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American Institute of Chemical Engineers, Cleveland Section

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Wednesday, November 13, 2024, 4:00 PM

Cleveland State University, Washkewicz Hall, Room 405,
Chester Avenue, Cleveland, Ohio 44115
Membership is Not Required to attend any meetings.

"Portrait of a Chemical Engineer", Joint Meeting with CSU AIChE

Abstract: Ben Horwitz will guide us on his journey through life in the chemical engineering profession. We will benefit from his experience and wisdom gained over the years from the "trial by fire" path we all have traveled or will travel during our working years. Ben has offered his personal story and approach on problem solving to illustrate cause-and-effect actions we are subject to with events that are both beyond our control as well as those we have minimal control over. Ben has methodically approached problem solving with an outcome that will optimize the next level of opportunities. One of Ben's passions in life is to take the lessons he has learned from his experiences and transfer that essence onto the next generation of engineers. (Abstract outline continued below)

Bio: Benjamin A. Horwitz from Cleveland Heights, Ohio, has written 7 books and 2 plays, while practicing his profession as a chemical engineer. He graduated from the University of Pittsburgh with a degree in chemical engineering and received a Master of Science degree in mathematics from Cleveland State University. He served as a Peace Corps Volunteer in Bhopal, India. Ben was the Process Engineering Manager (of chemical engineers) at the H.K. Ferguson Company, the industrial division of the Morrison Knudsen Corporation, a global engineering design and construction corporation. During his tenure at HKF-MK, Mr. Horwitz lectured at both Cleveland State University and Case Western Reserve University in Plant Design classes with the Chemical Engineering Departments. Historically, the HKF-MK Corporation worked on notable projects like Hoover Dam, the Manhattan Project, the NASA Moon Mission Apollo Vertical Assembly Building, NASA Space Shuttle landing strip, and the BP Alaska Pipeline as well as numerous chemical, food, and beverage projects domestically and across the globe. Currently, Mr. Horwitz is consulting on training classes domestically with Chemstations, a process simulation platform that utilizes his wisdom and work experience gained over the years on numerous challenging projects

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

Abstract (continued): Portrait of a Chemical Engineer by a Life-Long Chapter's Journey

1. Ideas
2. Cleveland, Ohio, 1968 (SOHIO)
3. Bhopal, India, 1969 (Peace Corps)
4. Back in Cleveland, 1971 (OH Med.)
5. Still in Cleveland, 1973 (HKF)
6. Paris, France 1974
7. Renville, Minnesota Sugar Beet Startup
8. Cleveland, Ohio 1976
9. Cleveland, Ohio 1977 Arthur G. McKee
10. Back at HKF 1979
11. Tokyo, Japan 1981
12. Cleveland, Ohio A Manager is Born
13. The University Education of a Chemical Engineer

    (you may want to *skip this if you are not a Chemical Engineer or a professor of Chemical Engineering*)
14. Weirton, West Virginia
15. Adapting to the Role of Manager
17. The Sex Life of a Chemical Engineer

    (you may want to *skip this chapter if you are not a Chemical Engineer or have no interest in Sex*. Or both)
18. The Boise Invasion
19. The PC Age Arrives
20. Two Near-Death Experiences with H2O
21. DuPont Revisited, Singapore Debacle
22. The Beginning of the End…NOXO
23. Epilogue

Meeting Location: **Washkewicz College of Engineering, CSU, Room # 405**

Chester Avenue

Cleveland, OH 44115

4:00 – 6:00 pm: Presentation with Q&A by: Mr. Horwitz

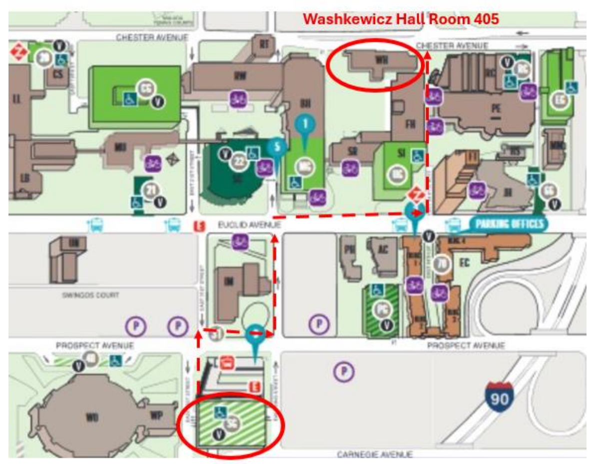
4:00 – 5:00 pm: Meal by: CLE AIChE

Parking: South Garage Parking, E21st Street

Menu:

Pizza & Soft Drinks

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



South Garage Parking ($6)
Enter from Prospect Avenue
to E 21st Street going south
opposite the Sports Field House

RSVP Recommended by Monday 11Nov2024 with Joseph Yurko and AIChE at: yurkojoe5@gmail.com

AIChE Annual Report from 2023:

https://www.aiche.org/sites/default/files/docs/pages/2023_aiche_annual_report_v07.pdf

NE Ohio Project Team Looking for Chemical Engineering Consulting Services

A project in NE Ohio is seeking chemist or chemical engineer to provide consulting services for a forthcoming project. The project includes designing and building a test station to calibrate flow meters and instrumentation used in an industrial process. The fluid in the process is caustic and toxic. The goal is to find a solution that is safe to use and has similar physical properties to the existing fluid. The consulting services would include evaluating the existing fluid and identifying the test fluid. Information on the existing fluid and samples of the fluid are available. The project is ready to start immediately. More detailed information will be provided to interested parties.

