AEESP Newsletter

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Highlights

Need to renew your 2021 AEESP membership? Go to "Membership > Online Renewal" on the AEESP Website: https://aeesp.org/content/online-membership-renewal www.AEESP.org

AEESP Newsletter Submissions

Please send news, conference announcements, job postings, letters to the editor, and other contributions to the newsletter to Kyle Doudrick at kdoudrick@nd.edu. The next newsletter will appear in June 2021.

President's Letter

BY JOEL J. DUCOSTE
North Carolina State University

What brings you sustained happiness or contentment? And I mean real contentment – the emotion evoked by positive subjective wellbeing, a state of happiness, or a source or cause of delight. I suspect that many of your answers consist of an overwhelming number of things, items, or people that are likely unrelated to your academic career. I, too, think of those extracurricular topics. However, I do find ways to infuse other activities that bring contentment in my academic career.

Am I getting too philosophical here? Yep. I had plenty of time during our forced isolation to limit the transmission of COVID-19 to think about all kinds of stuff. Yet, the amount of anxiety, depression, and other mental health challenges facing students and colleagues have made me consider what kinds of activities we should engage in to help buffer our concerns about our health, safety, political and societal climate, etc. All of this has led me down the road of how to infuse more contentment in the Professoriate.

I became a faculty member because I was interested in research to help change the world. I also wanted to inspire young minds to think about future possibilities on top of developing current solutions to life's pressing issues. What I did not realize when I started my academic career is that teaching, research, and scholarship were never the end goal or mission that I envisioned. They were only vehicles that would allow me to build relationships and serve others. At NC State University, faculty realms of responsibility are divided into Teaching and Mentoring, Discovery of Knowledge, Extension and Engagement, Creative Artistry and Literature, Technological and Managerial Innovation, and Service. The percentage of time spent by faculty in any of these realms depends on their appointment, rank, and stage of their career. While service is partitioned separately, the reality is that all these faculty realms of responsibilities are in the service of others.

Prior to our transition to a digital world due to COVID-19, I am sure that each of you had experiences where a former student stopped by the office or a colleague told you about how they were doing. The role you played in that person's life comes back to you and leads to feelings of joy and contentment. I want to make the case that we should continue to explore ways to increase these acts of support towards the service of others to increase contentment. Instead of thinking of the above faculty realms of responsibilities as exclusive independent goals, consider them all working towards the same goal: in the service of others.

'Ubuntu' is a word that comes from the Bantu language of South Africa and is defined as "I am because we are." Desmond Tutu described the meaning of the word to explain how the dehumanization of others leads to dehumanizing yourself. While that explanation could not be more important today in the United States (I will leave that for a future discussion), I want to stay in the positive. My interpretation of Ubuntu means the service of all others is the primary goal and we achieve it through the human relationships we build in all our activities.

While I have come to understand this goal, and frankly speaking, this human need of having relationships, our system of evaluating faculty and staff productivity does not include how impactful we are in the service of others in all realms of responsibility. Although, I do recall a Star Trek episode with Captain Jean Luc Picard explaining to a time traveler from the past that in the future, there is no need for currency because it is not the insatiable goal of humankind. He said that in the future, humans just seek to better themselves. I wonder if that was a different definition of Ubuntu? Okay, I have digressed.

My hope in having this conversation is to have each AEESP member consider reframing the goals within each academic realm of responsibility to assess how well relationships are built toward the service of others. Try to consider how

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www.aeesp.org/news

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Instead of thinking of faculty realms of responsibilities as exclusive independent goals, consider them all working towards the same goal: in the service of others.

well you are developing your relationship with your colleagues, post-doctoral fellow, and/or graduate students during your research projects. Make an effort to know a different student in your classroom and share an experience that you see could be helpful toward achieving their career goals. We are vessels of so much information and knowledge, and we sometimes forget that our personal journey and stories are engines that drive the passion towards the pursuit of new knowledge and educating the next generation of environmental engineers and scientists. The wisdom that you share from your personal journey combined with your technical knowledge will be remembered more fondly than just the technical knowledge alone.

