CLE AIChE young PROFESSIONALS

Washkewicz College of Engineering
CHEMICAL AND BIOMEDICAL ENGINEERING DEPARTMENT

American Institute of Chemical Engineers, Cleveland Section

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Wednesday, April 9, 2025, 2:30 to 3:30 PM

CSU Washkewicz College of Engineering, Room WH-405

A Career Journey in Chemical Engineering

Joint CLE AIChE and CSU AIChE Student Chapter Meeting

Abstract: Dr. Andrew Zak will share his Chemical Engineering journey from CSU to Lubrizol.

Bio: Andrew graduated with his Bachelors and Masters degrees in Chemical Engineering from the Washkewicz College of Engineering at Cleveland State University. He completed his Undergraduate Honors and Masters theses in Dr. Joanne Belovich's lab, where he validated a four-point mechanical load bioreactor testing system and utilized fluorescence spectroscopy and imaging techniques to quantify diffusion and convection of small molecules in canine tibia. Notably, Andrew and his senior design team won the 2014 AIChE National Design Competition, developing an alternative manufacturing process for the production of influenza vaccines using cell culture with the goal of replacing the traditional egg-based platform.

Inspired by his senior design project experience, Andrew went on to earn his PhD in Chemical Engineering from the University of Michigan at Ann Arbor, MI where he leds several projects improving the yield and quality of virus-like particle (VLP) vaccines against respiratory viruses with pandemic potential. He helped develop the first influenza virus-like particle vaccine produced in yeast that protects mice from lethal influenza challenge. Toward improving immune response evaluation, he utilized mass cytometry (CyTOF) to perform high dimensional characterization of the influenza immune landscape in mice, and expanded the functionality of the CyTOF panel to include influenza-specific markers, enabling viral infection and replication properties to be explored in >20 canonical immune cell types.

After graduating Dr. Zak started his industrial career as a Research & Development Scientist II at Hikma Pharmaceuticals in Bedford, OH. Here he developed a broadly-applicable quantitative risk analysis to determine appropriate test specifications for drug products considering incoming API properties, drug product batch-to-batch variability, and instrument sensitivity. He designed simple, high-throughput tests to help probe questions and solve investigations related to particle size of suspensions. He further planned and executed wet ball milling trials to determine effect of process parameters on the final properties of nanosuspensions. Presently Dr. Zak is with Lubrizol as an Oral Care Applications Scientist at their Brecksville location.

For those attending this event and interested, a Professional Development Hour Certificate (1 PDHs) will be available to you in the following days by Joe Yurko.

09Apr2025 Meeting Location:	**Washkewicz College of Engineering, CSU, Room # WH-405**
Chester Avenue, Parking CSU-EG	2:30 – 3:30 pm: Meal by: CLE AIChE
Cleveland, OH 44115	2:30 – 3:30 pm: Presentation by: Dr. Andrew Zak

Menu:

Pizza & Soft Drinks

CLE AIChE Professional Members cost: $10 per person
CSU AIChE Student Members cost: Free

RSVP Recommended by Monday 07Apr2025 with Joseph Yurko and AIChE at: yurkojoe5@gmail.com

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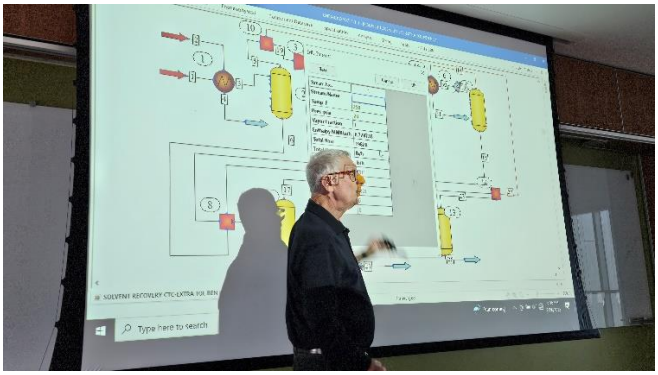
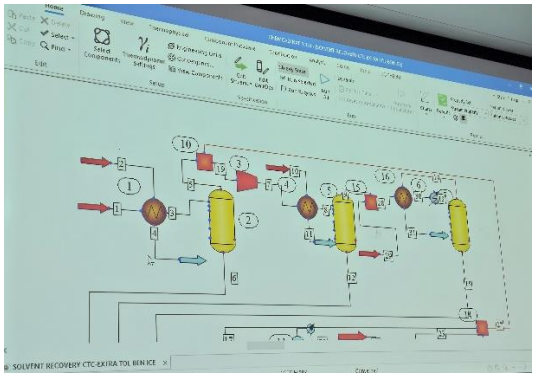
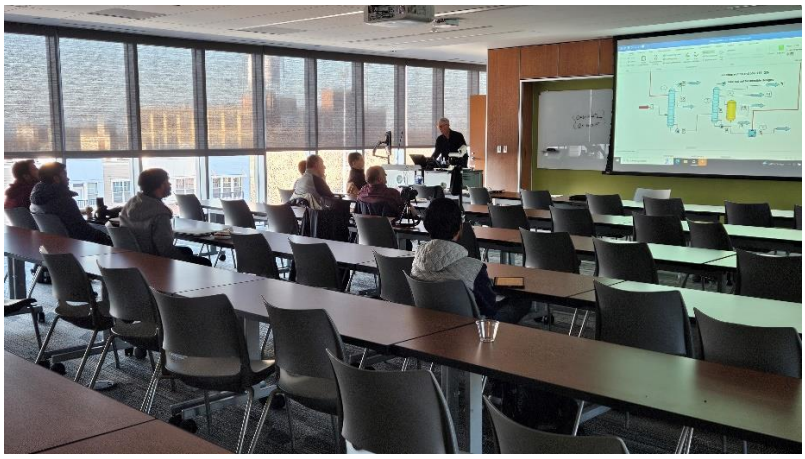
MARCH 26, 2025 CLE AICHE SEMINAR ON CASE STUDIES APPLYING PROCESS SIMULATION SOFTWARE WITH CHEMCAD

