EXPANDING GLOBAL AND REGIONAL ENGAGEMENT

CCPS ANNUAL REPORT | 2019-20

GLOBALIZATION
EDUCATION
MEMBERSHIP
CCPS has your Professional Development Covered from the Classroom to the Frontlines...
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The CCPS Story

Just after midnight on December 3, 1984, water contamination of a tank of methyl isocyanate in Bhopal, India, initiated a series of events that led to a catastrophic toxic release, killing more than 3,000 residents and injuring over 100,000.

In February of 1985, industry leaders asked the American Institute of Chemical Engineers (AIChE) to lead a collaborative effort to eliminate catastrophic process safety incidents. On March 23, 1985, AIChE formed the Center for Chemical Process Safety (CCPS); CCPS completed Guidelines for Hazard Evaluation Procedures a short time later.

As we enter 2020, we pause to reflect on the progress we’ve made while we continue to honor the memories of those lost in Bhopal by striving for a future where we can eliminate all process safety incidents. Toward this end, we remain committed to learning from incidents, advancing the practice, and collaborating broadly to implement safety measures. Vision 20/20 serves as our road map. Come join the global community committed to Process Safety—be ready for the future by working to create it.
As we begin a new decade, I want to pause and reflect on the Bhopal Gas tragedy, which occurred 35 years ago, killing more than 3,000 residents and injuring over 100,000 people. We honor the memories of those who lost their lives and suffered from this tragedy, and recognize the progress that CCPS and other process safety organizations have made to expand the message of process safety worldwide, to protect people, property and the environment.

CCPS’ mission is to eliminate all process safety incidents, towards that end, CCPS is enhancing its initiatives from the classroom to the frontlines, providing exciting new opportunities to learn, train and develop throughout all levels of one’s career. Whether it be online, face-to-face, networking regionally or internationally, CCPS is the home for process safety worldwide.

In 2019, CCPS held four global-regional conferences. The 15th Global Congress on Process Safety (GCPS) in New Orleans, LA brought almost 1000 attendees from about 300 organizations; the 4th Europe Conference on Process Safety and Big Data, in Frankfurt, Germany drew 115 delegates from 62 organizations; the 5th Global Summit on Process Safety (GSPS), held in Singapore, was attended by nearly 320 delegates and highlighted the Vision 20/20 implementation in the region; and the year ended with the 7th CCPS China Conference, held in Suzhou Bay, China, that brought together 1000 delegates from more than 15 countries.

CCPS expanded its engagement through two global face-to-face Technical Steering Committee (TSC) meetings as well as 3 virtual TSC Meetings. There were also six regional TSC meetings around the world in; New Delhi, Leverkusen, São Paulo, Mumbai, Calgary and Suzhou, connecting approximately 800 members and non-members to important learning and networking opportunities. Two visits to Brazil provided important opportunities to engage, collaborate and connect with member and nonmember companies throughout the region. Topics discussed included process safety challenges in mining, biofuels, and metal operations.

2019 year saw record growth in CCPS on a global scale, with 31 new members, the majority of which were outside the United States, including our first new members located in Israel and Chile. In an effort to support our continued global expansion, the CCPS Planning and Operations Committee was restructured to include more global representation to provide synergies to support the planning of the GCPS and in the development of future projects.

The Undergraduate Process Safety Education program continues to progress, with an additional eight new interactive SAChE modules. Six faculty workshops were held and hosted by Dow, Chevron, BASF, LyondellBasell, Bayer and ExxonMobil. Additionally, seven Process Safety Student Boot Camps were conducted with a combined attendance of 265 students. The CCPS Credentialing (CCPSC) program completed three certification exams in 2019, with 192 process safety specialists becoming CCPSC certified to date. Five CCPS book titles were published in 2019, including 2 books translated into Chinese. And the Beacon celebrated 18 years of continuous publication and is available in 40 languages.

When CCPS Vision 20/20 was created, it was envisioned that by the year 2020, leaders in process safety would value and demonstrate actionable commitment to the Vision 20/20 tenets that prevent, minimize, and mitigate process safety incidents. As 2020 begins, I am encouraged that progress has been made; however, much broader advancements are needed. The CCPS Vision 20/20 team has heard your feedback and is working to expand its tools and guidance to improve its deployment support structure.

As we close the chapter on this decade, and begin a new one, I want to thank you for your continuing support. I look forward to a very productive and safe 2020.
Highlights from the Year

2019: Expanding global and regional engagement and responsible collaboration

Our growing CCPS community

And the list continues to grow, from...

- SINGAPORE
- SAUDI ARABIA
- CHINA
- CANADA
- USA
- KUWAIT
- INDIA
- GERMANY
- COLOMBIA
- AFRICA
- MALAYSIA
- ISRAEL
- CHILE
- BRAZIL

Face-to-face meetings

CCPS WELCOMED MORE THAN 2,800 ATTENDEES
HELD OVER 15 CONFERENCES AND MEETINGS

HIGHLIGHTS INCLUDED:

- The 15th Global Congress on Process Safety that was attended by 1,000 registrants from over 300 companies and 30 countries.
- The 7th CCPS China Conference on Process Safety had nearly 1,000 attendees, while the pre-conference workshop attracted 130 attendees.
- The 5th Singapore CCPS Global Summit was attended by 250 delegates from around the world.

Resources to explore

5 INDUSTRY TENETS
Since 2012, companies have employed Vision 20/20 to create a road map for continuous improvement of their process safety efforts. Vision 20/20 is driven by five industry tenets of committed culture; compliance with standards; intentional competency; vibrant management systems; and enhanced applications of lessons learned. It is further enriched by four global societal themes, including: enhanced stakeholder knowledge; meticulous verification; harmonization of global standards; and responsible collaboration.

The Process Safety Beacon, translated into 40 languages, continues to be a go-to resource for our members.

27 COMPANIES have participated in programs that have translated CCPS books and tools into Spanish, Chinese, and Portuguese.
JOIN CCPS as a member company to help prevent catastrophic process safety incidents.

NOT A CCPS MEMBER YET?
Join CCPS: aiche.org/ccps
Email ccps@aiche.org or call 1.646.495.1371

VOLUNTEER for a CCPS project subcommittee. Share your knowledge and help shape industry best practices. There are several ongoing projects that can be found on the CCPS website. Highlight your expertise by contributing to project development or participate as a peer reviewer. Key contributions will be recognized in the books published. This is a chance to be immortalized as an expert in your field.

Your company must be a CCPS member to volunteer for a project. Contact a CCPS staff member or submit the form on the CCPS website (Note: Please log in as a member.)

