Institute News

President's Corner
Our Evolving Profession

On behalf of AIChE's Board of Directors, I wish you and your family a safe and happy new year. I am looking forward to serving you as President, and will work diligently to lead the Institute's efforts to provide programs and services that help you advance as a chemical engineer.

Last year was an excellent year for AIChE. The latest forecast for our year-end finances indicates profitable operating performance based on record revenues. The Institute enjoyed best-ever attendance at the San Francisco Annual Meeting; above-budget performance for its Industry Technology Groups (the Center for Chemical Process Safety, the Society for Biological Engineering, the Institute for Sustainability, among them); and record education services earnings. Investment returns on our permanent fund and pension fund are predicted to be strong. For all of this, we owe thanks to Past President Phil Westmoreland, AIChE's Board of Directors, Executive Director June Wispelwey, AIChE staff, and the many volunteers who make the Institute's work possible.

The year 2013 marked the 125th anniversary of the chemical engineering profession's receiving its definition. George E. Davis, often regarded as a founder of the discipline, was a chemist working in Manchester, England. Through his work as a manager at the Lichfield Chemical Co., and as an inspector under Great Britain's Alkali Act of 1863 (one of the earliest pieces of environmental legislation impacting the industry), Davis identified many features common to chemical factories. In 1888, he presented his findings at Manchester School of Technology (now Univ. of Manchester), in a series of lectures that defined the chemical engineering discipline. Davis later compiled this information in the influential book *A Handbook of Chemical Engineering* (1901).

Also in 1888, Massachusetts Institute of Technology chemistry professor Lewis M. Norton created the first four-year chemical engineering curriculum. "Course X," according to its original MIT course description, was designed "to meet the needs of students who desire a general training in mechanical engineering, and at the same time to devote a portion of the time to the study of the applications of chemistry to the arts, especially to those engineering problems which relate to the use and manufacture of chemical products." In 1891, MIT's Dept. of Chemistry granted the first seven bachelor's degrees in chemical engineering. And, in 1908, the American Institute of Chemical Engineers was founded.

As chemical engineers, it is important that we understand some of the key factors that led to the formation of our profession. The types of industry problems that George E. Davis faced in the late 19th century could not be solved by either chemistry or mechanical engineering alone. A discipline that incorporated the broad range of technologies commonly found in chemical manufacturing was needed.

Just as the fundamental nature of our profession was first articulated in 1888, its definition continues to evolve in 2014. Today, chemical engineering undergraduates complete coursework in chemistry, fluid mechanics, thermodynamics, electrical engineering, mechanical engineering, reaction kinetics, engineering design, and process safety — to acquire the in-depth, but broad, technical knowledge needed to ensure that they can design, build, operate, and manage safe and efficient chemical plants. During the next five to ten years, while we continue to apply core chemical engineering principles to capitalize on newly discovered energy resources, chemical engineers must also progress from "lean" manufacturing to "smart" manufacturing strategies.

As chemical engineers, we all need to meet the challenges imposed by change. Together, we will work with universities and industries, in the U.S. and abroad, to develop strategies and initiatives to meet those challenges.

AIChE is the global home for chemical engineers. As President, my primary focus in 2014 is to work on strengthening key programs that are essential for future growth of the Institute. These areas include local section revitalization, international outreach, closer partnerships with industry, education and training, and increased focus on our profession's social responsibility. I believe that strengthening these areas will facilitate the Institute's transformation as a global society and reinforce its value.

For example, to counteract a decline in local section membership, Phil Westmoreland and I have created the President's Blue Ribbon Task Force on Local Sections, which will make recommendations on how to improve the value of participation at the section level.

We are also working to deepen our partnerships with organizations in Latin America, Asia, and the Middle East. Our Saudi Arabia section now organizes a major conference in Bahrain. Our Center for Chemical Process Safety has expanded its activities in Brazil, Colombia, and elsewhere in South America, as well as in Australia and China. We have new partnerships with sister societies in Mexico and Taiwan, and new collaborations in India and Singapore. We are a global profession, and the need for chemical engineering expertise is growing.