WITH MR. BENJAMIN HORWITZ; CHEMCAD CONSULTANT AND CLE AICHE PROCESS SIMULATIONS CHAIR

PRELIMINARY INTRODUCTIONS BETWEEN BEN AND THE CLASS, AND THEN ONTO WORKSHOP CASE STUDIES







(L-R) MIKE GALGOCZY (AICHE CHAIR) & BEN HORWITZ

APRIL 29, 2025: CLE AICHE NEOSEF AWARDS BANQUET

NORTHEAST OHIO SCIENCE AND ENGINEERING FAIR (NEOSEF)

Student Environmental and Engineering Projects: Grades 7 to 12

FROM MARCH 11, 2025, AICHE JUDGES (WITH 300 JUDGES SITTING IN THE BLEACHERS) APPLAUD AS NEOSEF STUDENTS (ABOUT 300) ENTER THE CSU FIELDHOUSE ON THE FIRST FLOOR (2025)

Chemical Engineering Progress, CEP Magazine, The American Institute of Chemical Engineers (AIChE), February March 2025, Page 4

Engineered Heart Muscle Offers Hope for Patients with Heart Failure

https://www.aiche.org/resources/publications/cep/2025/march/cep-news-update/engineered-heart-muscle-offers-hope-patients-heart-failure

Patients with end-stage heart failure often die waiting for a heart transplant. Today, a new engineered patch of heart muscle may extend their lives.

The engineered heart muscle patches are still in the clinical trial phase, with only 15 patients treated. But one of these patients was later given a heart transplant, allowing researchers to examine the engineered muscle graft on the patient's original heart. Remarkably, they found that the patch was being fed by the patient's blood supply, which supported the patient's failing heart muscle. More importantly, that patient's disease remained stable for the three months leading up to transplantation.

"We now have, for the first time, a laboratory-grown biological transplant available which has the potential to stabilize and strengthen the heart muscle," says Ingo Kutschka, the director of the department of cardiothoracic surgery at Univ. Medical Center Göttingen, who performed the surgery.

60 million people worldwide have heart failure, and 10% of those are in the advanced stage, stresses Wolfram-Hubertus Zimmerman, the director of the Institute of Pharmacology and Toxicology at Univ. Medical Center Göttingen. Sadly, 99% of patients with heart failure die without receiving a transplant.

Doctors can implant mechanical pumping devices to give patients more time in hopes of an eventual transplant, but these have high complication rates, Zimmerman adds. Researchers have long hoped to be able to shore up failing hearts with lab-grown cardiac muscle cells, but previous attempts have failed because the injected cells induced heart arrhythmias.

The new approach uses patches of heart muscle grown from induced pluripotent stem (iPS) cells, which are human cells — taken, in this case, from blood — that have been genetically engineered to an earlier developmental stage, enabling them to then differentiate into a variety of tissues. The researchers took these iPS cells, programmed them to differentiate into heart muscle cells and connective tissue cells, and then brought the two components together on a collagen gel. "We grow them on a mechanical training device that allows the patches to contract against load," Zimmerman says. The result is engineered heart muscle that looks biologically equivalent to the heart muscle of a 4- to 8-year-old, he claims…

Jabran, A. F., *et al.,* "Engineered Heart Muscle Allografts for Heart Repair in Primates and Humans," *Nature,* doi: 10.1038/s41586-024-08463-0 (Jan. 29, 2025).

Chemical Engineering Progress, CEP Magazine, The American Institute of Chemical Engineers (AIChE), March 2025, Page 8

Carbon Cloth Electrodes Could Reduce the Cost of Seawater Desalination

https://www.aiche.org/resources/publications/cep/2025/march/cep-news-update/carbon-cloth-electrodes-could-reduce-cost-seawater-desalination

Desalinating seawater has long been pitched as one possible route to addressing water insecurity around the globe. However, the process has remained cost-prohibitive at large scales because it requires enormous amounts of energy, as well as expensive and resilient equipment and infrastructure. In addition, one of the primary costs associated with desalination is the high cost of the necessary chemicals for acid and base treatments. In a new study published in the journal *Nature Water*, researchers developed a novel method of removing boron from seawater, a critical step in making seawater safe to drink, using carbon cloth electrodes — a woven fabric of carbon fibers that function as an electrode.

Boron is naturally occurring in the form of boric acid in seawater, appearing at concentrations twice as high as the most lenient World Health Organization guidelines for drinking water and five to twelve times higher than is tolerant for agriculture. These high concentrations make boron removal a necessity for any large-scale desalination plant.

Standard reverse osmosis (RO) processes remove salts via a semi-permeable membrane that allows water molecules to pass through but blocks larger and/or charged molecules like salt ions. This poses a problem, as boric acid ($B(OH)_3$) is uncharged at neutral pH and therefore passes through RO membranes more easily than salts. To get around this, desalination processes increase the pH by adding a base, thereby increasing the concentration of hydroxyl groups, which bond with boric acid to create negatively charged borate ions, $B(OH)_4^-$. These negatively charged ions are better rejected by the RO membrane. After filtration, acid is added to neutralize this base.