In addition to activities you can do locally on your campuses, I want to encourage you to investigate the activities going on at AEESP. There are several committees that you can join to get involved in AEESP. All committees are designed to support our colleagues and constituencies that we serve. A full description and summary of each committee activity are displayed on our website (**AEESP Committee Descriptions**). These committees are an important dimension of the service we do for our members and are filled with volunteers who have many great ideas and energy. Yet, they are always looking for more members to join and contribute new ideas that help grow and diversify our reach of support. I can easily high-

The wisdom that you share from your personal journey combined with your technical knowledge will be remembered more fondly than just the technical knowledge alone.

Continued on next page

light any of the committee activities here, but I do not want to leave out any because I am proud of them all and would encourage you to join any that the spirit moves you to consider. If you have been a member of one of these committees in the past and have stepped down to pursue other activities, first let me say "Thank You," and I hope we can count on you to consider future service with AEESP.

In closing, I believe that human relationships toward the service of all others is a significant path forward to help improve our well-being, joy, and contentment in our academic careers. Embracing the concept of Ubuntu, "I am because we are," recognizes that building relationships and sharing our individual journey and wisdom along with our technical skillsets will strengthen our collective connection and reach those that feel unconnected and lack a sense of belonging. I hope you join me in spreading the power of Ubuntu. Best wishes for a safe, happy, and healthy 2021.

Sharing our individual journey and wisdom along with our technical skillsets will strengthen our collective connection and reach those that feel unconnected and lack a sense of belonging.

AEESP Research and Education Conference Virtual "Appetizer" July 13-14, 2021 with In-Person Conference in St. Louis Postponed to Summer 2022

By Dan Giammar, Washington University in St. Louis, AEESP Research and Education Conference Host

While the trajectories of COVID-19 cases and vaccination progress are promising, we have made the difficult decision to postpone the in-person AEESP Research and Education Conference to summer 2022. This decision was based on your responses to the survey in January, travel restrictions at many of our universities, and an assessment of our own campus operations. While we are disappointed that we will have to wait a year to see you in St. Louis, we are excited to offer a virtual "appetizer" event this July and to provide an update on the program for the 2022 conference.

https://aeesp2021.wustl.edu/

Virtual "Appetizer" of the AEESP Conference, July 13-14, 2021

The virtual "appetizer" will be held as two half-day sessions. The first day will open with a keynote presentation by Yvette Pearson, Associate Dean for Accreditation, Assessment, and Strategic Initiatives in the George R. Brown School of Engineering at Rice University and Founder of The Pearson Evaluation and Education Research Group (The PEER Group). She is recognized globally for her work along the intersections of sustainability, diversity, equity, and inclusion. Dr. Pearson's keynote will be followed by a set of parallel workshops designed for current and future environmental engineering professors at different career stages. The first half-day will conclude with a "Meet the Candidate" networking reception. AEESP President Joel Ducoste will open the second half-day with a presentation on the AEESP strategic plan. This day will include an interactive session on diversity and inclusion in environmental engineering and an additional window of workshops. The second day will conclude with the annual AEESP awards and President's address.

Highlights of the AEESP Board of Directors Meeting
February 4 – 5, 2021

Submitted by Allison MacKay
The Ohio State University, AEESP Vice President

The AEESP Board of Directors (BOD) met from Feb. 4 – 5, 2021 via ZOOM video conference to accommodate coronavirus pandemic travel restrictions. Brian Schorr, the AEESP Executive Administrator from Technology Transition Corporation (TTC) was also present for the meeting. A summary of meeting highlights is provided below.

Membership

As of Jan. 31, 2021, AEESP currently has 605 members who are in good standing, consisting of 405 professors, 62 student/post-doc members and the remaining being lifetime, affiliate and sustaining members. An additional 313 members are currently in arrears. A large fraction of members who are in arrears are in the student/post-doc category and possibly have moved on to careers outside of academia. There is a slight increase in members of good standing compared to this time last year but a slight decrease, overall when members in arrears are included. Please pay your dues, if you are currently overdue! The Board will be considering new strategies in 2021 to increase the number of Sustaining Members in the organization.

There was discussion about ways to expand membership in the organization. This can include member campaigns among colleagues at their home institutions and engagement of other engineering disciplines with interests in sustainable engineering. There is likely some growth through integration and support of Professors of Practice and topical diversity so the organization more fully represents the present field of environmental engineering practice.