James G. MacMillan, PE, CEM
Principal, Director of Engineering
MacMillan and Company, LLC
2926 State Road, #219
Cuyahoga Falls, Ohio 44223
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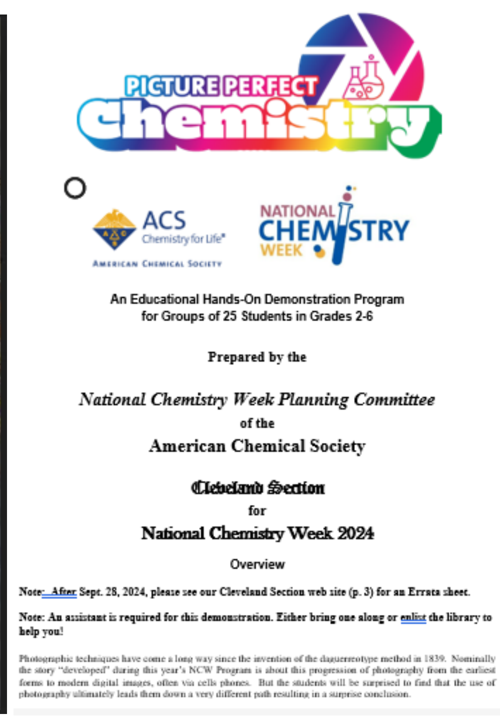
American Chemical Society, National Chemistry Week, October 2024



PICTURE PERFECT Chemistry

ACS Chemistry for Life® AMERICAN CHEMICAL SOCIETY — NATIONAL CHEMISTRY WEEK

An Educational Hands-On Demonstration Program
for Groups of 25 Students in Grades 2-6

Prepared by the

National Chemistry Week Planning Committee
of the
American Chemical Society

Cleveland Section
for
National Chemistry Week 2024

Overview

Note: After Sept. 28, 2024, please see our Cleveland Section web site (p. 3) for an Errata sheet.

Note: An assistant is required for this demonstration. Either bring one along or enlist the library to help you!

Photographic techniques have come a long way since the invention of the daguerreotype method in 1839. Nominally the story "developed" during this year's NCW Program is about this progression of photography from the earliest forms to modern digital images, often via cells phones. But the students will be surprised to find that the use of photography ultimately leads them down a very different path resulting in a surprise conclusion.

Joe Yurko (AIChE Newsletter), Celebrating National Chemistry Week with the Cleveland Section of the American Chemical Society at the Strongsville Branch of the Cuyahoga County Public Library with kids in grades 2-6!

CLE AIChE Process Safety Seminar at Strongsville Fire Dept. on 16Oct2024

Process Safety Seminar1 of 3, Presentation by Mr. Gurmukh Bhatia, CPSA: President of RPSC, LLC

CLE AIChE Meeting at the M.W. Wilson Company on 10Oct2024

Steam Safety Operation, Presentation by Mr. Jeff Wilson, President and CEO of the M.W. Wilson Company, Inc.

Jeff Wilson and Mike Galgoczy — Audience of the M.W. Wilson Company Steam Safety Presentation

Article from CEP, Chemical Engineering Progress, American Institute of Chemical Engineering Magazine, September 2024, page 23:

"The Bhopal Gas Tragedy — Part I: Process Safety Culture"

By Kenneth Bloch (Process Safety Supervisor) and Brue K. Vaughen P.E., CCPS
https://www.aiche.org/resources/publications/cep/2024/september/bhopal-gas-tragedy-part-i-process-safety-culture

The Bhopal gas tragedy stands as a stark reminder of the critical importance of process safety management. Forty years after the disaster, this article emphasizes the significance of the event and what it reveals about the prevailing process safety culture.

The Bhopal gas tragedy occurred on Dec. 3, 1984. Forty years later, this incident is still recognized as history's worst industrial disaster *(1)*. This article explains the significance of the Bhopal gas tragedy and why it is still relevant today.

The Bhopal disaster started inside a chemical plant in Bhopal, Madhya Pradesh, India. The factory was owned and operated jointly between the U.S. conglomerate Union Carbide Corp. (UCC) and its foreign entity, Union Carbide India Limited (UCIL). On the evening of Dec. 2, 1984, a large amount of water entered Tank 610. Tank 610 was one of two large chemical storage tanks that contained methyl isocyanate (MIC), a highly reactive and toxic intermediate ingredient used to manufacture pesticide products at the Bhopal factory. The mixing between MIC and water initiated an exothermic reaction inside of the tank. MIC gas production accelerated as the tank's temperature continued rising, undetected, throughout the night.