“The cost associated with acid and base treatment for the second pass of reverse osmosis in seawater reverse osmosis (SWRO) desalination is considerable,” says Menachem Elimelech, the Nancy and Clint Carlson Professor of Civil and Environmental Engineering and Chemical and Biomolecular Engineering at Rice Univ. “In a two-stage SWRO process, the cost of acid and base in the second stage can account for up to 39% of the total operational cost.”

The new carbon cloth electrode technology skips this step by trapping boron in micropores coated with oxygen-containing and boron-selective functional groups…

Pan, W., *et al.,* “A Highly Selective and Energy Efficient Approach to Boron Removal Overcomes the Achilles Heel of Seawater Desalination,” *Nature Water,* doi: 10.1038/s44221-024-00362-y (Jan. 20, 2025).

Chemical Engineering Progress, CEP Magazine, The American Institute of Chemical Engineers (AIChE), March 2025, Page 22

Emerging Voices: Slowing the Spread of Fires with Flame Retardants

https://www.aiche.org/resources/publications/cep/2025/march/emerging-voices-slowing-spread-fires-flame-retardants

As a resident of Southern California, I have always been acutely aware of the looming threat of wildfires, especially in the presence of the Santa Ana winds. These strong, dry winds, accompanied by low humidities in the region, create ideal conditions for the rapid spread of fires. The destructive wildfires in Los Angeles in January this year underscore the importance of early preventive fire safety measures, especially flame retardants, in protecting our communities and mitigating potential losses before a wildfire can even occur.

What are flame retardants? Commonly associated with the spray foams used by firefighters, fire retardants help stop or slow down the spread of a fire. On the other hand, flame retardants are a class of chemical compounds frequently used in consumer products that prevent or delay the ignition and spread of a fire. As the effects of climate change become more pronounced and wildfires become more common, flame-retardant coatings and materials of construction have emerged as critical for safeguarding lives and property.

Different mechanisms. Flame retardants employ four different mechanisms to achieve their fire-suppressing effects: intumescence, gas phase inhibition, endothermic degradation, and gas phase dilution. The intumescence mechanism involves forming a char layer on the surface of the material, which acts as a barrier to heat and oxygen, thereby preventing the fuel from continuing to burn. This char layer is created when the flame retardant decomposes and releases water vapor, which then reacts with the heat from the fire to form a carbon-rich residue. As a result, the material swells and forms a protective layer, reducing the spread of the fire…

Chemical Engineering Progress, CEP Magazine, The American Institute of Chemical Engineers (AIChE), March 2025, Page 24

Advanced Manufacturing Progress: Developing a Framework for Advancing Technologies from Idea to Operation

https://www.aiche.org/resources/publications/cep/2025/march/advanced-manufacturing-progress-developing-framework-advancing-technologies-idea-operation

On Oct. 23, 2023, the U.S. Dept. of Energy (DOE) renewed AIChE's Rapid Advancement in Process Intensification Deployment (RAPID) Institute for an additional five years. A key deliverable for this newest iteration of RAPID — dubbed RAPID 2.0 — is the development of a methodology that can help engineers and developers determine if a technology and its supporting components are ready for scale-up. Given the breadth of process technology, the methodology must avoid unnecessarily detailed process specifics while including a "just right" level of detail to produce accurate results with reasonable user effort.

Traditionally, a technology's readiness can be evaluated using well-known methodologies such as the National Aeronautics and Space Administration's (NASA's) Technology Readiness Levels (TRLs). In 1974, Stan Sadin, a NASA researcher, conceived the first seven-level scale, which was later expanded to nine levels in the 1990s. The TRL scale has gained widespread acceptance, although its language and syntax reflect its aeronautical/aerospace origins. The NASA TRL scale remains in use in various government agencies and institutes, modified to suit each particular field *(1–4)*.

The NASA TRL methodology allows a developer to gauge the maturity/readiness of their technology, independent of its type. BioMADE has developed a highly detailed framework called the "bioindustrial manufacturing readiness levels (BioMRLs)" that defines the development work corresponding to the readiness level for each required task and subtask *(1)*. By compiling the information for the detailed matrix, this methodology provides an accurate assessment of the technology's maturity…

Chemical Engineering Progress, CEP Magazine, The American Institute of Chemical Engineers (AIChE), March 2025, Page 27

Envisioning the Future of Automation

https://www.aiche.org/resources/publications/cep/2025/march/envisioning-future-automation

Automation technology is evolving in response to today's market demands, broadening the possibilities for chemical producers to optimize process efficiency with smarter, more agile operations and reduced maintenance needs. Distributed control system (DCS) vendors are taking advantage of the latest technology trends and open standards to boost plant performance and sustainability without diluting the core DCS qualities of reliability, availability, safety, and security.

Since their debut over 40 years ago, DCSs — also widely referred to as decentralized control systems — have played a starring role in orchestrating many of the complex industrial processes that our society is dependent on. DCSs oversee safer, more dependable, and more efficient operations in thousands of industrial facilities worldwide, spanning chemicals, pharmaceuticals, and oil and gas to metals, minerals, water treatment, food and beverage, pulp and paper, and more.

The success of DCSs has grown from their ability to manage and solve the challenges commonly encountered in large-scale industrial operations. Foremost amongst these is managing the complexity of processes that handle multiple variables and equipment spread across wide geographical areas. By distributing control functions across multiple controllers, they enable localized control of different sections of the plant, ensuring that each process area operates efficiently and can respond to changes or anomalies without overwhelming a central system.