VOLUNTEER TODAY: aiche.org/ccps

EDUCATE your entire workforce by getting involved with the CCPS education curriculum, with face-to-face instructor-led courses including Process Safety Boot Camp (CH 900) / Foundations of Process Safety (CH 910), Incident Investigation (CH 901), Recognizing Catastrophic Incident Warning Signs (CH 850), and our many eLearning courses on process safety and related topics.

aiche.org/ccps

SHARE your expertise by participating in the Global Congress on Process Safety (GCPS), Global Summit on Process Safety (GSPS), a CCPS Regional Conference, or a Global or Regional Technical Steering Committee meeting.

CONFERENCES, MEETING & EVENTS:
aiche.org/ccps

MODEL your company as a process safety champion for CCPS publications and tools.

CCPS@aiche.org

MENTOR your new employees by bringing them to the Young Professionals program at the GCPS.

aiche.org/community/sites/committees/young-professionals

As a new member, link with an existing member company to gain valuable knowledge and improve your CCPS experience.

COMMUNICATE the message by forwarding CCPS’ Process Safety Beacon to your colleagues.

Sign up for the CCPS Beacon:
aiche.org/ccps/resources/process-safety-beacon

CONNECT with your process safety peers through CCPS LinkedIn.

Join CCPS LinkedIn Group:
linkedin.com/groups/105603

PARTICIPATE by getting your company involved in CCPS’ Vision 20/20 Responsible Collaboration activities throughout the year.

Contact Louisa Nara for more information: louna@aiche.org

CERTIFY your knowledge. The program for obtaining the “CCPS Certified” credential is gaining momentum and recognition around the globe. There are several opportunities per year to take the CCPS certification examination. The assessment process is rigorous and verifies that your knowledge is broad, deep and current. Earning the credential will gain you recognition as one of the elite certified experts in the field of Process Safety.

Learn more about the process: aiche.org/ccps/resources/certified-process-safety-professional

ADVERTISE your company’s services, logo and website for FREE at CCPS’ online Professional Services Directory. This opportunity is only available to CCPS member companies. For information on how to get your company listed, please contact Michele Horwitz at michh@aiche.org.

Review current listings at: aiche.org/ccps/community/members/directory
Resources to Explore

Books Published in 2019

→ Process Safety Leadership from the Boardroom to the Front Line
→ G/L for Investigating Process Safety Incidents, 3rd Ed
→ More Incidents that Define Process Safety
→ G/L for Inherently Safer Chemical Processes: A Life Cycle Approach, 3rd Ed
→ Guide to Making Acute Risk Decisions

Ongoing 2020 Book Projects

→ Guidelines for Process Safety during Transient Operations
→ Risk Based Process Safety in Pilot Plants & Laboratories
→ Process Safety in Upstream Oil & Gas
→ Guidelines for Updating & Revalidating PHA, 2nd Ed.
→ Lessons Learned Years Later – In the Aftermath of Incidents
→ Golden Rules of Process Safety for Select Technologies

Process Safety Beacon

Sponsored and produced by CCPS, the Process Safety Beacon is a resource aimed at delivering process safety messages to plant operators and other manufacturing personnel. The monthly one-pager, often used as a training tool, covers a breadth of process safety topics. Each issue discusses a real-life accident, and describes the lessons learned and practical means to prevent a similar accident in your plant. With an estimated distribution of a million readers, and published in 40 languages, the Beacon is CCPS’ most widely read publication.

aiche.org/ccps/resources/process-safety-beacon/

Process Safety Incident Database (PSID)

PSID is a lessons learned tool, containing over 800 incidents, and 425 users from over 85 CCPS member companies. To enhance the benefit of the database and to expand the breadth of knowledge in the system, members are strongly encouraged to submit at least one incident per year into the database. To ensure company privacy, CCPS removes all identifiable company information from the incidents before adding them into the database.

If you’re interested in contributing to this lessons learned database, please contact Christa Pennino at chrip@aiche.org. To register for PSID, please go to http://psidnet.com.

CCPS Glossary

CCPS approved definitions for chemical process safety verbiage.

aiche.org/ccps/resources/glossary

Process Safety Incident Evaluation (PSIE)

The Process Safety Incident Evaluation (PSIE) app lets users evaluate a chemical incident against safety indicators.

The PSIE app has three main components: the Process Safety Incident (PSI) Evaluation Questionnaire, the Severity Weighting Questionnaire, and the Chemical and Mixtures Database.


RAST and CHEF

The Risk Analysis Screening Tool (RAST) is an Excel based software that is used to help validate hazard scenarios and evaluate process risks. RAST is an excellent tool for assisting Process Hazards Analysis (PHA) teams, managing the risks associated with changes to a process, or evaluating and potentially reducing the risks of a process during its design. The user inputs information about the chemicals, equipment and unit operations, the process conditions, and the facility
layout. The RAST software validates potentially hazardous scenarios, uses industry guidelines for event frequency and consequence impact, and estimates the risk based on the company-specific risk criteria. Users can select scenarios for further assessment through a Layer of Protection Analysis (LOPA). The RAST software was upgraded and reissued on March 25, 2019.

Chemical Hazards Engineering Fundamentals (CHEF) is a Calculation Aid for those interested in understanding the mathematical framework of RAST. CHEF provides the background equations that are used.

Tools, user’s manuals, and case studies are on the CCPS website: aiche.org/ccps/resources/risk-analysis-screening-tool-rast-and-chemical-hazard-engineering-fundamentals-chef.

Safe Work Practices (SWP)

Various SWP's are documented on the CCPS website. The content is designed to reach, and provide value to a very broad audience, including operations, maintenance and engineering personnel in the process industries (chemical, petrochemical, electronics, oil & gas, LNG, and others). It is also intended to appeal to management personnel as they attempt to justify the investment within their organization. This information has been tailored to reach large and small global organizations.

Specific notes and potential vulnerabilities are presented, allowing users to personalize safe work practices in order to raise a sense of vulnerability with respect to potential hazards.

In 2019, six new Safe Work Practices have been added to the website. CCPS member companies who contribute to the SWP initiative will receive special acknowledgement.

aiche.org/ccps/resources/tools/safe-work-practices

Risk Based Process Safety (RBPS) Resources

This web based collection of resources are for each of the 20 elements of Risk Based Process Safety.

aiche.org/ccps/resources/rbps

CCPS on Knovel

As a CCPS member, your organization is entitled to a 35% discount on the CCPS collection on Knovel. For more information about subscribing to the CCPS collection on Knovel, contact Knovel directly at CCPSOnKnovel@elsevier.com.

