist in strengthening university programs devoted to this area. Sustaining members are often those who employ or interact closely with graduates of environmental engineering and science programs such as consultants, utilities, research foundations, professional organizations, publishers and equipment manufacturers. The financial support provided by Sustaining Members allows AEESP to carry out a variety of special programs that benefit all members of the profession. Sustaining Members have access to all AEESP publications and are invited to all AEESP events. Organizations or individuals desiring more information on Sustaining Membership should write to the Secretary, the President, or the Business Office.

Annual dues for Sustaining members are \$500. Organizations or individuals desiring more information on sustaining membership should contact the Business Office at the phone number below.

Ready to join? You can apply for membership online!

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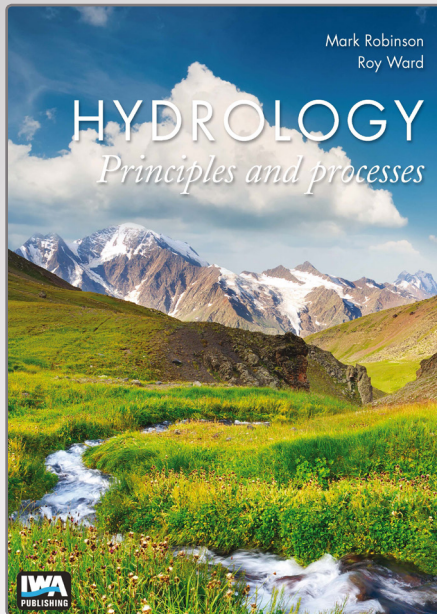
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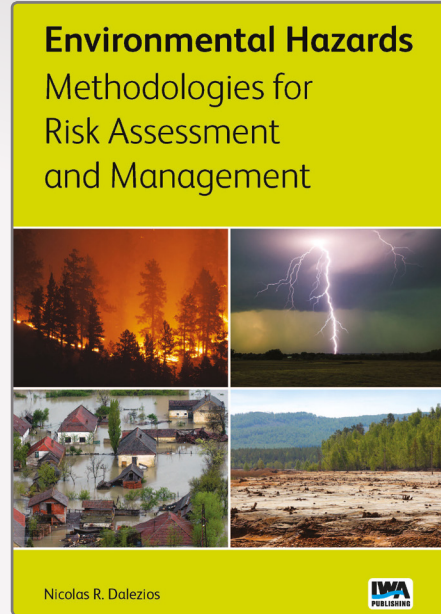




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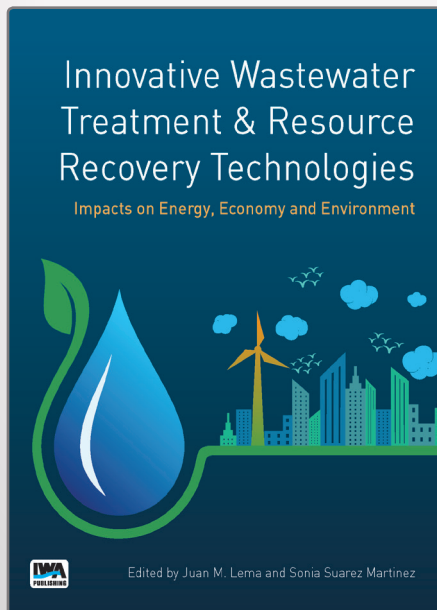


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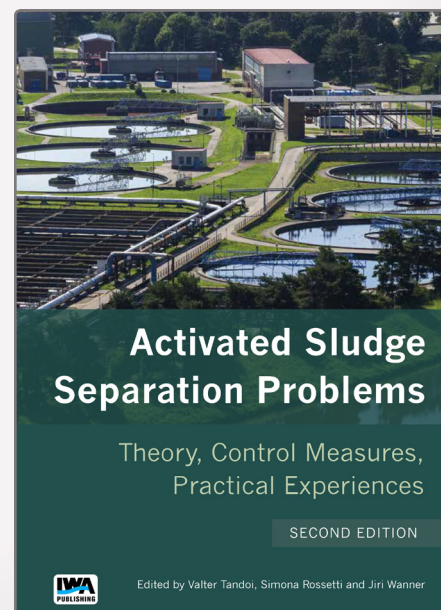


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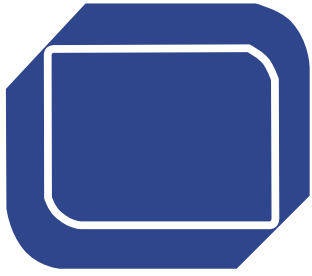
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# Association of Environmental Engineering and Science Professors Newsletter

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