Financial

The Board approved the budget for 2021. Net expenses exceeded revenue by approximately $4,000 at the end of FY2020. Such a difference is typical in a non-conference year. The primary loss of revenue was through lower than typical job postings that are likely related to pandemic-induced budget slow downs. Some typical travel expenses also did not materialize due to coronavirus travel restrictions. The organization enters 2021 in a strong fiscal position with cash reserves at recommended levels for a non-profit organization.

Bylaws Updates and Other Board Approvals

The Board proposes amending the AEESP Bylaws to define the officer positions of Chief Technology Officer and Chief Information Officer. These positions have been a part of the Board on an ad hoc basis to support the evolution of organization communication strategies. The Bylaw revisions clarify the appointment process and roles of these two Board member roles. They will be presented to the membership for approval during the 2021 election.

The Board approved a slate of candidates who will stand for election to be new board members with terms starting in Sept. 2021. The election is forthcoming by electronic ballot with candidate statements of past contributions to AEESP and rationale for future service.

AEESP Commitment to Diversity and Inclusion

The Board is working with the Membership and Demographics Committee with input from the Government Affairs Committee to draft an organization statement for AEESP Commitment to Diversity and Inclusion. This includes a recognition of the values of the organization.

AEESP Website

AEESP has entered into contract with a web designer to modernize and update the Society and Foundation webpages. This activity has been on-going for several months in collaboration with the Internet Resources Committee. The web designer shared data analytics on the use of the existing Society and Foundation webpages, in terms of user profile, landing sites, staying time and likelihood of user bookmarking sites (e.g., AEESP jobs page). The Board discussed the goals of website engagement and reviewed the rough architecture of the website layout and opportunities for efficiently conveying information.

2021 Biennial AEESP Research and Education Conference

The Board met with Dan Giammar, 2021 Research and Education Conference Host. Details on the plans for the 2021 Conference are outlined in his announcement on page 3 of this *Newsletter*.

Strategic Planning

A steering committee was formed in December to lead a representative subset (39) of AEESP members through a discussion of future directions for the AEESP organization. The last strategic planning activity occurred in 2012, and President Joel Ducoste, with full support of the Board, identified the need for revisiting the question of how AEESP serves its membership and the brand value associated with AEESP as an organization. An intensive ideation session will occur in late February with the goal of a formulated framework plan to be introduced on the second day of the virtual appetizer discussed on page 3. The framework plan will guide the organization and activities of committees over the next five years.

Outreach Activities

The Board discussed opportunities to raise the profile of Environmental Engineering and Science careers through broader K12 outreach. Some initial concentrations are underway to explore a potential partnership with the North American Association for Environmental Education.

Committee Reports

The Board discussed the various committees that make AEESP work. Highlights from a few of the committees are presented below. You can find the listing of the AEESP committees and committee chairs at http://www.aeesp.org/about/committees. Please consider volunteering your time on one of these committees and getting more involved with AEESP.

Awards
The Awards Committee is currently reviewing candidate submissions for the AEESP and joint American Academy of Environmental Engineers and Scientists (AAEES)/AEESP awards in anticipation of presentation at the summer AEESP conference. A portion of the discussion about award nominations focused on opportunities to better advertise the AEESP Awards program, including more targeted promotion on the organizations' websites.

Foundation
One education grant was funded by the Foundation in Fall 2020. A targeted year-end appeal for the Foundation garnered six donations. The Foundation plans to expand efforts to work on fundraising to endow AEESP awards over this next year.