Knovel (www.knovel.com) offers the largest standalone collection with several titles that contain importable Excel data. Included in the collection are all CCPS Guidelines and Concepts titles including:

- Process Safety Leadership from the Boardroom to the Front Line
- G/L for Investigating Process Safety Incidents, 3rd Ed
- G/L for Integrating Process Safety into Engineering Projects
- Bow Ties in Risk Management: A Concept Book for Process Safety
- Loss Prevention Symposium (LPS)
- International Conference and Workshop Proceedings (CCPS)

Evergreen/LOPA Database

The Evergreen/LOPA database is a simplified quantitative tool for analyzing and assessing risk. The tool was originally developed by user organizations during the 1990’s as a streamlined risk assessment tool, using conservative rules and order of magnitude estimates of frequency probability and consequence severity. The resource is free for CCPS members.

aiche.org/ccps/resources/tools/lopa

Professional Services Directory

The Professional Services Directory on the CCPS website is a fantastic free opportunity to feature your company’s services, logo, and website, and posting is only available to CCPS member companies. This online resource and benefit will make CCPS end-user member companies aware of your company as the service provider.

Chemical Reactivity Worksheet

The Chemical Reactivity Worksheet (CRW) is a free software program you can use to find the chemical reactivity of thousands of common hazardous chemicals, the compatibility of absorbents, and the suitability of materials in the construction of chemical processes. The most recent update (version 4.0.3) was released on July 1, 2019. The update includes a mixture cloning function, mixture migration utility, and is compatible with the latest PC and Mac operating systems.

aiche.org/ccps/resources/chemical-reactivity-worksheet
CCPS has your Professional Development Covered from the Classroom to the Frontlines...

**Student Boot Camps**

Student Boot Camps, sponsored by CCPS member companies, provide an introduction to engineering students about how leading companies across a variety of chemical process industry (CPI) sectors manage process safety to prevent catastrophic accidents involving toxic, highly reactive, and flammable materials. These events are part of the Undergraduate Process Safety Learning Initiative (UPLSI), a core priority of the AIChE Foundation’s Doing a World of Good campaign.

This year, CCPS organized six boot camps as well as the first Student Process Safety Workshop in China.

- **2019 Praxair Sponsored CCPS Student Boot Camp**
  February 1-2 | Villanova University

- **2019 Trinseo Sponsored CCPS Student Process Safety Workshop**
  March 9 | Nanjing Tech University

- **2019 Covestro Sponsored CCPS Student Boot Camp**
  April 12-13 | Ohio University

- **2019 AdvanSix Sponsored CCPS Student Boot Camp**
  August 23-24 | Virginia Commonwealth University

- **2019 Bayer Sponsored CCPS Student Boot Camp**
  September 13-14 | Brigham Young University

- **2019 Syngenta and Chemours Sponsored CCPS Student Boot Camp**
  September 21-22 | North Carolina A&T State University

- **2019 Ecolab Sponsored CCPS Student Boot Camp**
  September 27-28 | University of Minnesota, Duluth
Launching your career with a strong process safety foundation to help create a safer, more livable world...

...begins in the classroom. As part of AIChE’s Doing a World of Good campaign, and in conjunction with the Center for Chemical Process Safety (CCPS), industry and academia have come together to launch a major global initiative to improve and accelerate process safety education at the university level so you can graduate with an understanding of process safety.

| An Introduction to Managing Process Safety Hazards | Hazards and Risk: What Can Go Wrong? | NEW! Risk Review Using LOPA (Layer of Protection Analysis) |
| Introduction to Process Safety | Hazards and Risk: Safeguards Other Than Relief Systems | The Role of Inert Gases in Process Safety |
| NEW! Lab Safety | Source Models | NEW! Risk Based Process Safety - Training & Procedures |
| Chemical Process Safety in the Chemical Process Industries | Toxicalogical Hazards | |
| NEW! Dust Explosion Control | Understanding Hazards & Risk | |
| Hazard Recognition | NEW! Process Safety Ethics – A Brief Introduction | |
| Identifying & Minimizing Process Safety Hazards | NEW! Atmospheric Dispersion | |
| Process Safety Lessons Taught from Experience | NEW! Hazards and Risk: Introduction to Hazard Identification and Risk Analysis | |
| Runaway Reactions | NEW! Risk Based Process Safety Manager Risk - Commit to Process Safety | |
| Chemical Reactivity Hazards | Common Chemicals and Their Major Hazards | |
| Explosion Hazards | Inherently Safer Design | |
| Fire Hazards | Risk Based Process Safety - Manage Risk: Operations | |
| Hazards and Risk: Introduction to Pressure Protection | | |

**Early Career Professionals**

Process Safety training and the understanding of practical aspects of day-to-day work are typically lacking for those early in their career. As such, in July 2019, a subcommittee of Early Career Professionals (ECP) in Process Safety was established. The subcommittee’s charter is to identify the needs of the ECP to execute their responsibilities in the Process Safety field. Because the level of training ECPs receive varies prior to starting their careers, focused courses are needed. The subcommittee will identify key focus areas that ECPs encounter, to determine the best in-class training available and to identify where the gaps are. CCPS intends to create a program to fill these gaps with training geared to the target population. In addition to the traditional delivery methods, transformational technologies, such as augmented reality and virtual reality, will also be considered.

For more information about the program, or if you would like to volunteer for the subcommittee, please contact Anil Gokhale at anilg@aiche.org.
Find CCPS Courses, Plus Much More

AIChE Academy brings a full array of education and training resources to CCPS member companies and their employees. Find CCPS courses and process safety themed webinars all in one convenient place. You can search by topic, availability of CEUs and PDHs, delivery method, skill level - even location. Start learning today.

Public Sessions, In-Company Training, and eLearning Courses

Embodying CCPS’ practice-leading guidelines, and developed by highly experienced industry professionals, process safety courses from the AIChE Academy are offered both online and in-person. Sign up for single or multiple group seats (onsite or online), Academy has just the training you and your staff need.

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**eLearning Courses**

- 20 Elements of Risk Based Process Safety (RBPS)
- Hazard Identification for Operators and Maintenance Workers
- HAZOP Studies
- Layer of Protection Analysis (LOPA)
- Management of Change
- OSHA Process Safety Management Review
- Process Safety Leadership for Front-Line Supervisors
- Process Safety Management for Biodiesel
- Process Safety Management for Bioethanol
- Process Safety Management Overview
- The Importance of Codes and Standards for Process Safety
- What Every New Engineer Needs to Know about Process Safety
- Plus more than 20 SACHE modules on all aspects of Process Safety

**Public Courses**

- CCPS / RAPID Webinar: The Link Between Process Safety & Process Intensification
- Advanced Concepts for Process Hazard Analysis
- Hazard Identification for Operations and Maintenance Workers
- HAZOP Studies and Other PHA Techniques for Process Safety and Risk Management
- Incident Investigation and Root Cause Analysis
- Inherently Safer Design
- Managing Process Safety Risks During Organizational Change
- Overview of Risk Based Process Safety
- Process Safety Boot Camp/Foundations of Process Safety
- Recognizing Catastrophic Incident Warning Signs
- Senior Leaders and Process Safety: The Role and the Responsibility
- The OSHA Regulatory Approach to Process Safety Management

Some eLearning Courses are available in Spanish, Portuguese, and Mandarin. Please visit aiche.org/academy for details.

