

SEPTEMBER 27, 2023



SUMMER/FALL 2023

AIChE Environmental Division Newsletter



Dear Colleagues,

Hoping you all had a good spring and summer. Our Division has had fruitful spring and summer, with much good news to share. We had an excellent open meeting in June, with several new members expressing interest in getting involved. Thanks to Marwa El-Sayed and her committee for organizing an excellent fall seminar series. For a complete list of upcoming webinars (see <https://www.aiche.org/community/sites/divisions-forums/environmental-division/webinars-0> for a complete list). Thanks to Gerardo, our treasurer who was reported for the first time in many years that our division is in the black. Our sound financial footing is due in large part to Alex Orlov's efforts lowering expenses and updating our investment strategies.

I am looking forward to seeing many of you at our annual meeting in Orlando. We have excellent programming, thanks to Jason Trembly and Shweta Singh. Monday will be an important day with our awards session in the morning, where we will get to hear from our Cecil Award winner (Michael Wong, Department Chair, Rice University, and AIChE Environmental Division Director) and Early Career winner (William Tarpeh, Stanford University). Monday evening will be our Division Dinner at Cuba Libre. Thanks to David Russel for organizing. On Tuesday the 7th, we will hold an open executive committee and programming meetings between 11 am to 1 pm. Keep an eye out for the location.

Hope to see you there!

Sincerely,
Kerry Kelly
AIChE Environmental Division Chair (2023)

Newsletter Highlights

Letter from the Chair:
Dr. Kerry Kelly

**2023 Division
Leadership**

Division Awards

**Environmental Division
Webinars**

Announcements

**Our Industrial Advisory
Board**

**AIChE Annual Meeting -
Environmental Division
programming**

**Environmental Regulatory
Updates**

ENVIRONMENTAL DIVISION AWARDS

2023 Lawrence K. Cecil Award in Environmental Chemical Engineering: Dr. Michael Wong, Rice University
2023 Environmental Division Early Career Award: Dr. William Tarpeh, Stanford University
2023 Dr. Peter B. Lederman Environmental Division Service Award: Dr. Ray Smith, U.S. Environmental Protection Agency's Office of Research & Development

2023 Graduate Student Paper Awards:

Masayuki Takeuchi(1st Place) Ying Liu(2nd Place) Km Prottoy Shariar Piash(3rd Place)

2024 Awards Nominations Due June 1, 2024

Please see the [AICHE Environmental Division awards webpage](#) to nominate members for the following awards.

Lawrence K. Cecil Award in Environmental Chemical Engineering;
Environmental Division Early Career Award
Dr. Peter B. Lederman Environmental Division Service Award
Environmental Division Graduate Student Paper Award
Environmental Division Undergraduate Student Paper Award

2023 LEADERSHIP

Chair: Dr. Kerry Kelly, PE, PhD
1st Vice-Chair: Dr. Matthew Alexander, PE
2nd Vice-Chair: Dr. Kirti Maheshkumar Yenkie, PhD
Past Chair: Dr. Alexander Orlov
Secretary: Dr. Robert Peters
Treasurer: Dr. Gerardo J. Ruiz-Mercado
Program Chair: Dr. Jason Trembly
Director: Dr. Marwa M.H. El-Sayed
Director: Dr. Yinlun Huang
Director: Dr. Coty Jen
Director: Mr. David Russell
Director: Dr. Shweta Singh
Director: Dr. Michael Wong

2023 DIVISION WEBINARS DECARBONIZATION AND SUSTAINABLE SOLUTIONS

The following seminars were organized by the division in 2023 and are freely available to all Environmental Division members.

- 1) Greeshma Gadikota, Cornell University – October 23rd
- 2) Yuan Yao, Yale University – December 18th
- 3) Christos Maravelias, Princeton University– January 29th

To see more info and the link to register, please click the following link:
<https://www.aiche.org/community/sites/divisions-forums/environmental-division/webinars-0>

DIVISION ANNOUNCEMENTS

1) There is an upcoming symposium joint ACS/AICHE symposium "AICHE/ACS Frontiers of Chemistry, Materials Science & Chemical Engineering for Circular Economy" at the 2024 ACS meeting in New Orleans. The Environmental Division is supporting it. We had 30 presentations during the 2023 Spring ACS meeting. The deadline for Abstract submissions is October 2, 2023. To learn more details, please click the following link: <https://callforabstracts.acs.org/acsspring2024/ENVR>

2) The dinner for Management Division, Environmental Division and The Chemical Engineering & Law Group will be held at 6-9 PM, Nov 6th. To learn more details, please click the following link: <https://aiche.confex.com/aiche/2023/meetingapp.cgi/Search/0?sort=Relevance&size=10&page=1&searchterm=dinner&ProgramBook=Program%2F3306>

3) The AICHE® Foundation is delighted to collaborate with the Environmental Division in establishing the Environmental Division Endowment Fund. The fund will support AICHE's most prestigious environmental award, the Lawrence K. Cecil Award, in perpetuity. Our goal is to raise \$50,000 in sustaining the award. If you wish to mail in a gift check, please click the following link for more information. Please contact Natalie R. Krauser, Associate Director of Development, natak@aiche.org with any questions. <https://www.aiche.org/giving/impact/funds/environmental-division-endowment-fund>

4) Please follow the [AChE Environmental Division](#) on LinkedIn to receive regular updates.