Another challenge is improving system reliability and minimizing downtime. Using multiple controllers provides effective redundancy in the event of a problem, avoiding the risk of shutdowns or incidents caused by the knock-on impact of a failed controller or subsystem affecting the rest of the system. The availability of real-time diagnostics also assists with troubleshooting, enabling problems to be pinpointed and rectified before they can escalate without disrupting the whole system…

Chemical Engineering Progress, CEP Magazine, The American Institute of Chemical Engineers (AIChE), February March 2025, Page 40

Lies of Omission in Safety Data Sheets

By: Jessica E. Nichols, Travis Scholtz, Steven Horsch; The Dow Chemical Company

https://www.aiche.org/resources/publications/cep/2025/march/lies-omission-safety-data-sheets

The safety data sheet (SDS, formerly Material Safety Data Sheet) is essential for modern chemical hazard assessments. Efforts by safety professionals, educators, regulatory agencies, and people across the chemistry and chemical engineering disciplines have made consulting an SDS the basic expectation when assessing a chemical's potential hazards. Under the Globally Harmonized System for Hazard Communication (GHS), these documents and their classifications are relatively standardized. Although variations exist between jurisdictions, the minimum information present, hazard codes and phrases, and corresponding hazard pictograms are typically managed according to clear guidance published by the United Nations (UN) *(1)*.

The ubiquity of the SDS, however, can have unintended consequences. Over-reliance on simplified and standardized documents may lead individuals to incorrectly assume a material is safer than it actually is. When SDS documentation is incomplete or inaccurate, serious accidents can result. For instance, an explosion and fire at Optima Belle LLC (Belle, WV) in December 2020 led to one fatality and two serious injuries. The U.S. Chemical Safety and Hazard Investigation Board (CSB) cited failure of an SDS to include all known hazards as a contributing cause, emphasizing the importance of performing hazard analyses beyond just reviewing the SDS *(2)*.

Failures in SDS communication are not new, with recent publications addressing these risks by providing best practices and technical advice *(3)*. Examples of such failures can range from omitting well-known hazards to failing to identify potential explosive formation through evaporation or side reactions *(4)*. Many common laboratory solvents are prone to slow formation of potentially explosive peroxides *(5, 6)*, but no corresponding GHS hazard statement exists for this risk. Other chemicals pose risks well-known to reactive hazard experts that are not necessarily in an SDS…

Chemical Engineering Progress, CEP Magazine, The American Institute of Chemical Engineers (AIChE), June 2023

2023 AIChE Salary Survey Results

Note: The 2025 current AIChE Salary Survey is in progress and will be published in the CEP June 2025 issue.
This article is published as the most current information reference for the Class of 2025 about to graduate in May.

https://www.aiche.org/resources/publications/cep/2023/june/2023-aiche-salary-survey-results

Welcome to the 2023 AIChE Salary Survey! This is the 11th edition of the biennial Salary Survey conducted by *CEP* for the American Institute of Chemical Engineers (AIChE). The survey was deployed in December 2022, after a time of great disruption for the U.S. workforce driven by social change in the wake of the COVID-19 pandemic and rising costs of living. This ongoing movement, known as the "Great Resignation," saw millions of Americans resigning from their jobs in search of higher wages, flexible remote work policies, and a better work-life balance. As a result, a key focus of this year's Salary Survey is this movement and how it has impacted the chemical engineering community.

Unlike previous years, the 2023 Salary Survey was open both to AIChE members and other chemical engineers. The survey garnered a total of 1,122 responses, and salary data was collected only from respondents who met certain criteria (*e.g.,* full-time employment, with a background in chemical engineering or a related discipline). A brief review of our survey methodology can be found on page 31.

The survey found that the overall median salary of chemical engineers is $150,000, an 8.3% increase from the median salary of $138,500 reported in the 2021 Salary Survey (not accounting for inflation). In comparison, the 2021 Salary Survey reported a 9.92% increase from the median salary reported in 2019.

Similarly, the median starting salary for new graduates increased to $74,500. This is a 6.43% increase from the median starting salary of $70,000 reported in the 2021 Salary Survey.

Adjusted median salaries were determined using the U.S. Bureau of Labor Statistics' consumer price index (CPI) and its inflation calculator. Median salaries from past AIChE Salary Surveys were adjusted to 2023 current dollars. Overall, an increasing trend is seen in the median salary for chemical engineers. However, the 2023 median salary compared to that of 2021 is approximately $9,000 less when adjusted for inflation…

Chemical & Engineering News, C&EN Magazine,

The American Chemical Society (ACS), March 21, 2025

Comment: Supporting our long-standing commitment to science

*by **Wayne E. Jones Jr., Chair, ACS Board of Directors***

https://cen.acs.org/acs-news/comment/Comment-Supporting-our-long-standing-commitment-to-science/103/i8

The American Chemical Society continues to navigate a rapidly changing global chemistry landscape as it approaches its 150th anniversary. In times of significant change and uncertainty, it is reassuring to reflect on ACS's long-standing commitment to improving all lives through the transforming power of chemistry. We see examples of these efforts throughout ACS in national activities, local sections, divisions, and even international chapters. Three recent initiatives highlight our continuing commitment to helping the chemistry community navigate these challenging times: our new strategic plan, our dedication to advocating for science and scientists, and the ongoing evolution of ACS meetings and governance.