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**CCPS MEMBERS BENEFIT IN TWO WAYS**

**DISCOUNTED FEES:** Employees of CCPS member companies enjoy the low member rate for all CCPS and SACHE courses. And member companies are entitled to discounted rates on group training, both onsite and online. **For more information, contact academy@aiche.org.**

**FREE SEATS:** As each new eLearning course is launched, CCPS Member companies are entitled to three free seats. **For more information, contact CCPS@aiche.org.**
CCPS Faculty Workshops

Faculty Workshops sponsored by CCPS member companies show chemical engineering faculty how process safety is put into industrial practice and demonstrates the importance of process safety to the design and operation of a chemical plant. These events are part of AIChE’s Doing a World of Good campaign.

- **2019 LyondellBasell Sponsored CCPS Faculty Workshop**
  January 6-9, 2019 | Houston, TX

- **2019 Dow Sponsored CCPS Faculty Workshop**
  June 10-13, 2019 | Midland, MI

- **2019 BASF Sponsored CCPS Faculty Workshop**
  July 22-25, 2019 | Wyandotte, MI

- **2019 Bayer Sponsored CCPS Faculty Workshop**
  July 29 - August 1, 2019 | Muscatine, IA

- **2019 Chevron Sponsored CCPS Faculty Workshop**
  August 4-7, 2019 | Richmond, CA

- **2019 ExxonMobil Sponsored CCPS Faculty Workshop**
  August 12-15, 2019 | Baytown, TX

For more information: aiche.org/ccps/resources/conferences/events/faculty-workshops

CCPS Process Safety Professional Certification

Become recognized as an expert in Process Safety by passing the CCPS Process Safety Certification (CCPSC) exam and show your employer and colleagues that you have the depth and breadth of experience needed to excel in your career.

The exam to obtain your CCPSC credential, offered multiple times per year, is receiving global recognition and is in high demand. CCPS now has almost 200 Process Safety experts worldwide.

The requirements to qualify for this rigorous exam include references, academic and long term employment information, and an in-depth knowledge of the CCPS Risk Based Process Safety concepts and applications.

For more information about the CCPSC certification program, please go to aiche.org/ccps/resources/certified-process-safety-professional

To maintain your credentials, renewal is required annually via continuing education.
The 15th Global Congress on Process Safety (GCPS) was held March 31 – April 2, 2019 at the Hilton New Orleans Riverside. This world premier process safety conference hosted 1,000 attendees from over 300 companies and 30 countries. Attendees had the opportunity to hear and see featured keynote presentations, followed by 195 technical and 95 poster presentations.

Following the conclusion of the GCPS, a full day CCPS Technical Steering Committee Meeting with more than 160 attendees was held. Topics included:

- Updates and challenges from the CSB
- Regulatory agenda updates by the U.S. DOL/OSHA Office of Engineering Safety
- Chemical National Emphasis Program updates (NEP)
Events and Meetings

**4TH ANNUAL CANADIAN TECHNICAL STEERING COMMITTEE MEETING**

The 4th Annual Regional Canadian Technical Steering Committee Meeting was held in Calgary and hosted by Inter Pipeline on September 12, 2019. A record setting 70 people and 36 companies registered for the meeting, reflecting a 36% increase in company attendance over last year. Also, for the first time this year, Doctoral Candidates from the University of Alberta attended to present their research. Panel sessions were held on the subjects of Safe Operating Procedures, as well as Corrective Actions Management.

**FALL TECHNICAL STEERING COMMITTEE MEETING**

The Fall Technical Steering Committee (TSC) Meeting was held November 6-7, 2019 in Sugar Land, TX and attended by over 80 members, each of who contributed in workshop breakout groups, presentations and incident sharing. The evening concluded with valuable networking at the TSC reception and dinner.

Members gave very interesting presentations this year on Process Safety Management, Improvements and Learnings, Process Safety in the Steel Industry, Managing Process Safety during Mergers and Divestitures, and updates on their projects’ status.
Process Safety Outreach in Latin America

CCPS REGIONAL MEETINGS

CCPS gathered with a total of 90 people from 20 member and nonmember organizations in São Paulo and Rio de Janeiro from May 8-15, 2019. CCPS Executive Director & CEO, Shakeel Kadri, attended the events alongside Latin America Regional Manager, Marvin Szoychen, and CCPS Staff Consultant, Alexandre Glitz. The attendees discussed process safety challenges in mining, biofuels, and metals operations. While in Brazil, CCPS held a regional meeting at ABIQUIM’s São Paulo headquarters on May 8, 2019. Representatives from DuPont, FM Global, Chevron, and Johnson & Johnson were present.

CCPS also met with various member and non-member companies from May 9-15, 2019. Organizations included Usiminas and Raízen in São Paulo, as well as IBP and Petrobras in Rio de Janeiro.

REGIONAL MEETING AT GCPS

CCPS organized a Latin America Regional Meeting during the 15th Global Congress on Process Safety. 25 attendees participated, and discussed process safety in the mining and metallurgical industries.
**EUROPE**

**4TH EUROPEAN REGIONAL TECHNICAL STEERING COMMITTEE MEETING**

The meeting held on March 6-7, 2019 in Leverkusen, Germany, hosted by Covestro, was represented by 24 attendees from 18 CCPS member and non-member companies. The day and a half meeting featured incident sharing, case studies, new product development, a round table discussion, as well as corporate presentations specific to each company’s lessons learned on varying topics of interest.
PROCESS SAFETY IN EUROPE, ORGANIZATIONS, NETWORKS AND THE INDUSTRY

The Center for Chemical Process Safety (CCPS) and The European Chemical Industry Council (Cefic) jointly hosted the European Process and Plant Safety Conference in Brussels, Belgium on September 11, 2019. Forty-one persons attended this event from 33 organizations, including 9 CCPS member companies. The one-day conference consisted of 2 keynote presentations, 10 technical talks, and 3 sessions.