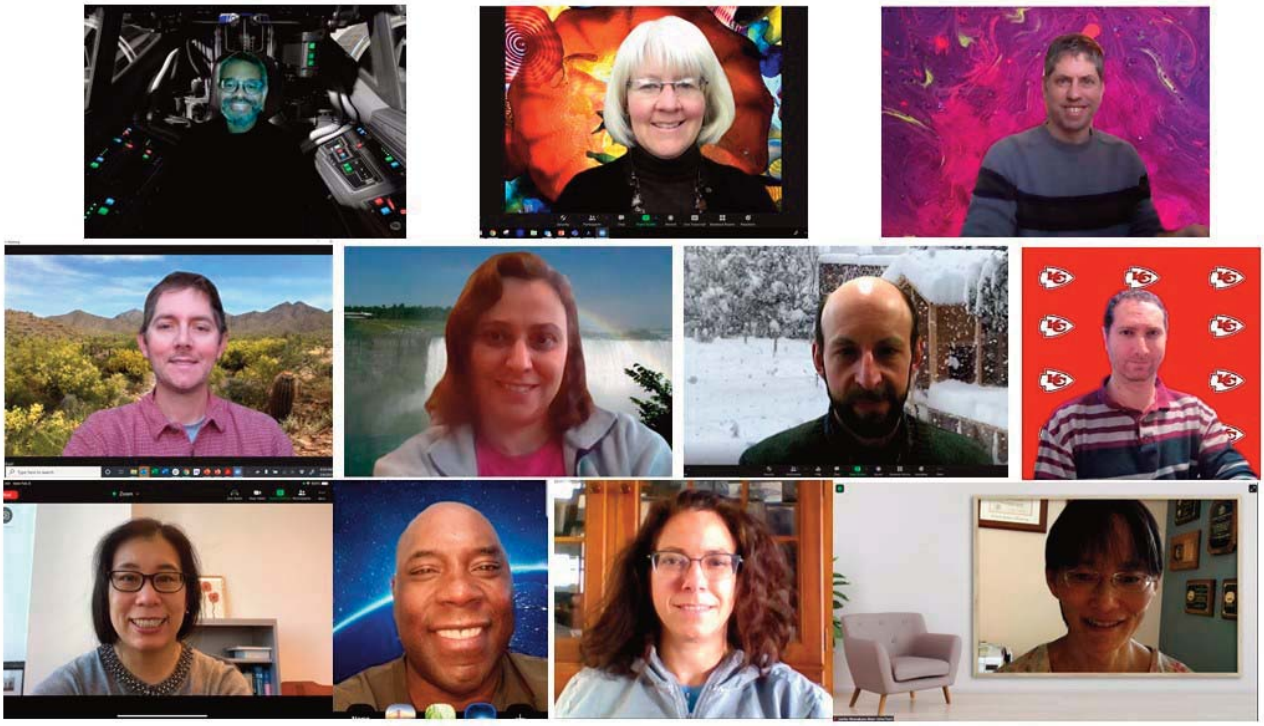
Education
Efforts to move forward with the second, Phase II, revisions of the Environmental Engineering Body of Knowledge have been initiated by AAEES. AEESP will continue to partner in this initiative.

Government Affairs
The Government Affairs Committee is discussing starting a 'policy corner' column in the newsletter to provide updates on major environmental policy initiatives. Periodic communications to the AEESP will be undertaken to provide notifications of short-term news items, such as comment periods for major legislation.

Lectures
The Lectures Committee will be working with schools in May 2021 to schedule visits by 2021-2022 Distinguished Lecturer, Cliff Davidson.

Environmental Engineering Program Leaders
Plans are in progress to design the agenda for the annual Environmental Engineering Program Leaders workshop to be held during the 2021 AEESP Biennial Conference.

Internet Resources Committee
A major focus of this committee has been coordination with the website designer to design a new website for the organization. A call from the committee is forthcoming to request contributions of original images for use on the website. A plan is under development to increase engagement through AEESP social media.



AEESP Board of Directors. Top Row (L-R): Joel Ducoste (NCSU), Allison MacKay (OSU), Bill Arnold (U Minnesota); Middle Row: Trevor Boyer (ASU), Debora Rodrigues (U Houston), Rob Nerenberg (Notre Dame); Brian Schorr (TTC); Bottom Row: Heileen Hsu-Kim (Duke), Willie Harper (AFIT), Amy Pruden (VA Tech), Junko Munakata Marr (CSM).

Spotlight: Environmental Engineering Science, AEESP Journal

Mark J. Krzmarzick (Chair of the AEESP Publications Committee), David A. Ladner (Member of AEESP Publications Committee), Catherine A. Peters (*EES* Editor-in-Chief)

The "Spotlight" column draws attention to selected articles in *Environmental Engineering Science (EES)*, the official journal of the Association of Environmental ngineering and Science Professors (AEESP). Spotlight articles appear regularly in the Journal as an Editor's Note, as well as in the *AEESP Newsletter*. 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 shine the spotlight on selected articles from the August 2020 through November 2020 issues of *EES*. Congratulations to all whose work is highlighted.