This commitment begins with a strong foundation. As detailed in a recent C&EN article, ACS has implemented a new strategic plan, the result of a yearlong dedicated effort by the ACS Board of Directors, governance volunteers, members, and staff. This plan positions ACS to effectively serve its global community and the broader chemistry enterprise, regardless of future challenges. Our core values are at the heart of the plan: passion for science, lifelong learning, inclusion and belonging, and sustainability. With the incorporation of our updated, action-oriented mission to advance scientific knowledge, empower a global community, and champion scientific integrity, the new plan builds on our previous mission of advancing the chemistry enterprise, and positions the organization to drive towards a vision of a world built on science, recognizing that a sound scientific foundation is required to address the most pressing global challenges.

At the heart of our mission is advocacy for science, with chemistry at its core. These efforts are particularly critical in times of rapid change and uncertainty at the national level. In February, ACS president Dorothy Phillips, CEO Al Horvath, and I sent a letter to ACS members addressing these changes in the political landscape. The ACS Board is firm in our commitment to being a welcoming home for those working in and interested in the chemical sciences. We stand ready to advance scientific knowledge, empower a global community, and champion scientific integrity on behalf of this enterprise. At times like this, we must leverage our resources, expertise, and advocacy capabilities to strengthen science, technology, engineering, and math education. We also need to develop a skilled workforce, enhance business and innovation ecosystems, increase investment in research and development, and ensure scientific integrity and data accessibility…

Chemical & Engineering News, C&EN Magazine,

The American Chemical Society (ACS), March 21, 2025

Frances H. Arnold forges ahead

The 2025 Priestley Medalist directs her own evolution

*by **Bethany Halford***

https://cen.acs.org/people/awards/Frances-H-Arnold-forges-ahead/103/i8

In celebrity-filled Los Angeles, Frances H. Arnold can walk down the street in relative anonymity. That's not to say she's not famous. Fans of the popular TV show *The Big Bang Theory* might recognize her from one episode (in which she played herself), and art lovers might have seen her photo in the collection of the Smithsonian Institution's National Portrait Gallery. But in Tinseltown, she can go about her daily routine in relative peace.

That changes when Arnold—the Linus Pauling Professor of Chemical Engineering, Bioengineering, and Biochemistry at the California Institute of Technology—is among scientists and engineers. When she attends meetings and conferences, strangers will stop her to talk. Students commonly ask her to pose with them for selfies.

Arnold is "chemistry famous." Her many accolades include a Nobel Prize in Chemistry and the Charles Stark Draper Prize, the engineering profession's highest honor. She is a member of all three National Academies—Engineering, Medicine, and Science—and the National Inventors Hall of Fame. This year, Arnold will add the Priestley Medal, the American Chemical Society's highest honor, to her collection of prizes.

Arnold takes this specialized fame in stride, and she makes it known that her success also belongs to those who work with her. "These medals go to one person, which doesn't make any sense at all," she says. "We tend to put somebody on a pedestal for the work of so many. So I just want to point out that the future belongs to them. The science belongs to them, and it's been a huge privilege to be able to take the ride with them."

Arnold earned her chemical renown for her groundbreaking development of the directed evolution of enzymes, a method that uses evolution to create enzymes that accomplish tasks no one has found them to do in nature. Enzymes are nature's chemical reactors. They transform one molecule into another, making and breaking bonds through a delicate dance of amino acids. Unlike plenty of benchtop chemistry, enzymes don't require harsh conditions or caustic reagents. They accomplish complex chemistry even in water. Arnold has long admired their versatility and chemical acumen…

Chemical & Engineering News, C&EN Magazine,

The American Chemical Society (ACS), March 21, 2025

How rising temperatures affect the human brain

Confusion, impulsive behaviors could have economic impacts, experts warn

by Sanket Jain, special to C&EN

https://cen.acs.org/biological-chemistry/neuroscience/The-heat-trap/103/i8

Chhaya Gaikwad didn't know that ignoring her father-in-law's advice of not working in scorching heat could cost her over $1,000.

Gaikwad has been a farmer for over 30 years and has a wealth of knowledge about farming. For the past decade, she has been cultivating radish pods and has perfected the art of growing and harvesting them. She knows the precise timing for the best yield and how market demand shifts with the seasons.

Yet last year, she made a significant mistake for the first time.

Last summer, when the temperature reached 44 °C (111.2 °F) in her village in India, 50-year-old Gaikwad worked in the fields for 8 h a day. Her late father-in-law, Sakharam Gaikwad, had warned her against this, but she dismissed his concerns, convinced she was too young to be affected by the heat.

Gaikwad spent her days planting and watering crops, weeding the fields, harvesting produce, and carrying heavy bundles of livestock fodder on her head. She also worked applying fertilizers and spraying pesticides, collecting firewood, and tending to the cattle, without a minute's break.

Then it came time to plant the radish pods. "As soon as winter arrives, radish pods are in high demand and fetch a premium price," says Gaikwad, a resident of remote Jambhali, a village in India's Maharashtra state.

To align with peak market demand, Gaikwad should have begun growing them in September 2024. But she had made a misjudgment in her preparation and work planning during the summer months that meant she planted the radish pods a month later. By the time the first harvest was ready, it was the last week of December, and the market was saturated. "There were days when I couldn't sell even 5 kg as the price dropped rapidly," she says.

While Gaikwad had anticipated a market rate of at least 100 Indian rupees ($1.15) per kilogram, after the first few weeks she could only sell for INR 30 ($0.35) and sometimes even less. "I couldn't even cover the transportation costs to get to the market." It was a tremendous loss caused by poor decision-making.