2019 EUROPEAN CONFERENCE ON PROCESS SAFETY AND BIG DATA

Organized by CCPS and EPSC, and hosted at the DECHEMA House in Frankfurt am Main, Germany on October 1-2, 2019, the conference boasted 116 attendees from 39 organizations, 24 of which were CCPS member companies. The conference opened with a Keynote on the subject of “Integrating the Digital Field Worker,” followed by a Panel on “Process Industry’s Evolution towards Big Data for Process Safety: Challenges and Successes.” Panelists were from Dow, DuPont, Total, and Shell. Three additional sessions were conducted throughout day one, on topics which included:

- Tools to Avoid Human Errors Session
- Data Lakes / Intelligent Dashboards / KPIs and Big Data Analytics
- Big Data Analytics and Standards

Day two, featured two Keynotes, the first entitled “Applying Safety Analytics for Improving Organizational Risk Capability to Reduce Incident Frequency and Severity: From Heavy Industry to the Modern Tech World” and the second on “Artificial Intelligence for Process Safety: Past, Present, and Future.” This was followed by a panel discussion on Current Technology Developments for EHS Digital Solutions. Panelists were from Sphera, Honeywell and IBM.

The day concluded with sessions on the following topics:

- Practical Examples/Case Studies and Plant Monitoring Session
- Robotics in Support of Safety and Predictive Maintenance
- Standard and Methods and Augmented Reality Session
ASIA PACIFIC & MIDDLE EAST

3RD KUWAIT INTERNATIONAL HEALTH, SAFETY, SECURITY AND ENVIRONMENT (KIHSSE) CONFERENCE • FEBRUARY 18-20, 2019

CCPS staff played a key role at the Kuwait International Health, Safety, Security, and Environment (KIHSSE) 2019 Conference. The 2019 event stood at the forefront of blending HSSE as a practice to attain Business Excellence under the theme, “Transforming HSE Culture for a Resilient Future.”

CCPS Executive Director & CEO, Shakeel Kadri, delivered the keynote speech, while Bruce Vaughen, Lead Process Safety Subject Matter Expert, presented a paper on the Risk Analysis Screening Tool (RAST). Umesh Dhake, Asia Pacific & Middle East Regional Manager, presented CCPS' work at a technical session on key updates incorporated in the 3rd edition of CCPS Guidelines on Investigating Process Safety Incidents. Bruce Vaughen and Umesh Dhake also provided a one-day pre-conference workshop on the RAST Tool, which was attended by 35 delegates.

CCPS INDIA REGIONAL TECHNICAL STEERING COMMITTEE MEETING

The meeting was hosted by HPCL-Mittal Energy Limited (HMEL) on February 22, 2019 in Delhi. Forty-five delegates from leading companies were in attendance, which included Reliance, DNV GL, LR, Sajjan India, Syngenta, ONGC, Essar, HPCL, and Adani Group. Various case studies and incidents were shared by attendees.
CCPS Executive Director & CEO, Shakeel Kadri and Asia Pacific & Middle East Regional Manager, Umesh Dhake, participated in the International Process Safety Conference (INPSC) which promotes innovative technologies and winning strategies in tackling the challenges of the global process safety industry, including the sharing and learning of experiences and best practices.

The theme of INPSC 2019 was “Culture, Competency and Excellence,” which was designed to meet key strategic objectives on business critical issues while facilitating the development of more comprehensive safety systems. Also addressed was the implementation of best global practices and engaging executive leaders in catastrophic event prevention. Shakeel Kadri was featured as the keynote speaker and guest of honor. His topic was “Process Safety Leadership, Managing a Line in the Sand.” Umesh Dhake presented a RAST tool overview during a technical session.

CCPS INDIA REGIONAL TECHNICAL STEERING COMMITTEE MEETING

This meeting, one of the largest ever gatherings in the region, was hosted by Reliance Industries Ltd. in Mumbai on August 7, 2019, and was attended by more than 140 delegates from 48 companies throughout India. Eight process safety professionals from different companies shared their valuable PSM case studies and incident learnings to support the mission of encouraging a shared knowledge mindset to help create safer and more sustainable operations. The session ended with a commitment from member companies to share more incident case studies from their organizations during the next CCPS Technical Steering Committee Meeting.
5TH CCPS GLOBAL SUMMIT ON PROCESS SAFETY

The Center for Chemical Process Safety (CCPS) and The Singapore Chemical Industry Council (SCIC) jointly organized the 5th Global Summit on Process Safety in Singapore from October 22-23, 2019 and was attended by more than 320 delegates from throughout the world. Themed “CCPS Vision 20/20 – The Five Industry Tenets and Four Societal Themes,” the meeting’s aim was to transform this vision into result-oriented actions for achieving process safety excellence.

NICS-CCPS MOU SIGNING CEREMONY

The National Institute of Chemical Safety (NICS) of the Republic of Korea and the Center for Chemical Process Safety (CCPS) signed a Memorandum of Understanding (MoU) on October 23, 2019 in Singapore to strengthen the collaboration between NICS and CCPS for both parties’ institutional support of projects with mutual interest. Both CCPS and NICS will support the promotion of each other’s activities and events through their databases, websites, e-mail marketing, and other communication channels, while participating in each other’s technical committees, and the joint organization of events and courses.
The Center for Chemical Process Safety-China Section (CCPS-CS) was founded by the Center for Chemical Process Safety of the American Institute of Chemical Engineers and the Center for Safety and Environmental & Energy Conservation Technology of the China University of Petroleum in April 2007.

**Missions of CCPS-CS:**

- Advancing the state of the art process safety technology and management practices in China
- Serving as a premier resource for process safety information in China
- Fostering process safety learning in undergraduate engineering education
- Promoting process safety as a key industry value

**CCPS CHINA SESSION ORGANIZED BY CCPS-CS AT THE 15TH GLOBAL CONGRESS ON PROCESS SAFETY**

**7TH CCPS CHINA PROCESS SAFETY MEETING**

Louisa Nara, Global Technical Director, CCPS and David Moore, AcuTech, were the instructors for a two-day preconference course on the “Overview of Risk Based Process Safety” from October 29-30, 2019. A total of 130 participants from the Chinese government, to industry and academia attended the course, which was supported by a translator. The course focused on Metrics, Inherently Safer Design and Human Factors.

The 7th CCPS China Conference on Process Safety, which took place from October 31 – November 1, 2019 in Suzhou, China was organized by CCPS, the China University of Petroleum, and the China Chemical Safety Association. The conference, which attracted a record 1,000 attendees from around the world, featured a presentation by the Vice Minister of Emergency Management, Sun Huashan, who spoke about China’s need to look at inherently safer design.
Throughout the two-day conference, three major themes were addressed, which included:

- Process Safety Management
- Risk Identification, Analysis and Management, and;
- Safety Management and Technology of the Fine Chemicals Industry

In addition, 15 keynote and 47 technical presentations were delivered throughout the two-day period.