Wu, T., and Brant, J. R. (2020). Magnetic field effects on pH and electrical conductivity: Implications for water and wastewater treatment. *Environ. Eng. Sci.* 37(11), 717-727.

The highlighted articles in this Spotlight edition each discuss unconventional means to deal with problems that the environmental engineering and science community are trying to tackle. Perhaps the most unconventional method explored is the use of magnetic fields in water and wastewater treatment. There exists a wide variety of unit processes to treat drinking water and wastewater, but no conventional processes use magnetic fields to impart changes in water chemistry. Wu and Brant (2020) put forward some new ideas about how magnetic fields might be harnessed to improve the efficiency and sustainability of water treatment. They show that flow through a magnetic field alters the hydrogen bond characteristics of water molecules and can even directly affect the pH. The measured bulk electrical conductivity is altered, and that depends on the velocity of water flowing through the magnetic field. Wu and Brant's work could be applied in processes where coagulation or mineral precipitation occur, among other possibilities. Employing magnetic fields could help reduce our reliance on chemical addition in water and wastewater treatment.

Nguyen, D. T., Zeng, C., Sinha, S., and Westerhoff, P. (2020). Stannous chloride reductive treatment and kinetics using hexavalent chromium in water supplies. *Environ. Eng. Sci.* 37(10), 649-657.

While stannous chloride is not on the radar of many environmental engineers, it has been approved for use in water treatment, mostly as a corrosion inhibitor. Nguyen et al. (2020) explore stannous chloride for its ability to reduce chromium(VI) to chromium(III) as part of a drinking water treatment train. They find that stannous chloride is effective at 3.5 times the stoichiometric dose when applied to Arizona groundwater. Background oxyanions like arsenic and tungsten competed with chromium in the reaction, which is important for future process design. The team also reported some practical considerations, such as a reduced effectiveness of stannous chloride when it was exposed to air during storage. This paper provides needed information for water treatment practitioners who are weighing various options for treating drinking water sources containing chromium.

Villars, K., Huang, Y., and Lenhart, J. J. (2020). Removal of the cyanotoxin microcystin-LR from drinking water using granular activated carbon. *Environ. Eng. Sci.* 37(9), 585-595.

While granular activated carbon (GAC) is a well-known unit process, its performance for microcystin-LR (MLR) removal is less well known. Recent increases in algal blooms are motivating operators of water treatment plants with existing GAC processes to project whether their units can tackle MLR. Villars et al. (2020) provide just such data to determine how different types of GAC behave under various matrix conditions. They used rapid small-scale column tests and found that a hardwood- and lignite-coal-based GAC removed MLR better than bituminous-coal-based GAC, which contained a lower mesopore volume. The conclusion for practitioners is that GAC can be effective for MLR removal and this new study should help practitioners choose a material that will give the longest service time before regeneration is needed.

Aluthgun Hewage, S., Batagoda, J. H., and Meegoda, J. N. (2020). In situ remediation of sediments contaminated with organic pollutants using ultrasound and ozone nanobubbles. *Environ. Eng. Sci.* 37(8), 521-534.

Aluthgun Hewage et al. (2020) reports on the unconventional use of a combination of ultrasound and ozone nanobubbles for organic pollution remediation in sediments. Thus, polycyclic aromatic hydrocarbons (PAHs), for example, can become remediated in New Jersey's Lower Passaic River superfund site. The ultrasound and ozone nanobubbles approach is a one-two punch: ultrasound provides mechanical energy to desorb contaminants from the sediments and ozone oxidizes the desorbed contaminants. That second punch is especially effective because the nanobubble configuration enhances the ozone concentration and half-life. Under some conditions the application of ultrasound with ozone nanobubbles achieved about 92% removal of PAH from the sediment. Future work is planned to investigate whether the technique is scalable and cost-effective. If so, this may be added to the toolbox of options for sediment remediation, which is needed for many sites in the United States and around the world.