5) Please note the events for undergraduate student members: Green Collar Career Opportunities session on Nov 4th (Saturday): <https://aiche.confex.com/aiche/2023/meetingapp.cgi/Session/54039>

6) We are delighted to announce an undergraduate Student Poster Session: Environmental: <https://aiche.confex.com/aiche/2023/meetingapp.cgi/Session/53936>

Financial support for the awards from Ohio University's Institute for Sustainable Energy and the Environment (<https://www.ohio.edu/engineering/isee>)

OUR INDUSTRIAL ADVISORY BOARD

Akhilesh Jain, SparkCognition

Arijit Pakrasi, EDGE Engineering and Science, LLC

Bob Weber, President & CoB USA Environment

David Russell, Global Environmental Operations Inc.

Kevin McMurray, Frost Brown Todd LLC (Attorneys)

Steve Smith, Lyondell Chemical Co.

Tony (Wenzhao) Wu, ExxonMobil

Matthew Alexander, Texas A&M University Kingsville

Yinlun Huang, Wayne State University

AICHE ANNUAL MEETING-ENVIRONMENTAL DIVISION

November 5 - November 10, 2023. Hyatt Regency Orlando Orlando, FL

Monday, November 6, 2023

8:00 AM - 10:30 AM

- 1) 8 - Environmental Division Awards and Honors (Invited Talks)
- 2) 254 Undergraduate Research Presentations - Chemicals, Biotechnology, and Environment
- 3) 257 Model Based Design and Optimization for Hybrid Materials and Interfaces

11:00 AM - 12:20 PM

- 1) 14 Featured MPC Session: Sustainability and the Circular Economy Panel Discussion

12:30 PM - 3:00 PM

- 1) 18 Design and Analysis of Carbon Capture and Negative Emissions Technologies - Experimental
- 2) 188 Emerging Frontiers in Environmental Chemical Engineering

3:30 PM - 5:00 PM

- 1) 117 Poster Session: Environmental Division

3:30 PM - 5:30 PM

- 1) 711 CSPI Townhall - Climate Change Policy

6:00 PM - 9:00 PM

- 1) Management (MGMT) & Environmental (ENV) Divisions / Chemical Engineering & The Law Group Dinner - TICKETED EVENT

Tuesday, November 7, 2023

8:00 AM - 10:30 AM

- 1) 130 Design and Analysis of Carbon Capture and Negative Emissions Technologies - Models
- 2) 131 Waste Plastic - Recycle, Reuse and Remediation Strategies I
- 3) 133 Decarbonization by Electrification
- 4) 273 Sustainability Fundamentals and Metrics Applications

10:30 AM - 11:30 AM

- 1) Environmental (ENV) Division Executive Committee Meeting

11:30 AM - 12:30 PM

- 1) Environmental (ENV) Division Programming Committee Meeting

12:30 PM - 3:00 PM

- 1) 48 Design and Analysis of Sustainable Carbon Capture and Emissions Control Technologies I
- 2) 139 Breakthroughs in Sustainable Chemical Production and Process
- 3) 219 Fundamentals of Environmental Kinetics and Food, Energy, and Water Systems
- 4) 222 Decarbonization by Electrification: Reactors & Reactions 1

1:00 PM - 3:00 PM

1) 706 Meet the Industry Candidates Poster Session: General Topics

3:30 PM - 6:00 PM

1) 156 Design and Analysis of Sustainable Carbon Capture and Emissions Control Technologies II

2) 226 Design and Optimization of Integrated Energy Systems

3) 227 Waste Plastic - Recycle, Reuse and Remediation Strategies II

4) 292 Decarbonization by Electrification: Reactors & Reactions 2

5) 339 Integrated Process Engineering and Economic Analysis

6) 570 Recent Developments in Fuel Processing for Hydrogen Production II

AIChE ANNUAL MEETING-ENVIRONMENTAL DIVISION

November 5 - November 10, 2023. Hyatt Regency Orlando Orlando, FL

Wednesday, November 8, 2023

8:00 AM - 10:30 AM

1) 71 Atmospheric Chemistry and Physics: Laboratory, Modeling, and Field Studies

2) 162 Environmental Advance in Nuclear and Hazardous Waste Processing and Disposal

3) 297 Water Reuse and Recycling

4) 344 Decarbonization by Electrification: Reactors & Reactions 3

5) 455 New processes for efficient CO₂ capture and utilization under mild conditions

12:30 PM - 3:00 PM

1) 79 Advanced Treatment Technologies for Water I

2) 80 CO₂ Industrial, Engineering and R&D Approaches

3) 389 Process Innovation in Bioseparations

4) 391 Decarbonization by Electrification: Separations

3:30 PM - 6:00 PM

1) 169 Advanced Treatment Technologies for Water II

2) 243 Sustainable Fuel from Renewable Resources

3) 432 Decarbonization by Electrification: Systems & Policy

Thursday, November 9, 2023

8:00 AM - 10:30 AM

1) 91 Fundamentals and Applications for Municipal Solid Waste Treatment and Valorization