The contamination incident remained undetected until shortly after midnight on Dec. 3, 1984, when Tank 610's pressure relief valve (PRV) opened as designed to prevent an uncontrolled process release. However, this led to the discharge of 28 tons of MIC gas into the atmosphere over the next two hours. The toxic gas settled back to the ground as a poisonous fog where people living in the highly populated community outside the factory were sleeping. Panic spilled into the streets as the residents awoke, choking on the toxic air that surrounded them. Thousands of people died before daybreak. The exact number of fatalities will never be known, but it is estimated that 5,000 people died within 48 hours and up to 20,000 deaths can be related to the lingering effects of the toxic gas release. In addition, the toxic chemical release resulted in almost 500,000 injuries and massive destruction of animal life and vegetation.

The Bhopal gas tragedy raised public concern over how an industrial emergency could negatively affect community health and safety. The incident unified global industry's commitment to making process safety management (PSM) a part of all phases of a chemical facility's life — from design to decommissioning. Immediately after the incident, industry leaders petitioned the American Institute of Chemical Engineers (AIChE) to organize activities devoted to eliminating catastrophic process release incidents. In response to this request, the AIChE introduced the Center for Chemical Process Safety (CCPS) on Mar. 23, 1985 *(2)*…

Article from CEP, Chemical Engineering Progress, American Institute of Chemical Engineering Magazine, September 2024, page 30:

"Lifecycle Thinking for Next-Generation Chemical Engineering"

By Brent Heard, Liana Vaccari; National Academy of Sciences, Engineering and Medicine
https://www.aiche.org/resources/publications/cep/2024/september/lifecycle-thinking-next-generation-chemical-engineering

*The authors are solely responsible for the content of this paper, which does not necessarily represent the views of the National Academies of Sciences, Engineering, and Medicine.

The thinking underpinning lifecycle assessment has proven to be flexible and adaptable enough to guide analyses of emerging technologies, social impacts, and carbon emissions accounting approaches.

Chemistry and chemical engineering are vital disciplines for transitioning society to a circular and net-zero-emissions economy *(1, 2)*. Chemical engineers, accustomed to approaches and tools for systems analyses and optimization, are well suited to apply lifecycle thinking, evaluating potential impacts, and designing for the desired outcomes. Lifecycle thinking and its analytical approach — lifecycle assessment (LCA) — provide a comprehensive and adaptable framework for guiding and supporting future developments in chemical engineering that meet the transforming needs of our society. Advancements in the application of LCA and its principles will be essential for chemical engineers to understand and leverage to meet the challenges of the energy transition.

Primarily drawing from the National Academies of Sciences, Engineering, and Medicine reports, this article presents the authors' synthesis of conclusions and recommendations around lifecycle assessment by use sectors (*e.g.,* transportation fuels, commodity chemicals, and plastics), highlighting best practices for use, tradeoffs, and outstanding needs for increasing accuracy and availability.

Lifecycle thinking and lifecycle assessment

Lifecycle assessment (LCA) is the analytical approach underpinning lifecycle thinking. LCA collates inputs and outputs of a product or process throughout its lifecycle in a defined framework of four stages: goal and scope definition, inventory analysis, impact assessment, and iterative interpretation of these previous stages.

LCA is frequently used to calculate and compare the environmental impacts of products or processes but can also be used for "hotspot" analysis to identify areas of concern within a product's lifecycle. A basic overview of the LCA process follows while a more detailed discussion on the process and how it can inform design is provided in the June 2022 *CEP* article "Life Cycle Thinking for Sustainability-Informed Decision Making" *(3).*

The first fundamental step to undertaking an LCA is defining the system boundaries considered and the functional unit, addressing what is in and out of scope in an analysis…

Article from CEP, Chemical Engineering Progress, American Institute of Chemical Engineers Magazine, September 2024, page 40:

"Lost in Translation: Acknowledging Language Limitations in Process Safety"

By Dalia Davila, Peter A. McKnight (Reviewer), Ronald B. Melucci (Reviewer)
Engineering Planning and Management, Inc.
https://www.aiche.org/resources/publications/cep/2024/september/lost-translation-acknowledging-language-limitations-process-safety

Process safety relies on effective communication between team members. With an increasing number of English language learners in the workforce, engineers and operators need to be aware of the potential challenges posed by miscommunication.

Communication is a vital aspect of process safety. Every element of process safety in the Occupational Safety and Health Administration's (OSHA) process safety management (PSM) standard requires transferring information from one person to another *(1)*. With the increase of globalization, it is no surprise that today's workforce is becoming increasingly diverse, which has made it common to find teams composed of workers from a variety of different backgrounds throughout the chemical process industries (CPI). Therefore, process safety leaders and advocates must be aware of the challenges of working with an evolving workforce.

One of the current limitations is the diversity of language and the increase of English-language-learning (ELL) employees in the workforce. On a small scale, accommodating language diversity is an inherent part of improving process safety in a contemporary workforce. On a larger scale, language breakdowns are responsible for many major engineering disasters. People involved in process safety must learn from these mistakes to prevent similar communication breakdowns that could cause safety hazards.