New Faculty Appointments

Dr. Dengjun Wang Joins Auburn University

Dr. Dengjun (Kevin) Wang joined the School of Fisheries, Aquaculture, and Aquatic Sciences in the College of Agriculture at Auburn University as an assistant professor in January 2021. Before landing in Auburn, Dr. Wang was a postdoctoral researcher associated with the Oak Ridge Institute for Science and Education (ORISE) and National Research Council (NRC) at the U.S. EPA. He received his Ph.D. in Environmental Sciences from the Institute of Soil Science, Chinese Academy of Sciences.

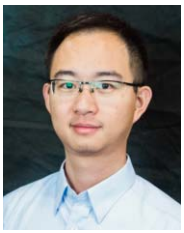
Dr. Wang's principal research areas are on the fate and transport of particles and remediation of contaminants in the aquatic environment. Specific research areas include: (1) transport of colloids, nanomaterials, and plastics in porous media; (2) tracking sources and biogeochemical cycling of phosphorus in watershed using stable isotope techniques (phosphate oxygen isotope); (3) innovative technology for soil and groundwater remediation, including PFAS remediation; and (4) nanotechnology for sustainable agriculture (nanopesticides, nanofertilizers, and nanosensors).

Dr. Anjali Mulchandani Joins University of New Mexico

Dr. Anjali Mulchandani joined the Department of Civil, Construction and Environmental Engineering at the University of New Mexico (UNM) as an assistant professor in January 2021. Her research converges materials science, nanotechnology, thermodynamics, and simulation modeling to design technologies for water, waste, and energy resource sustainability. A primary area of her expertise is atmospheric water harvesting, an innovative decentralized technology that provides clean drinking water from the air. Her passions include designing hands-on learning tools and leading public outreach initiatives for STEM awareness and engagement among all levels of learners.

Prior to her appointment at UNM, Dr. Mulchandani was a postdoctoral research scholar at Stanford University. She earned her M.S. and Ph.D. from Arizona State University and B.S. from UCLA. She was a member of the NSF Engineering Research Center on Nanotechnology Enabled Water Treatment, and recipient of the NSF Graduate Research Fellowship and 2019 ASU Engineering Dean's Dissertation Award.

Dr. Shiqiang Zou Joins Auburn University



Dr. Shiqiang Zou joined the Department of Civil and Environmental Engineering at Auburn University as an assistant professor in January 2021. Before joining the faculty at Auburn, Zou was a postdoctoral scholar at Stanford University. He received his Ph.D. in Civil Engineering from Virginia Tech, an M.S. from the National University of Singapore, and an M.S. from Peking University.

Dr. Zou's research focuses on developing reliable electrochemical solutions to transform resource-intensive wastewater management into a resource-supplying hub. His research synergistically integrates electrochemistry with membrane separation and bioprocess to develop energy-efficient engineering processes. The Zou Lab aims to (i) selectively recover valuable resources from industrial, agricultural, and domestic wastewaters, (ii) fundamentally understand rate-limiting steps on the system level via thermodynamic and kinetic analysis, and (iii) identify scaling-up challenges to better design the wastewater treatment train.

Two AEESP Members Named Henry Dreyfus Teacher-Scholars

Lindsay Soh of Lafayette College and **John Sivey** of Towson University are two of eight faculty members from across the country to receive a 2020 Henry Dreyfus Teacher-Scholar Award. These awards are sponsored by The Camille & Henry Dreyfus Foundation and recognize early career faculty members in the chemical sciences who have "created an outstanding independent body of scholarship and are deeply committed to education with undergraduates".

Dr. Soh is an associate professor of chemical and biomolecular engineering and the Kate and Walter A. Scott '59 Scholar in Engineering at Lafayette College. Dr. Soh's research group leverages green chemistry and engineering strategies toward the design of sustainable biorefinery products and processes.

Dr. Sivey is an associate professor of chemistry at Towson University. Dr. Sivey's research group explores the chemistry and consequences of commonly overlooked electrophiles in chlorinated water, as well as the environmental fate of "inert" safeners in herbicide formulations.