The answer to Gaikwad's poor decisions may be found in a paper published last year by scholars in Australia (*Econ. J.*, DOI: 10.1093/ej/ueae036). The researchers discovered that nights exceeding 25 °C in Indonesia led to irrational and impulsive behavior and poor economic decisions. Reduced sleep quality during these hot nights decreases cognitive function the following day, resulting in poor choices. Households with lower incomes and limited air-conditioning access are particularly susceptible.

India isn't the only country grappling with rising temperatures. Parts of the US and nations in Central America, the Middle East, South Asia, and Africa reported unusually high temperatures in 2024, making it Earth's hottest year. According to a report from the Red Cross Red Crescent Climate Centre, World Weather Attribution and Climate Central, these temperatures affected 6.8 billion people, or 84% of the world's population. On average, individuals endured extreme heat for at least 31 days, a number that researchers project will grow further (*Heliyon* 2024, DOI: 10.1016/j.heliyon.2024.e26431)…

Chemical & Engineering News, C&EN Magazine,

The American Chemical Society (ACS), March 19, 2025

EPA targets air, climate, other rules in deregulation blitz

Agency proposes 31 regulatory actions for review and potential removal, including membership on scientific advisory committees

*by **Leigh Krietsch Boerner***

https://cen.acs.org/policy/chemical-regulation/EPA-targets-air-climate-rules/103/i8

U.S. Environmental Protection Agency head Lee Zeldin announced March 12 that the EPA is reviewing 31 regulatory actions for possible rollback. These rules include guidelines on scientific input, several emission standards for air pollutants, and the endangerment finding, a 2009 declaration that greenhouse gas (GHG) emissions endanger human health—a stance that underpins many of the EPA's climate regulations.

"Today is the greatest day of deregulation our nation has seen," Zeldin says in a statement. "We are driving a dagger straight into the heart of the climate change religion to drive down cost of living for American families, unleash American energy, bring auto jobs back to the U.S. and more," he says.

Industry advocacy groups the American Chemistry Council and the US Chamber of Commerce, both proponents of environmental deregulation, say the moves will reduce costs and support economic growth. But many environmental advocacy groups, including Earthjustice and the Environmental Law and Policy Center, say rolling back the regulations threatens people's safety and may be unlawful.

Amanda Leland, executive director of the environmental advocacy group the Environmental Defense Fund, calls the plan chaotic. "EPA Administrator Lee Zeldin today announced plans for the greatest increase in pollution in decades," she says in a statement. "Just last week, President Trump promised to 'get toxins out of our environment . . . and keep our children healthy and strong.' Administrator Zeldin's plan undercuts those words. Those seeking to make America healthier should be deeply concerned," Leland says.

One of the items on the extensive list of rules targeted for rollback is restructuring the EPA's Science Advisory Board (SAB) and Clean Air Scientific Advisory Committee (CASAC), groups of scientists that provide science-based advice to the EPA administrator. In January, the EPA announced that it would "reset" the membership on these committees in order to "reverse the politicization of SAB and CASAC under the Biden-Harris Administration," according to an EPA press release. Nominations for these boards are now open. Together with the Office of Management and Budget, the EPA will also reconsider the endangerment finding and all actions that rely on it. The endangerment finding is a 2009 conclusion by the EPA that high atmospheric concentrations of a mixture of six GHGs are a threat to public health and welfare. This action was prompted by a 2007 Supreme Court decision that GHGs are considered air pollutants under the Clean Air Act and that the EPA is required to determine if GHGs are a threat to human health…

Chemical & Engineering News, C&EN Magazine,

The American Chemical Society (ACS), March 12, 2025

EPA requirement for analyzing safer technologies and chemicals under fire

Trump administration vows to rewrite the 2024 chemical accident prevention rule the requirement is part of

*by **Cheryl Hogue, special to C&EN***

https://cen.acs.org/policy/chemical-regulation/EPA-requirement-analyzing-safer-technologies/103/web/2025/03?sc=230901_cenymal_eng_slot3_cen

The Donald J. Trump administration is likely to target a requirement that chemical-handling facilities analyze the use of safer technologies or substances. This anticipated move is part of the government's plan, announced in a court filing last week, to reshape a 2024 risk management regulation.

For years, chemical manufacturers and other industries have opposed what the US Environmental Protection Agency calls safer technologies and alternatives analysis. In a March 2024 regulation, the Joe Biden EPA incorporated requirements for companies to conduct such assessments—and if facilities don't adopt the safer measures, to justify why they don't.

That sweeping rule is aimed at reducing the frequency and severity of accidents at nearly 11,740 US chemical plants, warehouses, storage sites, and other facilities. According to the EPA, about 131 million people live within 3 mi (4.8 km) of these facilities.

In a Jan. 30 letter, a coalition of industry lobbying groups, including those representing chemical manufacturers, asks EPA administrator Lee Zeldin to revamp the Risk Management Program (RMP) rule. At the top of the industry groups' list of issues for the EPA to "correct" in the rule is the requirement for facilities to conduct safer technologies and alternatives assessments.

This requirement "is unwarranted and unduly burdensome" as well as expensive, the chemical industry group American Chemistry Council (ACC) said in a statement last year, after the regulation was finalized. The ACC is one of the 16 signatory groups on the January letter to the EPA chief.

The EPA intends to rework the safety rule "in light of the new Administration's policy priorities," says a March 6 motion by the Trump administration to a federal appeals court. In the motion, the US Department of Justice asks the US Court of Appeals for the District of Columbia Circuit to put a case challenging the regulation on hold because of the EPA's plan. The case was filed by 14 states last year and alleges that the EPA lacked the legal authority to issue the regulation.