This article discusses how language diversity within the workforce affects process safety, told from the perspective of a process safety engineer who learned English as a second language. Additionally, the article explores how becoming aware of this diversity and embracing these language differences can lead to more effective process safety implementation. Additional measures to reduce the language barriers in process safety communications are also discussed…

Article from C&EN, Chemical & Engineering News, American Chemical Society Magazine, September 30, 2024, page 50:

"US government funds a stalling battery industry"

Battery materials firms are set to receive more than $3 billion, but they still face big challenges

by Matt Blois

https://cen.acs.org/energy/energy-storage-/US-government-funds-stalling-battery/102/i30

September 26, 2024 | A version of this story appeared in Volume 102, Issue 30

The US Department of Energy (DOE) is handing out more than $3 billion in grants for 25 battery materials projects to jump-start the country's nascent industry. The funding comes as some US battery projects are stalling because of low demand, policy uncertainty, and competition from China.

The grants are designed to help companies making battery components in the US challenge more-experienced competitors in China. But some industry experts say the support is too little, too late.

"For something like this . . . $3 billion doesn't get you in the game," says Richard Wang, founder of the battery research firm Crevasse Consulting. "We've fallen behind, and catching up is way more expensive than leading."

Many of the DOE grants, which require significant matching funding from recipients, aim to strengthen production of the building blocks needed to make lithium-ion batteries.

Dow is in line to receive $100 million to build an electrolyte solvent plant on the US Gulf Coast. Honeywell is expecting a $127 million grant that will fund an electrolyte facility in Louisiana. Braskem plans to use a $50 million grant to retrofit a Texas polyethylene facility to meet battery industry standards.

The funds will also support a handful of next-generation technologies. Mitra Chem landed a $100 million grant to start producing lithium-manganese-iron-phosphate cathode materials, a higher-capacity version of inexpensive lithium-iron-phosphate materials. A project owned by Standard Lithium and Equinor received a $225 million grant to build a plant in Arkansas that will chemically extract lithium from brine, a technology called direct lithium extraction.

But even with government support, companies making these materials face a litany of challenges, Wang says. Last year, Huntsman Corp. canceled an expansion of an electrolyte plant because Chinese competitors were flooding the US market with cheaper products. Meanwhile, Umicore and BASF have announced that they are slowing investment in battery materials because demand is growing slower than they anticipated.

The grants follow an initial round of awards granted to companies in 2022, but some of the firms have also experienced setbacks. For example, Piedmont Lithium was slated to get a $142 million DOE grant for a lithium refinery in Tennessee, but the firm has shelved the project until the price of lithium increases…

Article from C&EN, Chemical & Engineering News, American Chemical Society Magazine, October 7, 2024, page 5:

"Device extracts lithium from Dead Sea brine"

New electrochemical design offers path toward sustainable lithium mining

by Prachi Patel September 27, 2024
https://cen.acs.org/energy/energy-storage-/Device-extracts-lithium-Dead-Sea/102/web/2024/09

Sustainable ways to obtain lithium are necessary to make batteries for an increasingly electrified world. An efficient new electrochemical device that could extract the critical metal from thousands of liters of seawater at a time offers a way forward (*Science* 2024, DOI: 10.1126/science.adg8487).

The device, which relies on a cheap electrode material used in today's lithium-ion batteries, can extract over 84% of lithium from natural or simulated Dead Sea water. Although the Dead Sea is thought of as the epitome of saltiness, its waters contain lithium salts at 40 parts per million (ppm)—relatively low compared to the hundreds of parts per million in brines mined today. "We are trying to extract lithium from unconventional resources to solve lithium supply issues," says Zhiping Lai, a chemical engineer at King Abdullah University of Science and Technology (KAUST).

Lithium is mined mostly from concentrated brines or hard-rock ores. The former involves environmentally damaging evaporative ponds that threaten local wildlife and the water supplies of surrounding rural communities, and the latter is energy intensive. Companies are developing chemical or physical processes to directly extract lithium from dilute salt waters, such as the wastewater produced during drilling for geothermal energy or oil. But these direct lithium extraction (DLE) techniques rely on expensive sorbents that need to be regenerated using heat or harsh chemicals…

Article from C&EN, Chemical & Engineering News, American Chemical Society Magazine, September 30, 2024, page 20:

"Petrochemicals are in for a renewal"
The industry is in the midst of a downturn from which it may emerge leaner and greener

by Alexander H. Tullo, September 27, 2024 | A version of this story appeared in Volume 102, Issue 30
https://cen.acs.org/business/petrochemicals/Petrochemicals-renewal/102/i30

The petrochemical industry is in a downturn likely to be so long and so deep that it will be forever transformed when it emerges at the other end. Over the next several years, many older, less efficient chemical plants, particularly in Europe, will close. The center of gravity will shift to newer facilities in North America, the Middle East, and China.

When the downturn is over, the industry will likely be more sustainable too. Projects to decarbonize chemical production, such as with low-carbon hydrogen fuel, will start coming online by the end of the decade. Companies are ramping up efforts to produce recycled plastics. Even biobased substitutes for fossil fuel–derived plastics may be in the offing.