We are always looking for new and better ideas to strengthen AIChE. If you have ideas to share, please e-mail me at president@aiche.org.

Otis A. Shelton
2014 AIChE President

AIChE Gala Spotlights Ethics, Raises Funds for Ethics Education and Training

Chemical engineers, business leaders, young professionals, and students gathered with AIChE leaders at the Institute's Annual Gala on Thursday evening, Nov. 21, to build awareness for the central role of ethics in engineering practice. This year's event, held at New York City's Plaza Hotel, raised $400,000 to support the expansion of ethics training for chemical engineering undergraduates, as well as to support lifelong-learning opportunities for professional engineers.

▲ The chemical engineering community honored the exemplary ethical standards of three company heads at AIChE 2013 Gala. From left: honoree David M. Cote (Honeywell); honoree David T. Seaton (Fluor); Gala Chair Raj L. Gupta (Avantor); and honoree Stephen F. Angel (Praxair). Photo: Mike Sapia.

The gala honored three leaders from the manufacturing, engineering and construction, and industrial gases industry sectors: David M. Cote, Chairman and CEO of Honeywell; David T. Seaton, Chairman and CEO of Fluor; and Stephen F. Angel, Chairman, President, and CEO of Praxair.

Raj L. Gupta, Chairman of Avantor Performance Materials and Senior Advisor at New Mountain Capital, served as the gala's chair and host. He commended the honorees and their companies for "proactive approaches to ethics as a core value, for promulgating codes of conduct considered best practices, and for tangibly demonstrating a commitment to integrity, honesty, and fairness."

In recognizing Cote, Gupta mentioned that the executive was recently named "CEO of the Year" by *Chief Executive* magazine, adding that, under Cote's leadership, "Honeywell has stood out for its business success, and also as a leader in advancing ethical engineering and business practices." Gupta also noted that Honeywell has been named one of "The World's Most Ethical Companies" by the Ethisphere Institute, an independent promoter of best practices in corporate ethics.

In honoring Seaton and Fluor, Gupta traced the company's leadership on ethics and anti-corruption back to 2002, when Fluor chaired the engineering and construction sector of the World Economic Forum. Together with the Forum, Fluor helped to create the Partnering Against Corruption Initiative principles. Seaton was instrumental in "building consensus … to improve the engineering and construction industry's ethical conduct," said Gupta, "pushing ethical performance, quality, and a fair basis for competitiveness."

Gupta also saluted Praxair's Angel for his ethical leadership, singling out Praxair as "a leader in advancing ethical engineering and business practices through an aggressive, innovative, and robust Standards of Business Integrity program." Each year, Praxair employees worldwide recertify their commitment to the company's integrity standards. "Praxair's leadership on this issue demonstrates the company's deepest values, and is a key component of the company's continued success," Gupta explained.

The Gala's theme was introduced by a short film entitled *Ethically Speaking*, in which engineering students attested to their commitment to ethical practice. The gala audience also viewed the AIChE Foundation's new short film *The Promise* — which reflected on the legacy of chemical engineering and the responsibility that the profession must uphold as it continues to shape the world.

The Annual Gala is organized by the AIChE Foundation. Assisting Raj Gupta were the gala's co-chairs John Televantos (Arsenal Capital Partners) and S. Shariq Yosufzai (Chevron).

AIChE's 2013 President Phil Westmoreland and AIChE Executive Director June Wispelwey were also on hand to express their gratitude to the honorees, gala chairs, and the many supporters of the Institute's initiatives in ethics.

AIChE's Code of Ethics

Members of the American Institute of Chemical Engineers shall uphold and advance the integrity, honor, and dignity of the engineering profession by:

- *Being honest and impartial, and serving with fidelity their employers, their clients, and the public;*
- *Striving to increase the competence and prestige of the engineering profession;*
- *Using their knowledge and skill for the enhancement of human welfare.*

Read more at www.aiche.org/about/code-ethics.