AWWA Water Science Welcomes New Editorial Board Members

AWWA Water Science is an interdisciplinary journal that publishes original, refereed (peer-reviewed) research on the science, engineering, and social aspects of water. AWWA Water Science is honored and excited to be able to welcome several new professionals to the editorial board:

Katherine Alfredo, PhD, PE — Water Quality Standards
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AWWA WATER SCIENCE
Theory and Practice of Safe, Sustainable Water

Topical Collection on PFAS Analytics and Treatment

The purpose of this topical collection in *AWWA Water Science* is to capture the present state of the science on PFAS analytical methods and approaches to PFAS treatment and disposal.

THEMES

In addition to general research topics related to the state of the science of PFAS analytics and treatment, topics may include:

- Occurrence of PFAS in source waters and wastewaters
- Novel detection/sensor approaches or devices
- Novel analytical approaches
- Fate and transport of PFAS
- Long-term costs of treatment technologies
- Comparative assessment of treatment technologies
- Effectiveness of novel treatment technologies
- Effects and co-removal of other contaminants during PFAS treatment
- Treatment of residual streams
- Regulatory requirements and compliance
- Unintended consequences of treatment selections
- Socioeconomic aspects of residual disposal
- Communications and outreach

GUEST EDITORS

Michelle Crimi, PhD
Michelle is a professor and director of engineering and management at Clarkson University in Potsdam, N.Y. Her research focuses on in situ treatment technologies for groundwater contamination and the impact of groundwater technologies on aquifer quality.

Thomas F. Speth, PhD, PE
Thomas has worked in the field of water treatment research at US Environmental Protection Agency (USEPA) since 1986. Since March 2018, he has served as the associate director of the Center for Environmental Solutions and Emergency Response at USEPA, where he is leading efforts on PFAS treatment, lead in drinking water, and small drinking water systems.

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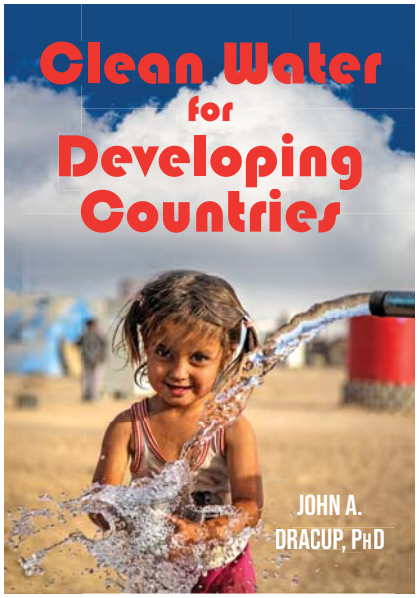

The web site is: https://www.cleanwaterbook.com/

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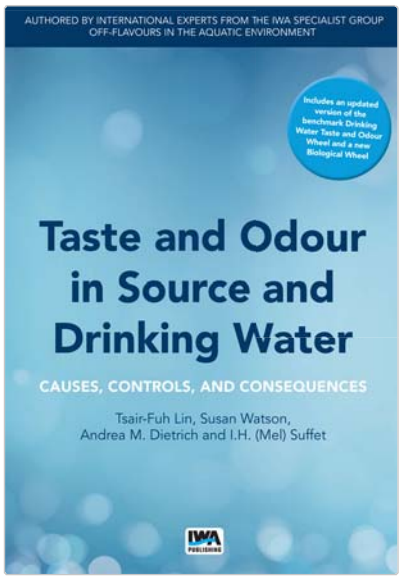
Taste and Odour in Source and Drinking Water

Causes, Controls, and Consequences

Tsair-Fuh Lin, Susan Watson, Andrea M. Dietrich & I.H. (Mel) Suffet



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Standard price:
£95 / US$143 / €119
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£71 / US$107 / €89

This book provides an updated evaluation of the characterization and management of taste and odour (T&O) in source and drinking waters. Authored by international experts from the IWA Specialist Group on Off-flavours in the Aquatic Environment, the book represents an important resource that synthesizes current knowledge on the origins, mitigation, and management of aquatic T&O problems. The material provides new knowledge for an increasing widespread degradation of source waters and global demand for high-quality potable water. Key topics include:

- early warning
- detection and source-tracking
- chemical, sensory and molecular diagnosis
- treatment options for common odorants and minerals
- source management
- modelling and risk assessment
- future research directions

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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*
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