Steve Lewandowski, CMA's vice president of global olefins, provided more detail in his presentation. Firms have erected new ethylene cracker complexes in the US to take advantage of low-cost ethane feedstock. China, which makes chemicals mainly from oil and coal, has been building capacity to make itself more self-sufficient. It has higher production costs than do the US and Middle East but relatively low construction costs.

Because of all this building, the world will have about 40 million metric tons (t) more ethylene capacity than it needs by 2028 when the market hits bottom. Plant operating rates will have dropped from nearly 90% before the COVID-19 pandemic to about 78%. Many petrochemical facilities, particularly those in higher-cost regions like Europe and East Asia will struggle to remain profitable.

"This cyclical trough that we're going through is much, much longer than we experienced in forever," Lewandowski said.

To bring the market back into balance, companies will need to shut many older, smaller, and less efficient plants. Already, Sabic and ExxonMobil have announced they are closing ethylene capacity in Europe. LyondellBasell Industries is reviewing the fate of its European operations. "More is likely to come," Lewandowski said.

For ethylene's key derivative, polyethylene, the trough is also historic, according to Nick Vafiadis, vice president of global plastics for CMA. Overcapacity combined with production cost disparities between regions "will drive change in the industry, and that change will likely include capacity shutdowns, operating rate cutbacks, and the potential slowdown, or delay, of new capacity start-ups," he said.

To run at a healthy 87% operating rate by 2029, the polyethylene industry will need to cut 24 million t of annual capacity, Vafiadis said, or roughly 20% of capacity overall.

Demand growth won't come to the aid of the polyethylene sector as much as it once did, Vafiadis said. Average annual demand growth for the polymer will slow from 4.5% between 2015 and 2020 to 3.0% during the next 10 years…

Article from C&EN, Chemical & Engineering News, American Chemical Society Magazine, September 30, 2024, page 24:

"R&D for long COVID is collapsing"
Public and private funding is lacking, scrambling opportunities to develop treatments

by Rowan Walrath; September 18, 2024 | A version of this story appeared in Volume 102, Issue 30
https://cen.acs.org/pharmaceuticals/drug-development/RD-long-COVID-collapsing/102/i30

When COVID-19 hit, the biotechnology company Aim ImmunoTech was developing a drug for myalgic encephalomyelitis/chronic fatigue syndrome, better known as ME/CFS. As more people came down with COVID-19, some began to describe lingering problems that sounded a lot like ME/CFS. In many cases, people who got sick simply never seemed to get better. In others, they recovered completely—or thought they had—only to be waylaid by new problems: fatigue that wouldn't go away with any amount of rest, brain fog that got in the way of normal conversations, a sudden tendency toward dizziness and fainting, or all the above.

There was a clear overlap between the condition, which patients began calling long COVID, and ME/CFS. People with ME/CFS have a deep, debilitating fatigue. They cannot tolerate much, if any, exercise; walking up a slight incline can mean days of recovery. Those with the most severe cases are bedbound.

Aim's leaders set out to test whether the company's drug, Ampligen, which is approved for ME/CFS in Argentina but not yet in the US, might be a good fit for treating long COVID. They started with a tiny study, just 4 people. When most of those participants responded well, they scaled up to 80. While initial data were mixed, people taking Ampligen were generally able to walk farther in a 6 min walk test than those who took a placebo, indicating improvement in baseline fatigue. The company is now making plans for a follow-on study in long COVID.

Aim's motivation for testing Ampligen in long COVID was twofold. Executives believed they could help people with the condition, given the significant overlap in symptoms with ME/CFS. But they also, plainly, thought there'd be money. They were wrong.

"When we first went out to do this study in long COVID, there was money from . . . RECOVER," Aim scientific officer Chris McAleer says, referring to Researching COVID to Enhance Recovery (RECOVER), the National Institutes of Health's $1.7 billion initiative to fund projects investigating causes of, and potential treatments for, long COVID. McAleer says Aim attempted to get RECOVER funds, "believing that we had a therapeutic for these individuals, and we get nothing."

Instead of funding novel medicines like Ampligen, the NIH has directed most of its RECOVER resources to observational studies designed to learn more about the condition, not treat it. Only last year did the agency begin to fund clinical trials for long COVID treatments, and those investigate the repurposing of approved drugs. What RECOVER is not doing is funding new compounds…

Article from CEP, Chemical Engineering Progress, American Institute of Chemical Engineers Magazine, October 2024, page 16

"ChE in Context: Chemical Engineers Embrace the Frontiers of AI/ML Part 2: Challenges"

By Luke E.K. Achenie, Phillip R. Westmoreland, AIChE PAIC AI/ML Working Group

https://www.aiche.org/resources/publications/cep/2024/october/che-context-chemical-engineers-embrace-frontiers-aiml-part-2-challenges

A previous ChE in Context column (*CEP*, July 2024, pp. 24–25) and *CEP's* August 2024 special section on AI and Digitalization described how the field of artificial intelligence (AI) and machine learning (ML) is quickly evolving. The speed of development and AI/ML's wide range of applications lead to many practical issues, and this column briefly considers some of them. Data is key to successful AI/ML modeling, so it is no wonder that data is central to many of these issues.

