

# CCPS® ANNUAL REPORT 2020-21

*Making an Impact Worldwide*



MEMBERSHIP



GLOBALIZATION



EDUCATION

An AIChE Technology Alliance  
**CCPS**  
Center for Chemical Process Safety



Bringing Together the Global Community  
Committed to Process Safety through  
Learning, Membership and Collaboration.



# Table of Contents

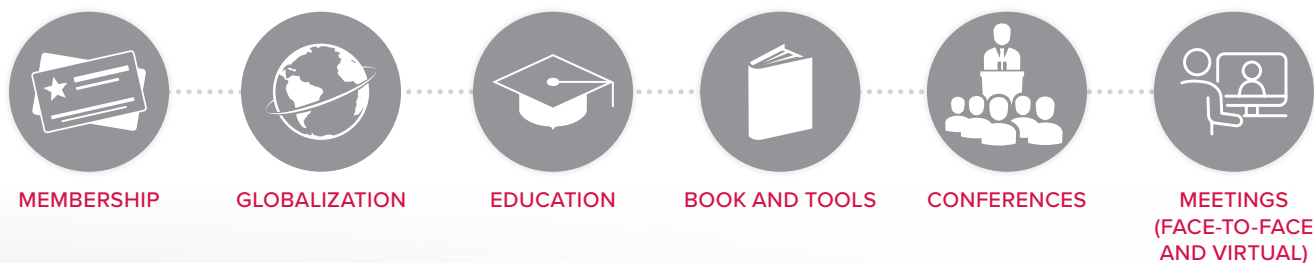
The CCPS Story.....	2
Message from the Executive Director & CEO.....	3
Highlights from the Year .....	4
Get Your Company Involved.....	5
Resources to Explore.....	6-8
Student Boot Camps.....	9
SACChE .....	10
Early Career Professional (ECP).....	10
Academy.....	11
Faculty Workshops .....	12
Process Safety Boot Camps .....	12
Credentialing.....	12
Events and Meetings .....	13-31
2021 Meetings, Destinations and Global Offices .....	32-33
CCPS Organizational Structure.....	34-35
→ Technical Steering Committee (TSC).....	34
→ Activities Management.....	34
→ Managing Board .....	34
→ Advisory Board.....	35
→ Project Planning & Operating Committee.....	35
→ Projects and Volunteers .....	36-39
→ Programs and Volunteers .....	39-40
→ Staff, Consultants and Instructors.....	41-42
Updates and Impact .....	43

# 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 2021, 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.







## Message from the Executive Director & CEO

The year 2020, by all measures, is sure to go down in history as one of the most difficult years ever. It brought unprecedented tragedy

and despair and impacted nearly everyone around the world. Having said that, the year 2020 also drastically shifted many of our paradigms and gave us new ways to operate, engage, and collaborate.

The many stories you shared and that we heard, from families, colleagues, strangers, and healthcare workers are memorable and powerful. And despite so much misfortune, so much good was also done for communities, strangers, and loved ones, including by our member companies. Your organizations generated and donated COVID-19 safeguards; participated in relief efforts with large sums of food and money where needed; many have and continue to participate in the development of clinical trials for vaccines; to name just a significant few.

The year was not typical in terms of member engagement. By mid-March, we ceased all planned face-to-face meetings and we began communicating through virtual formats. CCPS and our member companies managed a very successful year of connections and learning opportunities.

I want to begin by thanking the 24 companies from around the world who joined CCPS as new members this year. CCPS continues to expand its base in all regions and new industries.

And despite the challenges, we worked collectively to gather and disseminate COVID-19 process safety management best practices. We held online roundtables, regional meetings, conferences, panel discussions, project dialogues, specific company outreach, and so much more. The breadth of CCPS' reach this year spanned nearly 30 events in 7 countries.

To highlight some significant achievements, we expanded CCPS' body of knowledge, including two COVID-19 related monographs, three guideline books, and developed / expanded two online tools. We held three CCPSC exams, with a four-year total of 248 people who are now CCPSCs, a 10-week free training of RAST/CHEF tools was held

with over 200 people per session, the first-ever (virtual) Student Boot Camp in the Latin America Region, and the first-ever virtual meeting in South Africa. The Process Safety Improvement Database (PSID) improvement project reached a significant milestone toward modernizing the structure and search functionality.

We progressed our UPSLI effort. Three virtual faculty workshops were held, hosted by BASF, Chemours, and Dow. Five in-person Student Boot Camps were conducted, sponsored by Dow, Ecolab, Eastman, Bayer, and Lubrizol, while the additional 2 were conducted virtually and supported by AdvanSix, FMC, and Celanese. Additionally, SACHe published six new modules in 2020 and updated 2 modules from the previous year. We are continuing to develop the Early Career Professionals training program. The Beacon going into its 19th year, now supports 41 languages and is still CCPS' most recognized training tool around the world.