5TH CCPS CHINA REGION TECHNICAL STEERING COMMITTEE MEETING

The CCPS China Regional Technical Steering Committee was formally created with signatures of support from 12 companies (TÜV Rheinland, IRC, Shanghai Secco, CNOOC, Cargill, PSRG, Tronox, Chemours, Shenyang Research Institute, Corteva, Starr Tech, and Wanhua Chemicals), as well as representatives from the CCPS China Section. Two member company presentations were given on “Audit Findings and Follow-up” and “Various Components of Asset Integrity Management.” During the meeting, Mr. Malcolm Pu of Wanhua Chemicals, was appointed as the Chair for this committee; he vowed to spread CCPS’ mission and vision throughout China. The CCPS China Regional Technical Steering Committee Members also discussed potential topics for future meetings and expressed their willingness to support CCPS activities in China.
2020 Meetings, Destinations and Global Offices

**NORTH AMERICA**

**NEW YORK, NY**

- CCPS Advisory Board Meeting
  8:00am-5:00pm • March 11, 2020
- CCPS Advisory Board Dinner
  6:30pm-9:00pm • March 11, 2020
- CCPS Advisory Half Day Board Meeting
  8:00am-1:00pm • March 12, 2020

**HOUSTON, TX**

- 16th Global Congress on Process Safety
  March 29-April 1, 2020
- CCPS Technical Steering Committee Networking Dinner
  April 1, 2020
- CCPS Technical Steering Committee Meeting
  April 2, 2020
- DIERS Spring Meeting
  April 27-29, 2020
- Offshore Technology Conference
  May 4-7, 2020
- TSC Planning Committee Meeting (CCPS Houston Office)
  June 9-10, 2020

**CALGARY, CANADA**

- 5th Annual Canadian Regional Technical Steering Committee Meeting
  Hosted by Aon Energy Risk Engineering
  September 10, 2020

**VIRTUAL MEETING**

- Advisory Board Virtual Meeting
  10:00am-12:00 noon EST • October 22, 2020

**SUGAR LAND, TX**

- Fall Technical Steering Committee Meeting
  November 4-5, 2020

**HOUSTON, TX**

- DIERS Fall Meeting
  November 9-11, 2020

**EUROPE**

**BASEL, SWITZERLAND**

- 5th Europe Regional Technical Steering Committee Meeting
  Hosted by Syngenta Global Headquarters
  March 18-19, 2020

**FRANKFURT, GERMANY**

- 5th Europe Process Safety and Big Data Conference
  October 13-14, 2020

**SOUTH AMERICA**

**SAO PAULO, BRAZIL**

- 9th Latin America Conference on Process Safety (LACPS)
  4th Quarter 2020
  Location TBD

**CALGARY, CANADA**

- Regional Technical Steering Committee Meeting
  Meeting date to be announced in 2020
ASIA

KUALA LUMPUR, MALAYSIA
→ Asia Pacific Regional Technical Steering Committee Meeting
  Hosted by Petronas
  August 18, 2020

PERTH, AUSTRALIA
→ Australia Regional Committee Meeting
  August 20, 2020

QINGDAO, CHINA
→ 8th CCPS China Conference on Process Safety
  September 17-18, 2020
→ 6th CCPS China Regional Technical Steering Committee
  Face to Face Meeting
  September 19, 2020

INDIA AND MIDDLE EAST

NOIDA, INDIA
→ CCPS India Regional Technical Steering Committee Meeting
  Hosted by GAIL (India) Limited
  February 6, 2020

BAHRAIN
→ Middle East Regional Technical Steering Committee Meeting
  Hosted by BAPCO
  February 9, 2020

DAMMAM, SAUDI ARABIA
→ Middle East Process Safety Conference
  June 30-July 1, 2020

SOHAR, OMAN
→ Middle East Technical Steering Committee Meeting
  Hosted by Orpic
  Date to be Confirmed

MUMBAI, INDIA
→ India Regional Technical Steering Committee Meeting
  Hosted by L & T Hydrocarbon Engineering Ltd.
  September 22, 2020

NAVI MUMBAI, INDIA
→ 6th Global Summit on Process Safety
  December 15-16, 2020

GLOBAL TECHNICAL STEERING COMMITTEE WEB CONFERENCES

• February 19, 2020
• June 17, 2020
• September 16, 2020

All Web Conferences are from 10:00am-12:00pm EST

Look for upcoming events on our website — aiche.org/ccps

CCPS OFFICES
• New York, NY
• Houston, TX
• Frankfurt, Germany
• Mumbai, India
• Qingdao, China
Organizational Structure

**TECHNICAL STEERING COMMITTEE (TSC)**

The Technical Steering Committee (TSC) is the main body of CCPS, with one representative from each CCPS member company. The key functions of the TSC are to assist the CCPS Executive Director & CEO in:

- Developing an overall multi-year program for CCPS
- Defining the priorities for project selection
- Selecting specific projects for CCPS
- Defining and reviewing the scope for these specific projects
- Suggesting membership for the Project Subcommittees
- Reviewing the status of project programs.

The CCPS Technical Steering Committee meets face to face two times a year and by web conference three times a year.

**CCPS ACTIVITIES MANAGEMENT**

Activities are monitored and directed by the

- Managing Board
- Advisory Board
- Project Planning & Operating Committee
- Technical Steering Committee

Additionally, members of the Technical Steering Committee and other member company representatives serve on subcommittees that oversee CCPS projects. The Managing Board has fiduciary responsibility for CCPS’s operations. The Advisory Board has strategic responsibility for CCPS. Board members review CCPS’s mission and strategies and recommend new initiatives. The Planning and Operations Committee is responsible for evaluating opportunities and gaps in CCPS programs relative to its strategy and generating potential initiatives to address them.