Regulatory and safety compliance. "Black-box" ML models that are employed in applications where regulations and safety are key can be difficult to trust because they do not provide the requisite level of transparency required for compliance. "Grey" or "white box" ML models such as physics-informed and explainable-AI models are potential aids to building trustworthiness.

Ethical concerns. Model bias can lead to potentially significant ethical issues. AI/ML models learn from the data they are being "fed." As such, if the dataset is outdated or incomplete, the models will likely predict biased results. If the ML model developer is not aware of the potentially dangerous bias problem, that is an issue; if they are aware but do not account for it, that is an ethical issue. For example, in pharmaceutical drug discovery, bias is a difficult problem to solve. Clinical trials aim to recruit statistically appropriate patients with regard to sex, race, age, and other characteristics to avoid biased ML models…

Article from CEP, Chemical Engineering Progress, American Institute of Chemical Engineers Magazine, October 2024, page 45

"Energy Transitions: Insights from the Past, Solutions for the Future"

https://www.aiche.org/resources/publications/cep/2024/october/energy-transitions-insights-past-solutions-future

By Zenaida Otero Gephardt (Rowan University), Roger D. Turner (Science History Institute)

Understanding history equips engineers with valuable insights to more effectively design and plan for the energy and other technological transitions of tomorrow.

In the July 2023 issue of *CEP*, a section titled "The Energy Transition" documented some of the current transitions to sustainable energy. It focused on electrification, decarbonization, photovoltaic technologies, batteries, and long-duration energy storage *(1)*. The contributors agreed, as do most scientists and engineers, that fossil fuel use contributes to dangerous climate change and that urgent action is necessary to meet the 2050 environmental goals described in the section. Contributors to the section concluded that the urgent integration of new and renewable technologies in the energy sector is essential to mitigate climate change.

Advances in sustainable technology have been significant and more are underway. However, the pace of the energy, or any other technological transition, is not determined by technological innovation alone. Analyses of previous technological transitions show that engineering solutions are not enough to realize change. Cultural norms and personal values shape how people view a new technology and whether they will adopt it. Corporations and research entities are unlikely to invest significant capital into producing solutions that do not have a ready consumer market *(2–4)*. Other nontechnical challenges are global in nature with significant uncertainties. Resources to develop and implement the technologies required are unevenly distributed throughout the world, and trust in science, technology, and its practitioners has significantly diminished in recent years *(5, 6)*. Without achieving broad societal acceptance of energy stewardship and climate protection, environmental goals may not be met. Engineers, who have always played a critical role in the technical aspects of transitions, can do much throughout their professional organizations and communities to disseminate information that will aid in the understanding of the energy transition, its connection to climate change, and the civics and policies associated with public and private action…

Article from C&EN, Chemical & Engineering News, American Chemical Society Magazine, October 7, 2024, page 11:

"NIH plots path forward for clinical trials of long COVID treatments"
It's a starting point for resolving what many advocates perceive as a bottleneck

by Rowan Walrath, September 26, 2024
https://cen.acs.org/pharmaceuticals/drug-development/NIH-plots-path-forward-clinical/102/web/2024/09

The National Institutes of Health has spent most of its nearly $1.7 billion in funding for long COVID on research designed to learn more about the condition rather than on trials for new treatments—a sore point for many advocates who feel frustrated by the lack of medical options. But if the 3-day meeting the agency just held to discuss the future of its RECOVER initiative is any indication, things are about to shift.

The NIH called the first phase of the initiative Researching COVID to Enhance Recovery (RECOVER). Its newest project will be called RECOVER-TLC, tacking on an acronym that stands for "treating long COVID." Unlike the first iteration of RECOVER, the TLC phase will focus on clinical trials; it will be led by the National Institute of Allergy and Infectious Diseases (NIAID), an NIH subagency. Jeanne Marrazzo, director of that institute, will have a team dedicated to long COVID clinical trials reporting directly to her.

RECOVER plans to launch RECOVER-TLC Intervention Information Request Form by the end of the month, a portal that drugmakers and other researchers can use to submit potential treatments for the team to consider. Marrazzo emphasized the importance of her group's timely responses to those submissions in her remarks during the meeting, which was held over 3 days in Washington, DC, and virtually.

"This should not be a yearlong process," Marrazzo said. "We need to do this quickly."

The urgency is a welcome change for critics of RECOVER. The initiative launched in 2021 and did not begin funding clinical trials until mid-2023. Even then, not all those studies were designed to test pharmaceutical interventions: half of them test a therapeutic video game and exercise therapy.