For the first time this year, the Global Congress on Process Safety, the Europe Process Safety & Big Data event, the Middle East Process Safety event, and the Latin America Conference on Process Safety were conducted on an interactive virtual platform.

We revitalized the CCPS Vision 20/20, which created a roadmap to boost CCPS' relevance and impact, enabling companies at all stages of process safety maturity to move toward process safety excellence. Additionally, CCPS continued to expand its "Responsible Collaboration" efforts around the world.

Thank you for continuing to make CCPS a stronger organization through your dedication and commitment to Process Safety. We collectively achieved a lot in 2020. I am very hopeful that we are nearing the end of this global pandemic, and that we will all be together soon. I wish you all a very safe and healthy 2021.

A handwritten signature in black ink, appearing to read 'Shakeel H. Kadri'.

**Shakeel Kadri**  
CCPS Executive Director & CEO

# Highlights from the Year

## 2020: 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

→ PERU

→ COLOMBIA

→ AFRICA

→ ARGENTINA

→ ISRAEL

→ CHILE

→ JAPAN

→ BRAZIL

→ JORDAN

→ MEXICO

→ THAILAND

→ BOLIVIA



# 24

NEW MEMBER  
COMPANIES HAVE  
JOINED CCPS

Thank you to our CCPS member companies who enabled us to deliver more virtual content than ever before, during the global pandemic.

## Virtual Events



# 30

VIRTUAL EVENTS  
IN 7 COUNTRIES

→ 2 Virtual Student Boot Camps

→ 3 Virtual Faculty Workshops

→ 1st Latin America Region Student Boot Camp

→ 4 Virtual Conferences

- 16th Global Congress on Process Safety
- 2020 Virtual European Conference on Process Safety and Big Data
- Latin American Virtual Conference on Process Safety
- 3rd Middle East Process Safety Virtual Mini-Conference

→ Conferences, Regional Meetings, Round Tables and Webinars

## Resources to explore

### Vision 20/20 Road Mapping

# 5

INDUSTRY  
TENETS

Since 2012, companies have employed **Vision 20/20** to guide their continuous improvement process safety efforts. Vision 20/20 is driven by five industry tenets of **committed culture; compliance with standards; intentional competency development; 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**.

In 2020, CCPS began developing a road map for all size companies to enable them to assess their current process safety maturity level. Using a self-assessment, containing Vision 20/20 and RBPS elements, companies can determine their process safety maturity level (1-4) and identify gaps to address to move up to the next level. With the gaps identified, the road map will provide links to existing CCPS tools and resources to develop or improve their management systems. CCPS anticipates rolling out the road mapping tool with self-assessment in 2021. For questions contact Louisa Nara at [louna@aiiche.org](mailto:louna@aiiche.org).



The **Process Safety Beacon**, translated into 41 languages, continues to be a go-to resource for our members.



# 2

New **Monographs** addressing 'Process Safety best practices during the Global Pandemic' were published in 2020.



CCPS and the Jordanian Engineers Association sign a **Memorandum of Understanding (MoU)** to provide a knowledge-sharing platform for Jordanian industries, process safety professionals and academia in the country.



# Get Your Company Involved



**JOIN** CCPS as a member company to help prevent catastrophic process safety incidents.

NOT A CCPS MEMBER YET?

Join CCPS: [aiche.org/ccps](https://aiche.org/ccps)

Email [ccps@aiche.org](mailto:ccps@aiche.org) or call 1.646.495.1371



**VOLUNTEER** for a CCPS project subcommittee. Share your knowledge and help enhance 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 recognized 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/community/projects/accepting-volunteers](https://aiche.org/ccps/community/projects/accepting-volunteers)



**EDUCATE** your workforce by getting involved with the CCPS education curriculum, with face-to-face and virtual instructor-led courses including *Process Safety Boot Camp* (CH 900) / *Foundations of Process Safety* (CH 910), *Incident Investigation* (CH901), *Recognizing Catastrophic Incident Warning Signs* (CH850), and our many eLearning courses on process safety and related topics.

[aiche.org/academy](https://aiche.org/academy)



**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/conferences-events](https://aiche.org/ccps/conferences-events)



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

PUBLICATIONS:

[aiche.org/ccps/publications](https://aiche.org/ccps/publications)

TOOLS:

[aiche.org/ccps/tools](https://aiche.org/ccps/tools)



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

[aiche.org/community/sites/committees/young-professionals](https://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](https://aiche.org/ccps/resources/process-safety-beacon)



**CONNECT** with your process safety peers through CCPS LinkedIn.

**Join CCPS LinkedIn Group:**

[linkedin.com/groups/105603](https://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](mailto:louna@aiche.org)



**CERTIFY** your knowledge. The program to obtain the "CCPS Certified" credential is gaining momentum and recognition around the globe. There are three opportunities per year to take the CCPS certification examination. The assessment process, based on the CCPS Risk Based Process Safety model and technical expertise, 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](https://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.