2) 245 Remediation of Emerging Contaminants and Legacy Compounds

12:30 PM - 3:00 PM

1) 93 Extreme Weather and Natural Disasters - An Environmental and Legal Perspective

2) 94 Fundamentals and Applications for Waste Treatment and Valorization I

3:30 PM - 6:00 PM

1) 175 Environmental Issues involving Biochar

2) 176 Fundamentals and Applications for Waste Treatment and Valorization II

To see more information about the speakers and locations for the AIChE Annual Meeting - Environmental Division, please see the following link:

<https://aiche.confex.com/aiche/2023/meetingapp.cgi/Program/3306>

ENVIRONMENTAL REGULATORY UPDATES

Ongoing Issues

- PFAS update. PFAS is believed to be present in about half of all public drinking water. EPA continues address PFAS following its roadmap across environmental programs, from Safe Drinking Water Act (SDWA) maximum contaminant level (MCL) to Comprehensive Environmental Response Compensation and Liability Act (CERCLA or “Superfund”) listing pursuant to the definition of “hazardous substance” and beyond. EPA proposed a new TSCA rule June 20, 2023 intending to address potential harm from fuels made using plastic waste based feedstocks. Then on Sept. 6, 2023, EPA held a webinar to discuss the subject of the proposed rule, new chemicals review of PFAS premanufacture notices (PMNs) and significant new use notices (SNUNs), covering the PFAS Framework as well. PFAS manufacturer 3M achieved preliminary approval of a \$10.3 billion settlement with U.S. public water providers claiming PFAS contamination after 22 states and territories dropped their objections. 3M plans to stop producing PFAS in 2025, however, the scope of PFAS defendants continues to grow as entities using products known to contain PFAS are being sued as well. See e.g., airports and firefighting gear.

Clean Air Act (CAA)

- Chemical manufacturers and others, are you a major source? More political ping-pong with “once in - always in” or the CAA National Emissions Standards for Hazardous Air Pollutants (NESHAP) “Major MACT to Area” (MM2A). Pursuant to Executive Order 13990, EPA is reconsidering its Nov. 19, 2020 (85 Fed. Reg. 73854) retraction of this CAA NESHAP rule allowing major stationary sources of hazardous air pollutants (HAPs) to become area (not major) sources once their emissions are reduced to below major source thresholds. Watch for a notice of proposed rulemaking if your facility emits hazardous air pollutants.

Clean Water Act (CWA)

- Definition of scope “post-Sackett.” Another wrestling match continues with EPA’s and Dept. of the Army’s August 29, 2023 CWA final rule again defining “waters of the United States” conforming its previous January 2023 definition to the US Supreme Court’s May 25, 2023 ruling in Sackett v. EPA. With the dizzying tug of war, perhaps the best explanation is that now EPA and the Corps of Engineers will utilize its pre-2015 regulatory approach in the 27 states that have not sued EPA and Corps’ about the Jan, 2023 final rule, where the remaining 23 states will follow this same pre-2015 approach “implemented consistent with relevant case law and longstanding practice as informed by applicable guidance, training and experience.” This is long way to say, if you’re wondering about the CWA scope as applied to your facility, “call your water lawyer.”

Safe Drinking Water Act (SDWA)

- Something Not PFAS. You might recall our early AIChE efforts working with affiliates to produce the Carbon Management Technology Conference (CMTC). Years ago at CMTC we discussed development of the SDWA rule allowing conversion of SDWA underground injection control (UIC) well Class II (oil and gas related injection wells) to a new class, Class VI for geologic sequestration of carbon dioxide. Apparently, EPA has only approved two Class VI permits. Now, more than a hundred applications are piling up at EPA. Developers will have to wait in line or somehow persuade EPA to delegate the SDWA UIC Class VI permitting to willing state agencies. E&E News | Article | As EPA drowns in CCS applications, oil states want to take control.

Solid Waste Disposal Act (SWDA)

- Sort of. EPA’s April 2023 Draft National Plastic Recycling Strategy closed its public comment on July 31, 2023 (comments here). While long anticipated, the scope of the strategy asks more questions than it answers and it’s not clear that a final strategy will be issued anytime soon. That may be quite ok because the world is now negotiating a global plastic treaty in response to the UN Environment Assembly Resolution 5/14 “End plastic pollution with an international legally binding instrument by 2024.” With meetings INC-1 in Uruguay, November 2022 and INC-2 in Paris, May 2023 the UN released its initial “zero draft” of the treaty in September 2023, to allow consideration of the draft at INC-3 in Nairobi, Kenya in November 2023. There is quite a bit of daylight between EPA’s draft strategy and the UN’s zero draft. Those hoping the United States just won’t sign a final plastic treaty, think about how, despite nonparty status, the US is still governed indirectly by the Basel Convention through its membership in the Organization of Economic Cooperation and Development (OECD). Also consider global trade implications regarding imports and exports involving nations that are parties to the treaty. Many changes to come and worth following developments, whether working with polymers or just as a normal consumer.