Critics say that at best that's a misuse of funds. Anyone can try a nonpharmaceutical intervention like exercise, but it takes access to a physician—or a clinical trial—to try something like a medication. At worst, they're dangerous. Exercise in particular has the potential to harm patients with postexertional malaise (PEM), a hallmark symptom that leaves people unable to exert themselves physically or cognitively. RECOVER's lack of focus on pharmaceutical interventions has also excluded the few industry players working to develop drug candidates that could address long COVID symptoms…

Article from C&EN, Chemical & Engineering News, American Chemical Society Magazine, October 7, 2024, page 15:

"Wind turbine blade recycling picks up speed"
New technologies and materials could help keep these giants out of landfills

by Prachi Patel, October 3, 2024 | A version of this story appeared in Volume 102, Issue 31
https://cen.acs.org/environment/recycling/Wind-turbine-blade-recycling-picks/102/i31

The small town of Sweetwater, in Nolan County, Texas, sits north of three of the world's largest onshore wind farms. Some call it the "wind turbine capital of Texas." On West Alabama Avenue in the town's southwest corner, its history collides with a more modern legacy. There, across from the Sweetwater Cemetery, where some graves date back to 1880, is a modern graveyard for wind turbine blades.

Hundreds of blades, each cut into thirds, lie there like gigantic white bones stacked on one another. "It's an eyesore," says Nolan County attorney Samantha Morrow. The blade boneyard was a hazard for neighborhood children until recently, when the landowners put a fence around it, she says. It remains a breeding ground for rattlesnakes and vermin.

A company called Global Fiberglass Solutions (GFS) started bringing blades to the site in 2017. General Electric (GE) and other turbine manufacturers paid GFS to shred them and use the material to make railroad ties and flooring panels. But the blades keep coming with no removal in sight, Morrow says.

GE filed a lawsuit against GFS last fall for its failure to deliver on its promise. Local officials are talking to state and national legislators, as well as to waste contractors, to remove the blades, according to Morrow. "But it'll be slow going because of the sheer magnitude and cost involved," she says.

That's not the peaceful, green ending one expects for these wind-harnessing behemoths after they have generated clean power for 20–25 years. In addition to languishing in junkyards such as the one in Sweetwater, many thousands of turbine blades are buried in landfills across the Great Plains in Iowa, South Dakota, and Wyoming—a blemish on wind energy's sustainable image. "We need a way to sustainably dispose of these technologies as they become defunct," Morrow says.

Turning blades into construction material, as GE and others are doing, is a low-value use for the high-tech composites. It's one of few available options because the tough resins that hold today's blades together are almost impossible to break down.

But now, researchers in academia and industry are putting a new spin on blade recycling. Labs around the world are working on novel chemical technologies to separate blades into their building blocks for reuse. Industry leader Vestas is testing a chemical recycling process that could work on today's blades. Others seek to make tomorrow's blades with new types of recyclable resins, while some are making the leap to biobased materials.

"Wind turbines are beacons of green energy," says E. Bryan Coughlin, a chemist at the University of Massachusetts Amherst. Sustainable materials should go hand in hand with renewable energy, he argues. Throwing blades in landfills is a cheap, easy way to get rid of them. "Out of sight, out of mind. But we can't do that," Coughlin says. "These wonderful composite materials were designed to perform. We need to think about what to do with them at end of life..."

Article from C&EN, Chemical & Engineering News, American Chemical Society Magazine, August 29, 2024, page 27:

"The US presidential election's implications for chemistry"
With the government's balance of power set to shift after November's election, the implications for science are far from decided

by C&EN staff, October 4, 2024 | A version of this story appeared in Volume 102, Issue 31
https://cen.acs.org/policy/US-presidential-elections-implications-chemistry/102/i31

The US presidential election is sure to affect scientists—but exactly how a win for Donald J. Trump or Kamala Harris would ripple through the chemical enterprise remains unclear.

Science has been a major plank in previous presidential platforms. This time, it's "incredibly conspicuous by its absence," says Andrew Maynard, a policy expert at Arizona State University.

Each candidate's stated priorities and in-office record leave certain science policy questions unanswered. It is unclear how far Harris, who became the Democratic Party's candidate in late July, intends to depart from Biden-Harris administration policies. Meanwhile, Republican Party nominee Trump has a track record in the Oval Office, but his intentions toward the policies described in Project 2025, a detailed agenda developed by conservative think tank the Heritage Foundation and many former Trump administration officials, are murky. Trump has distanced himself from the project.

Adding complication, what the next US president can accomplish will depend on the balance of power in Congress—which will also be decided in this election—and a global political context that demands containing wars in Ukraine and the Middle East, as well as reexamining the evolving relationship between the US and China.

Still, chemists can expect starkly different presidential visions to influence the federal budget, the actions of executive agencies, and the fate of various pieces of legislation, such as the Inflation Reduction Act of 2022 (IRA), which affects many industries. These differences will have implications for pharmaceutical and clean technology companies, immigration, academia, and chemical regulations. Here are the details.

Research funding and scientific integrity

by Laurel Oldach

The US federal government spends roughly $180 billion annually on research and development overseen by federal agencies, universities, and businesses, and the executive branch has considerable influence over how that money is allocated.

Harris, whose first job was cleaning pipettes in her mother's laboratory, cosponsored a scientific workforce diversity bill as a senator, and as vice president cast the tiebreaking vote to pass the IRA, investing billions of dollars in research. Given her stated priorities, experts predict that a Harris administration would continue to invest in technology, clean energy, and responsible AI development.