**2020 CCPS MANAGING BOARD**

- **June Wispelwey**
  AIChE Executive Director & CEO
  (Chair)
- **Rick Cain**
  AIChE Chief Financial Officer
- **Shakeel Kadri**
  CCPS Executive Director & CEO
- **Monty Alger**
  AIChE President
- **Deborah L. Grubbe**
  AIChE President-Elect
- **Kim Ogden**
  AIChE Past President
- **Ana Davis**
  AIChE Director
- **Pete Lodal**
  AIChE Director
- **Lorie McDowell**
  AIChE Director
- **Joseph Smith**
  AIChE Secretary
- **Rose Wesson**
  AIChE Treasurer

Sincere gratitude to the outgoing 2019 Managing Board members

- **Billy Bardin**
  AIChE Director
- **Christine Seymour**
  AIChE Past President
### ADVISORY BOARD

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
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<tbody>
<tr>
<td>Shakeel Kadri</td>
<td>CCPS (Chair)</td>
</tr>
<tr>
<td>Khaled Alalyani</td>
<td>SABIC</td>
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<tr>
<td>Bob Bahr</td>
<td>ExxonMobil</td>
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<tr>
<td>Garry Bryan</td>
<td>Bayer</td>
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<tr>
<td>Yong Sai Chung</td>
<td>Petronas</td>
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<tr>
<td>Al Cusson, IV</td>
<td>Air Liquide</td>
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<tr>
<td>Ana Davis</td>
<td>Syngenta Corporation</td>
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<tr>
<td>Rob DiValerio</td>
<td>BP</td>
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<td>Derek A. Fairclough</td>
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<tr>
<td>Abdullah A. Ghamdi</td>
<td>Saudi Aramco</td>
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<tr>
<td>Dave Greganti</td>
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<td>Cheryl Kennedy</td>
<td>DuPont Company</td>
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<td>Honeywell</td>
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<tr>
<td>Perry Logan</td>
<td>3M</td>
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<td>Yoshizumi Masahiro</td>
<td>Mitsubishi Corporation</td>
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<tr>
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<td>Chevron</td>
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<td>Cari Parker</td>
<td>Eastman Chemical</td>
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<td>Keith Silverman</td>
<td>Ashland</td>
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<td>Mike Snyder</td>
<td>DEKRA Insight</td>
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<tr>
<td>Prasad Tipnis</td>
<td>Reliance Industries, Ltd.</td>
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<tr>
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<td>John Wnek</td>
<td>Evonik Corporation</td>
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<tr>
<td>Kristine Williams</td>
<td>Ecolab</td>
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**Sincere gratitude to the outgoing 2019 Advisory Board Members**

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Khaled Saleh S. Al-Kharboush</td>
<td>SABIC</td>
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<td>David A. Lewis</td>
<td>Occidental Chemical Corporation</td>
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<td>Debra Small</td>
<td>Bayer</td>
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### PROJECT PLANNING & OPERATING COMMITTEE

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
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<tbody>
<tr>
<td>Fred Henselwood</td>
<td>NOVA Chemicals (Chair)</td>
</tr>
<tr>
<td>Chris Aiken</td>
<td>Cargill (1st Vice Chair)</td>
</tr>
<tr>
<td>Jerry Forest</td>
<td>Celanese Chemicals (2nd Vice Chair)</td>
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<tr>
<td>Abdul Aldeep</td>
<td>Siemens</td>
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<td>Steve Arendt</td>
<td>ABS Consulting Group</td>
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<td>Vivek Bichave</td>
<td>Reliance Industries, Ltd.</td>
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<td>Todd Aukerman</td>
<td>LanXess Corporation</td>
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<tr>
<td>Gustavo Jose Correa</td>
<td>YPF</td>
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<tr>
<td>Eric Freiburger</td>
<td>Linde plc</td>
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<td>John Wincek</td>
<td>Dekra Insight</td>
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## Projects and Volunteers

### PROJECT 244: PROCESS SAFETY - VISION 20/20

<table>
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<tr>
<td>Anne O’Neal</td>
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<tr>
<td>Samantha Scruggs</td>
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### PROJECT 248: GUIDE TO MAKING ACUTE RISK DECISIONS

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<td>Fred Henselwood</td>
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<td>Sorin Dan</td>
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<td>Seshu Dharmavaram</td>
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<td>Florine Vincik</td>
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### PROJECT 255: EVERGREEN LOPA/IPL DATABASE

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<tr>
<td>John F. Murphy</td>
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<tr>
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<tr>
<td>Jing Chen</td>
<td>CCPS</td>
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<tr>
<td>Kimberly Mullins</td>
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### PROJECT 270: PROCESS SAFETY IN UPSTREAM: OIL AND GAS

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<tr>
<td>Jean Bruney</td>
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<td>Rajender Dahiya</td>
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<tr>
<td>Kevin He</td>
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<td>David R. Mohler</td>
<td>Delek</td>
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<td>Carolina Morales</td>
<td>Ecopetrol</td>
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### PROJECT 275: PROCESS SAFETY DURING TRANSIENT OPERATIONS (START-UP/SHUT-DOWN)

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<tr>
<td>Theresa Broussard</td>
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<td>Daniel Silva</td>
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<tr>
<td>Katherine Anderson</td>
<td>Vertellus Specialties, Inc.</td>
</tr>
<tr>
<td>Susan Bayley</td>
<td>Linde plc</td>
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<tr>
<td>Donald Connolley</td>
<td>AcuTech</td>
</tr>
<tr>
<td>Eddie Dalton</td>
<td>BASF</td>
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### PROJECT 276: GUIDELINES/ESSENTIALS OF SAFE WORK PRACTICES

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<td>David Lewis</td>
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<td>Vivek Bichave</td>
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<td>Simon Jones</td>
<td>Sphera</td>
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<tr>
<td>Dan Miller</td>
<td>Emeritus</td>
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<tr>
<td>Jitesh Patel</td>
<td>New Jersey DEP</td>
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<td>Reyyan Koc Karabocek</td>
<td>ExxonMobil</td>
</tr>
<tr>
<td>Mikelle C. Moore</td>
<td>Buckman North America</td>
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<tr>
<td>Masaki Nakagawa</td>
<td>Mitsubishi Chemical Corporation</td>
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<tr>
<td>Pamela Nelson</td>
<td>Solvay USA, Inc.</td>
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<td>BakerRisk</td>
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<td>Mario Sumida</td>
<td>Braskem</td>
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<tr>
<td>Robert J. Weber</td>
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</tr>
<tr>
<td>Elliot Wolf</td>
<td>The Chemours Company</td>
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</tbody>
</table>
PROJECT 277: GUIDELINES FOR INHERENTLY SAFER CHEMICAL PROCESSES: A LIFE CYCLE APPROACH, 3RD ED.

John Wincek, Chair
Dekra Insight

Daniel Silva
CCPS Staff Consultant

Steve Arendt
ABS Consulting Group

Susan Bayley
Linde plc

Prashanti Bhupathi
Reliance Industries, Ltd.

Wayne Chastain
Eastman Chemical Company

Oliva Cheng
Chevron Corporation

Robert Coover
Linde plc

Carolina Del Din
PSRG, Inc.

Jonas Duarte
LanXess Corporation

Emmanuelle Hagey
NOVA Chemicals

Scott Haney
Marathon Petroleum Company

Dennis Hendershot
AIChE Fellow

Nicole Loontjens
Americas Styrenics

Dan Miller
Emeritus

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Sabrina Putruelse
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Morgan Reed
Exponent, Inc.