Southwest Process Technology Conference A Big Draw for Gulf Coast CPI Professionals

Nearly 500 chemical process industry professionals and students from the Texas Gulf Coast region gathered last October for the 5th Southwest Process Technology Conference, held at the Moody Gardens Hotel and Convention Center in Galveston, TX. Organized by AIChE and its South Texas Local Section, the annual Southwest Process Technology Conference tailors its programming to the needs of the region's process industry professionals. The event continues to grow in scope, with more than a dozen topical sessions this year covering a gamut of techniques and technologies — including process safety, process control and optimization, energy efficiency, distillation and separation, and other topics of importance to the petrochemicals and energy sectors.

The conference kicked off on Oct. 3 with a keynote address by Lynne Lachenmyer, Senior Vice President of ExxonMobil Chemical Co., who discussed the revitalization of the U.S. chemical industry and the impact of abundant shale gas supplies. In addition to the technical sessions, conference highlights included networking activities, a career fair, and a student program. Exhibitors from 30 companies — including software developers, engineering and construction firms, and equipment vendors — presented their wares. The program also featured a session on engineering ethics, as well as technical and career-oriented sessions for young professionals and students.

▲ Sessions such as the opening Keynote Address by Lynne Lachenmyer (Senior Vice President, ExxonMobil Chemical) attracted capacity crowds at the 2013 Southwest Process Technology Conference, organized by AIChE's South Texas Section.

The 2014 Southwest Process Technology Conference returns to Moody Gardens in Galveston, Oct. 9–10.

Institute and Board Award Nominations Due Feb. 15

Nominees for Industry Honors Sought

Nominations are being accepted for AIChE's 2014 Institute and Board of Directors' Awards. These awards, to be presented at the November 2014 AIChE Annual Meeting in Atlanta, GA, are the Institute's most prestigious honors, and recognize outstanding contributions across the spectrum of chemical engineering achievement.

Among these high honors are numerous awards that celebrate significant contributions in industrial practice. AIChE's Awards Committee is calling for more nominations in these industrial categories, which, in addition to the long-established Lawrence B. Evans Award in Chemical Engineering Practice and the Corporate Innovation Award, include recently inaugurated awards for achievements in engineering and construction, research and development, leadership, process operations, and energy and sustainability.

Reflecting on these industry honors, Bert Diemer, chair of the Awards Committee's Nominations Solicitation Subcommittee, says that the engineering profession finds its ultimate expression in practice. "As an institute of engineers, it is important that AIChE recognize excellence in industrial practice — to heighten the visibility of our societal impact, as well as to provide role models for early-career engineers, students of engineering, and young people evaluating career choices," he says.

Diemer adds that a healthy selection of high-caliber nominees from industry is needed to establish these newly launched honors within the chemical engineering community, and to shine a deserved spotlight on chemical engineers in industry.

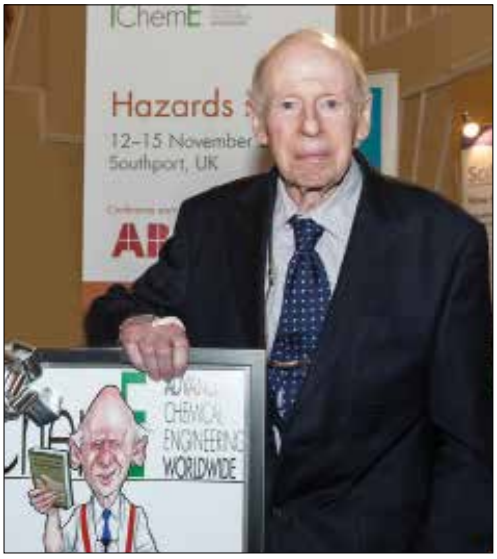
"Think about the people in your network whose engineering talents you admire," encourages Diemer. "If they are in industrial practice, consider nominating them for one of these awards."