The policies of a second Trump presidency could be less predictable. Project 2025 proposes a complete overhaul of federal research infrastructure, consolidating some agencies and eliminating others altogether. Such a move could disrupt the basic science ecosystem—but experts disagree on whether it is likely to occur. Tepring Piquado, executive director of the advocacy group National Science Policy Network, says "there's a very serious possibility" that a substantial reorganization might proceed. But Arizona State's Maynard considers it less likely in the short term because it's difficult for presidents to make radical changes. For example, although the first Trump administration had proposed "massive cuts" to National Institutes of Health and National Science Foundation budgets, by the end of the appropriations process, research funding had in fact increased. The uncertainty has ramifications for life science and other research: Trump has attempted to intervene in US Food and Drug Administration business before, and he worked to pare down the budgets of federal research agencies during his presidency, which—if repeated—would have a trickle-down effect on the pace of innovation, says Fred Ledley, founding director of the Center for Integration of Science and Industry at Bentley University.

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Process Safety Fundamentals with Chemical Processes is widely regarded as a vital and significant part of an overall Environment, Health and Safety Management System for chemical operations. We will briefly examine some recent process safety incidents which will help us understand the history and origins of chemical process safety. We will lay the groundwork for a comprehensive process safety management system for chemical operations.

Session #1- 16Oct2024, $25/Person, Mike Daymut Community Room SFD; 11297 Webster Rd., Strongsville, 44136
In this session we will focus on what it means to understand our chemical processes. What information is critical, and how this information is the backbone of a robust process safety management system. From 6 to 8:30 PM.

Session #2- 30Oct2024, $25/Person, Mike Daymut Community Room SFD; 11297 Webster Rd., Strongsville, 44136
This session will build on what we learned in session #1. After understanding our processes, their hazards and their safe operating limits, we will focus on learning how to consistently operate and maintain our systems following documented procedures and standards. Essential elements of operation and maintenance. From 6 to 8:30 PM.

Session #3- 06Nov2024, $25/Person, Mike Daymut Community Room SFD; 11297 Webster Rd., Strongsville, 44136
In this session we will use what we learned in the previous two sessions combined and, using a practical perspective, study the core element of process safety: Management of Change. Time permitting, we will work on an example of how change is managed. From 6 to 8:30 PM.

Presenting:

Mr. Gurmukh Bhatia, CPSA, is President of RPSC, LLC a Risk & Process Safety Consulting services company. He retired as the Corporate Director for Process Safety and Chemical Security from The Sherwin-Williams Company, with over 45 years of work experience in the chemical industry. Mr. Bhatia is certified by the Board of Environmental, Health, and Safety (EHS) Auditor Certification (BEAC) as a Certified Process Safety Auditor (CPSA) with 15 years of auditing experience in Process Safety Management (PSM) regulated facilities. He is presently serving on the CLE AIChE Steering Committee as the Risk and Process Safety Director. Mr. Bhatia graduated from the Case Institute of Technology with a Bachelor's Degree in Chemical Engineering.

Registration:

Please register with Joseph Yurko at yurkojoe5@gmail.com by October 28, 2024 for these events.
The registration fee is $25 for each seminar session. You may take one, two, or all three sessions. The registration fee will be paid at the door the day of the event with credit card, cash or check payable to AIChE Cleveland Section #017. The fee will include dinner and a CLE AIChE Professional Development Hour certificate for completing the event. Certificates will be awarded later for each event, and if all three events are taken, then a fourth certificate will be awarded.

Strongsville Fire Department, Ward 1, 11297 Webster Road, Strongsville, OH 44136, Mike Daymut Comnty. Room:
Our host has reserved the Community Meeting Room for our event: Wednesdays on 30Oct2024 and TBANov2024.


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CLE AIChE: Cleveland Chapter

Fall 2024 – Spring 2025 Program Planning

(as of Oct2024)

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. 06Novt2024	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: HTTPS://WWW.STRONGSVILLE.ORG/DEPARTMENTS/FIRE-EMERGENCY:SERVICES/STATIONS-AND-EQUIPMENT
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 ?	Joe Yurko, Dr. Gatica, Dr. Holland, CLE AIChE Meals: Professional members: $10; Students: Free CLE AIChE: Pizzas & Beverages
December 2024 (6 PM)	Nuclear Power an Introduction, Speaking: Andrew Ohrablo ?	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 2025 (6 PM)			
February 2025 (6 PM)	Appalachian Regional Clean H2 Hub ARCH2 DOE Award, Andrew Thomas, JD, CSU ?	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
March 2025 (6 PM)	Safety Engineering in Oil Refining processes; Marianne Corrao Speaking ?	The Sanctuary, Rockside Road Independence, 44131	Mike Galgoczy, Dinner menu ordering for professional members; Students cost: $5 http://places.singleplatform.com/shulas-steak-house-8/menu#menu_5599999
April 2025 (6 PM)	NEOSEF Awards Banquet	CCPL Branch Library ?	Joe Spagnuolo, Moderator NEOSEF Students, CCPL Branch Library Dinner: Pizza, professional members: $10; Students: Free
May 2025 (6 PM)	Tour?		

In person events -- Remote meetings if non-contact required / COMPLETED MEETING / PLANNED MEETING / PROPOSED MEETING

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

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