Sonny Sachdeva
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Randy Sawyer
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PROJECT 279: MORE INCIDENTS THAT DEFINE PROCESS SAFETY

Cheryl Grounds
CCPS Staff Consultant

Albert Ness
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Rajender Dahiya
AIG

Sean Dee
Exponent, Inc.

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PROJECT 281: HUMAN PERFORMANCE FOR PROCESS SAFETY PROFESSIONALS

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PROJECT 282: GUIDELINES FOR INVESTIGATING CHEMICAL PROCESS INCIDENTS, 3RD ED.

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Michael Broadribb
BakerRisk

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Robert Stankovich
Eli Lilly & Company

Rohan Vardekar
Reliance Industries, Ltd.

Terry Waldrop
AIG

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Della Wong
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Eneritis
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Michael Toraason
BakerRisk
Herve Vaudrey
DEKRA Insight
Erik Vettergren
Agrium
Dan Wilczynski
Marathon Petroleum Company

PROJECT 285: PROCESS SAFETY: LEADERSHIP FROM THE BOARDROOM TO THE FRONTLINES
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Calumet Specialty Products Partners L.P.
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Suncor Energy
Kevin He
Shell Downstream Manufacturing

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Walt Frank
Eneritis
Paul Gathright
Ascend Performance Materials
Amy Gay
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Leonard Gomes
Cheniere Energy, Inc.
David Greganti
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Mark Hazzan
AcuTech
Ng Ern Huay
Petronas
Gregg Kihne
BASF
Louisa A. Nara
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Cathy Pincus
ExxonMobil
Jatin Shah
BakerRisk
Scott Wallace
Olin Corporation

PROJECT 289: GOLDEN RULES OF PROCESS SAFETY FOR SPECIFIC TECHNOLOGIES
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Warren Greenfield
CCPS Staff Consultant
Denise Albrecht
3M

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Olin Corporation
Walt Frank
Eneritis
Paul Gathright
Ascend Performance Materials
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David Greganti
The Dow Chemical Company
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Petronas
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BASF
Louisa A. Nara
CCPS
Cathy Pincus
ExxonMobil
Jatin Shah
BakerRisk
Scott Wallace
Olin Corporation

PROJECT 291: GUIDELINES FOR ABNORMAL SITUATION MANAGEMENT
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CCPS Staff Consultant
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LanXess Corporation
Susan Behr
Braskem
Michelle Brown
FMC
Seshu Dharmavaram
Corteva Agriscience
Amy Gay
Occidental Chemical Corporation
Felix Azenwi Fru
National Grid
SP Garg
GAIL

PROJECT 292: LESSONS LEARNED YEARS LATER
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Steve Arendt
ABS Consulting Group
Pedro Bonilla
Buckman North America
Christopher Bowtell
Cheniere Energy, Inc.
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Marcus Miller
TapRoot
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Assem Saleh
Petro Rabigh
Matt Walters
Exponent, Inc.
Stephanie Wardle
Husky Energy
Projects and Volunteers

The following programs are ongoing. Instead of a predetermined end target, they are set up to produce valuable Process Safety tools, guidelines etc., on a periodic basis.

**PROJECT 152: PROCESS SAFETY BEACON**

Georges Melhem - Sponsor
ioMosaic Corporation
Mike Snyder - Sponsor
DEKRA Insight
John Herber, Co-Chair
Emeritus
Rüdiger Lenz, Co-Chair
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Denver Roopchand
Cheniere Energy, Inc.
Jatin Shah
BakerRisk
Jeffery E. Todd
Marathon Petroleum Company
Van Lommen Yvan
3M
PROJECT 251: PROCESS SAFETY IN PILOT PLANTS AND LABORATORIES

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CCPS Staff Consultant

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Abemarle Corporation

Randy Keller
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Andrew Minister
DOE - Pacific Northwest National Laboratory, Retired

Richard Palluzi
ExxonMobil, Retired

PROJECT 257: TRANSLATION OF CCPS BOOKS/TOOLS INTO CHINESE

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CCPS Staff Consultant

Jing Chen
CCPS

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Su Hu
Sinopac Yangzi Petrochemical Company Ltd

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Penghui Lu
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Sergio Leandro Vilches
Pluspetrol

Josefina Yañez
Técnicas Reunidas

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YPF

Nestor Sposito
CCPS Staff Consultant

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YPF

Trina Carrillo
Técnicas Reunidas

Ricardo Ceskiavikus
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Gretel D’Amico
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Ronald Ivan Tello David
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Cargill

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Clariant

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Tiago Do Monte Correa Novo
Braskem

Paula Onishi
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Gustavo Peron
Cargill

Sergio Silva
Petrobras

Mario Enji Yamaguchi Sumida
BASF

PROJECT 261: TRANSLATION OF CCPS BOOKS INTO PORTUGUESE

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Emeritus

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CCPS Staff Consultant

Mayara Carbono
Ecolab

Deyse Cassais
RSE

Carlos Cazarotto
BP

Isadora Ferreira
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Joedson Jose Goncalves Ferreira
Tronox

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Luciana Láconis
The Dow Chemical Company

Marcel Leite
Fuzzy Eng

Silvio Martins
Mosaicco

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Petrobras

Tiago Do Monte Correa Novo
Braskem

Paula Onishi
BASF

Gustavo Peron
Cargill

Sergio Silva
Petrobras

Mario Enji Yamaguchi Sumida
BASF

PROJECT 280: DOW RISK ANALYSIS SCREENING TOOL (RAST)

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CCPS Staff Consultant

Umesh Dhake
CCPS

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Dave Hazan
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Pier-Jan Hettema
DSM/EPSC

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Duncan Rose
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Kenan Stevick
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Bruce Vaughten
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   Lead Engineer & Project Manager
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   Asia Pacific Project Manager
5. Jing Chen
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6. Umesh Dhake
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13. Pallabi Roy
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    Latin America Regional Manager
15. Bruce Vaughan
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16. Professor DongFeng Zhao
    Director, CCPS China Section
17. Dr. Yi Liu
    Assistant Director, CCPS China Section
18. Yifei Meng
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John Murphy  Albert Ness  Frank Renshaw  Bob Rosen  Daniel E. Silva  Nestor Spósito  Byron Sun

Ken Tague  Jenny Wang
Updates and Impact

Where We Are Today

FUNDRAISING (Millions)

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*As of December 2019

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Vertellus Specialties Inc.
W. R. Grace and Company
Wanhua Chemical Group Co., Ltd.
Westfarmers Chemicals Energy and Fertilisers
World Steel Association
Yara Trinidad Ltd.
YPF - Yacimientos Petrolíferos Fiscales