Details about all of the Institute and Board awards, including eligibility criteria and the nomination process, can be found at www.aiche.org/community/awards/institute-awards. Nomination forms, supporting letters, and supplemental materials should be compiled and saved as a single electronic document (PDF format) and submitted to AIChE on a CD or by email. Nominations must be postmarked by Feb. 15, 2014. Address questions about the nomination process to awards@aiche.org.

Trevor Kletz, Hazard Analysis Pioneeer

Trevor A. Kletz, a pioneering advocate for chemical process safety who is widely credited with introducing the concepts of inherently safer design, died on Oct. 31, 2013, in Cheadle Hulme, U.K., at the age of 91. Over a nearly 70-year career as a researcher, industry safety advisor, author, and lecturer, Kletz developed a reputation as one of the chemical process industries' most respected figures.

David Brown, chief executive officer of the Institution of Chemical Engineers (IChemE), said that Kletz had a profound impact on industrial safety. "Trevor unquestionably saved lives," said Brown. "There are people working in the process industries today who will go home safely to their families and loved ones, thanks to Trevor."



▲ Trevor Kletz received a commemorative caricature commissioned in his honor at a retirement celebration held at IChemE's Hazards XXIII conference in Nov. 2012. Photo courtesy of IChemE.

After studying chemistry at Liverpool Univ., Kletz joined Imperial Chemicals Industries (ICI) in 1944, where he spent his early career as a researcher and a production manager in ICI's iso-octane, acetone, and tar acids plants. In 1968, after Kletz gained further experience in process investigation, ICI appointed him as one of the process industry's first technical safety advisors, with responsibilities that included helping ICI petroleum plant designers and operators to avoid process accidents. During Kletz's tenure, ICI developed hazard and operability (HAZOP) studies, and Kletz wrote the first book on the subject.

Ronald Willey, an editor of AIChE's *Process Safety Progress* journal, said that "many people active in today's chemical processing safety community owe their inspiration to Trevor Kletz." He added that part of Kletz's genius was his frequent use of imagery to make complexity simple. For example, Willey notes Kletz's use of a teacup analogy to illustrate the fragility of conventional atmospheric storage tanks, which can be "sucked in" because they are typically built to withstand a vacuum of only 2½ in. of water (0.1 psi) — the same hydrostatic pressure found at the bottom of a tea cup.

Willey also noted how the apparently straightforward notion behind Kletz's 1978 paper, "What You Don't Have, Can't Leak," formed the basis of minimization in process design, and became a key guideline in process hazard analysis. Kletz later expanded that influential paper into a book that introduced the concept of inherent safety.

Upon retiring from ICI in 1982, Kletz launched an extended career as a process safety consultant, teacher, and author — writing 14 books and more than 100 papers on process safety. In 1986, he became a full-time faculty member at Loughborough Univ. (Leicestershire, U.K.), and remained a visiting professor there, and an adjunct professor at Texas A&M Univ. (College Station), until his formal retirement in early 2013.

Kletz was a Fellow of the Royal Academy of Engineering and the Royal Society of Chemistry, and also a Fellow of both IChemE and AIChE. He was a frequent participant in AIChE's Loss Prevention Symposia, and for many years taught (with Roy Sanders) an AIChE short course on chemical plant accidents.

In 1997, Kletz received the United Kingdom's Order of the British Empire (OBE) for his contributions to industrial safety.

His autobiography, "By Accident … a Life Preventing Them in Industry," was published in 2000.

In Memoriam

David C. Banks, 88, Gustavus, AK

Curt B. Beck*, 89, Spring, TX

James L. Brennan, 82, Cookeville, TN

James W. Casten, 94, Los Gatos, CA

Gus L. Constan*, 86, Midland, MI

Joseph H. Duff, 87, Monmouth Junction, NJ

Robert S. Kirk, 90, West Lebanon, NH

Frank H. Libman, 93, Sykesville, MD

Edward R. Place, 73, Cleveland, OH

Donald R. Woods*, 78, Hamilton, Ontario, Canada

*AIChE Fellow