The EPA plans to finalize a revision of the regulation in late 2026, the motion says.

"The Biden EPA's costly Risk Management Plan rule ignored recommendations from national security experts on how their rule makes chemical and other sensitive facilities in America more vulnerable to attack," the EPA's Zeldin says in a March 12 statement announcing the agency's reconsideration of the rule.

Community and health groups strongly back the RMP rule's requirement of assessing safer technologies and chemical alternatives, says Adam Kron, an attorney for Earthjustice, a nonprofit law group. Earthjustice represents community and health groups backing the regulation in court.

This requirement "encourages best practices by these facilities to prevent disasters," Kron tells C&EN…

Chemical & Engineering News, C&EN Magazine,

The American Chemical Society (ACS), March 19, 2025

EPA kicks chemical regulations down the road

Environmentalists fear the delays are the first step toward rolling back pollution restrictions

by ***Britt E. Erickson***

https://cen.acs.org/policy/chemical-regulation/EPA-kicks-chemical-regulations-down/103/web/2025/03?sc=230901_cenymal_eng_slot1_cen

Workers in chemical plants, along with communities near such facilities, will have to wait longer for regulations that aim to reduce cancer and other health risks associated with widely used solvents like trichloroethylene, perchloroethylene, and carbon tetrachloride, and common building block chemicals like formaldehyde and 1,3-butadiene.

While attention has focused on President Donald J. Trump's moves to gut the federal workforce and slash funding that doesn't align with his priorities, the US Environmental Protection Agency has been quietly delaying restrictions on many hazardous substances, from asbestos to air pollutants. Environmental groups fear the delays are a first step toward weakening or even eliminating the restrictions.

Many of the targeted chemicals fall under the jurisdiction of the Toxic Substances Control Act (TSCA). On March 10, the EPA announced that it will revisit how it conducts risk evaluations under that law, amid widespread disagreement over its current framework. The announcement is the first major indication that the agency plans to revise risk evaluations issued by the previous administration and roll back regulations based on those evaluations.

Since early February, the EPA has also requested delays in several court cases involving regulations that restrict industrial chemicals under TSCA and reduce air emissions from chemical plants under the Clean Air Act. In general, environmental and public health groups are seeking to strengthen the rules. Industry wants more time to comply with them and in some cases wants the EPA to eliminate them altogether.

At the request of industry, the EPA has extended comment periods and postponed an advisory committee meeting related to chemicals undergoing risk evaluation. So far, those actions have put the brakes on restricting three chemicals used in making plastics and a dye.

Political appointees at the top

Overseeing decisions in the EPA's Office of Chemical Safety and Pollution Prevention, which is tasked with ensuring the safe use of chemicals under TSCA, are two Trump appointees. Principal Deputy Assistant Administrator Nancy Beck is temporarily leading the office, including its work related to the risks of existing chemicals, and Deputy Assistant Administrator Lynn Dekleva is overseeing the approval of new chemicals. Both officials worked for the EPA during Trump's first term and previously held senior roles at the American Chemistry Council (ACC), an industry group representing chemical manufacturers…

Chemical & Engineering News, C&EN Magazine,

The American Chemical Society (ACS), March 19, 2025

After 30 years, EPA finally bans last form of asbestos used in the US

Chrysotile asbestos ban is the first rule to be finalized under a revamped chemical safety law

*by **Krystal Vasquez***

https://cen.acs.org/policy/chemical-regulation/30-years-EPA-finally-bans/102/web/2024/03?sc=230901_cenymal_eng_slot2_cen

The US Environmental Protection Agency has banned chrysotile asbestos, the last type of asbestos that companies still use and import to the US. Eight chlor-alkali plants currently use chrysotile asbestos, a carcinogen, to make the high-volume chemicals sodium hydroxide and chlorine. Companies also use the material to make automotive and industrial products, such as aftermarket brakes and sheet gaskets.

According to the EPA, exposure to any kind of asbestos can cause lung cancer, mesothelioma, ovarian cancer, and laryngeal cancer. It has also been linked to more than 40,000 deaths in the US per year.

“The science is clear. There is simply no safe level of exposure to asbestos,” EPA administrator Michael Regan said in a call with reporters. “With today’s ban, EPA is finally slamming the door on a chemical so dangerous that it has been banned in over 50 countries.”

The new rule is the EPA’s second attempt to ban asbestos in the US. In 1989, the agency issued a rule banning most asbestos-containing products under the 1976 Toxic Substances Control Act (TSCA). But a federal court overturned the ban in 1991.

TSCA “was so significantly weakened by this court decision that it was rendered almost powerless to protect the people who needed protecting the most,” Michal Freedhoff, assistant administrator of the EPA’s Office of Chemical Safety and Pollution Prevention, said during the press briefing.

TSCA was amended in 2016, providing the EPA with more authority to restrict or ban commercial chemicals. The chrysotile asbestos ban is the first rule to be finalized under the revamped chemical safety law.

“Today’s rules are important for public health, but it’s also a symbol of how the new law can and must be used to protect people,” Freedhoff said.

Trump has yet to nominate an assistant administrator for the EPA’s chemicals office, a position that requires Senate confirmation. In the meantime, Beck is calling the shots. Her return to the EPA in that capacity concerns environmental groups.

“Handing Nancy Beck the reins to the EPA's Office of Chemical Safety and Pollution Prevention guarantees Americans will suffer greater health harms from unchecked chemical pollution,” says Brett Hartl, government affairs director at the Center for Biological Diversity. “During the first Trump administration, Beck demonstrated unbridled allegiance to the chemical industries she’s long worked to represent. Rather than taking a single step to prevent pollution, she’ll undoubtedly continue to focus solely on preventing any harm to the chemical companies profiting from making pollutants...”

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CLE AIChE: Cleveland Chapter

Fall 2024 – Spring 2025 Program Planning

(as of Apr2025)

Month	Topic, Speaker	Location	AIChE Officer Responsible
September 7, 2024 (6 PM)	Oktoberfest Social Event	German Central Farm, Parma	Joe Yurko, $7/guest admission + $ food & beverage free for CSU AIChE students. https://germancentralfoundation.com/oktoberfest
September 11, 2024 (Wednesday 2:30 – 3:30 PM)	Dr. Yu, CSU, IEEE Quantum Computer	CSU, Engineering CSU AIChE & IEEE Students	Joe Yurko & Dr. Gatica, Dr. Holland, Members: $10; Students: Free CLE AIChE: Pizzas & Beverages
October 10, 2024 (Thurs. 6 PM)	M.W. Wilson Company Steam Safety Class & Tour	M.W. Wilson Company 2579 Center Road Hinckley, OH 44233	Joe Yurko, Jeff Wilson, Dinner provided by M.W. Wilson Co.? M.W. Wilson Co.: 330-225-0663 https://www.wmsilsoncoinc.com .
October 2024 (6 PM) Wed. 16Oct2024 Wed. 30Oct2024 Wed. 06Nov2024	Chemical Process Safety Analysis Seminars: by Gurmukh Bhatia, CPSA	Strongsville Fire Dept. Ward 1 Community Rm 11297 Webster Road, Strongsville, OH 44136	Joe Yurko, Dinner cost is included in the seminar expense. Seminar expense: $25 per session with a total of 3 sessions. Certificates will be awarded for each class as well as a final certificate. sfd: 440-580-3210:
November 13, 2024 Wednesday (4:00 – 6:00 PM)	Benjamin A. Horwitz "Portrait of a Chemical Engineer" Career Discussion with students and professionals	CSU AIChE Section Joint Meeting, Washkewicz College of Engineering AIChE Chap	Joe Yurko, Dr. Gatica, Dr. Holland, CLE AIChE Meals: Professional members: $10; Students: Free CLE AIChE: Pizzas & Beverages
December 17, 2024 (6 PM)	Nuclear Power Accident Analysis, Speaking: Andrew Ohrablo, Vistra Life Cycle Manag. Fleet Engineer	The Sanctuary, Rockside Road Independence, 44131	Joe Yurko, Dinner menu ordering for professional members; Students cost: $5 http://places.singleplatform.com/shulas-steak-house-8/menu#menu_5599999
January 28, 2025 (6 PM)	SARTA Hydrogen Fuel Cell Bus Fleet Expansion Funding from DOE ARCH2 Award, Kirt Conrad CEO	Burntwood Tavern Fairlawn, Akron Rt.18 and I-77	Joe Yurko, Dinner menu $26 ordering for professional members; Students cost: $5 Lobster Bisque Soup or House Salad Salmon Salad, or Angus Burger, or Fish & Chips
February 27, 2025 (6 PM): Cancelled March 13, 2025 (6 PM): Rescheduled March 26, 2025 at CSU (5:30-8 PM)	1976 Diamond Shamrock plant Fortran Simulation Startup Presentation Speakers: Dr. Fowler, Dr. Harvey Benjamin A. Horwitz, Seminar "The Good, The Bad, & The Ugly" Chemical Process Simulation	The Sanctuary, Rockside Road Independence, 44131 CSU Student AIChE, Seminar WH-405, Washkewicz Hall March 26, 2025; 5:30-8 PM	Joe Yurko, Dinner menu ordering for professional members; Students cost: $5 http://places.singleplatform.com/shulas-steak-house-8/menu#menu_5599999 Mike Galgoczy & Joe Yurko: Dinner: Pizza, professional members: $10; Students: Free. AIChE Students to bring their PCs for workshop with simulation case studies
April 4, 2025 at CWRU (12 noon – 2 PM) April 9, 2025 at CSU (2:30 – 3:30 PM)	Benjamin A. Horwitz, Seminar "The Good, The Bad, & The Ugly" Chemical Process Simulation Andrew Zak, Speaker: Academic Career Path with ChE PhD (CSU Alumni)	CWRU Student AIChE, Seminar AWS-349, AW Smith Building April 4, 2025, 12 noon-2 PM CSU Student AIChE, Presentation WH-405, Washkewicz Hall April 9, 2025; 2:30 – 3:30 PM	Mike Galgoczy & Joe Yurko: Dinner: Pizza, professional members: $10; Students: Free. AIChE Students to bring their PCs for workshop with simulation case studies
April 2025 (6 PM)	NEOSEF Awards Banquet	CCPL Branch Library Parma, Snow Road	Joe Spagnuolo, Moderator NEOSEF Students, CCPL Branch Library Dinner: Pizza, professional members: $10; Students: Free
May 20, 2025 Tuesday (3 PM)	Tour of Perry Nuclear Power Reactor Simulator and Plant	Perry Nuclear Power Plant & Simulator Tour 18 visitors	Ray Zucker, Joe Yurko and Mandy Nagle (Vistra, Communications) Simulator Tour; Nathaniel Kehn and Jacob Mikulcic: Perry Nuclear Plant Peripheral Systems Tours.

Cleveland Section 017 of THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS Steering Committee 2024 - 2025

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