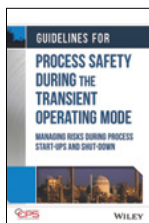
For information on how to get your company listed, please contact Michele Horwitz at [michh@aiche.org](mailto:michh@aiche.org).

**Review current listings at:** [aiche.org/ccps/community/members/directory](https://aiche.org/ccps/community/members/directory)

# Resources to Explore

## Books Published in 2020

- *Guidelines for Process Safety During the Transient Operating Mode*
- *Driving Continuous Process Safety Improvements from Investigated Incidents*
- *Process Safety in Upstream Oil and Gas*



## Ongoing 2021-22 Projects

- *Guidelines for Process Safety in Pilot Plants & Laboratories*
- *Introduction to Process Safety for Undergraduate Education, 2nd Ed.*
- *Interactive Online Training Using Bow Ties*
- *Guidelines for Chemical Reactivity Evaluation*
- *Book of Beacons*
- *Human Factors for Process Plants Operations - A Handbook*
- *Guidelines for PHA Revalidation & Update, 2nd Ed.*
- *Guidelines for Managing Abnormal Situations*
- *Guidelines for Process Knowledge Management*
- *Guidelines for Managing Cyber Security – a Risk Based Approach*

## Process Safety Beacon

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,



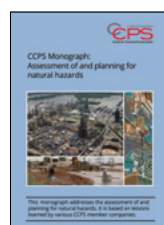
and published in 41 languages, the *Beacon* is CCPS' most widely read publication.

[aiche.org/ccps/process-safety-beacon](http://aiche.org/ccps/process-safety-beacon)

## Process Safety Monographs

- *Assessment of and Planning for Natural Hazards*
- *Risk Based Process Safety During Disruptive Times*
- *Reflections from Global Process Safety Leaders During and Following Pandemics*

[aiche.org/ccps/publications/process-safety-monographs](http://aiche.org/ccps/publications/process-safety-monographs)



## Process Safety Incident Database (PSID)

The CCPS Process Safety Incident Database (PSID), is a lessons learned tool, available to most member companies. It contains over 830 incident details.

Currently, over 500 users from about 100 CCPS member companies have access to PSID. To register, please go to <http://www3.aiche.org/PSID/Home.aspx>



Building on the valuable benefit of this database, a subcommittee of volunteers from member companies has completed an exercise to revise the functional specifications of PSID to include new, modern terms and categories. The updated platform will be fully configurable, easy to maintain, faster, reliable and more efficient, thus enhancing user experience from data entry to reporting analytics and search functionality. Key content enhancements will include simplified incident types (fires, explosions, toxic releases, near misses) as well as lessons learned, root causes, emergency response, and references to key RBPS elements. Ongoing subcommittee efforts will focus on driving continuous improvements and increasing the number of incidents that are added to the database.

PSID is an excellent platform for 'Member Sharing' and provides anonymity to those who wish to share incident data. Member companies who wish to enhance the breadth of knowledge in PSID, can contact [ccps\\_psid@aiche.org](mailto:ccps_psid@aiche.org)



# Resources to Explore

## CCPS Glossary

This glossary is used globally with the purpose of defining process safety terms. The term's definitions have been reviewed and approved by participants from CCPS Member companies. One of the glossary's goals is to help process safety professionals establish a common and consistent framework from which to 'talk process safety,' whether these discussions are held within a company or held with others across different cultures and languages.

[aiche.org/ccps/resources/glossary](https://aiche.org/ccps/resources/glossary)

## Process Safety Incident Evaluation (PSIE) App

The **Process Safety Incident Evaluation app** lets users evaluate a chemical incident against leading and lagging indicators.

PSIE has three main components: The Incident Evaluation Questionnaire, the Severity Weighting Questionnaire, and the Chemical and Mixtures Database.



[apps.apple.com/us/app/process-safety-incident-evaluation-psie/id1219287652](https://apps.apple.com/us/app/process-safety-incident-evaluation-psie/id1219287652)



[play.google.com/store/apps/details?id=com.aiche.ccps.psie&hl=en\\_US&gl=US](https://play.google.com/store/apps/details?id=com.aiche.ccps.psie&hl=en_US&gl=US)

## RAST and CHEF

Donated to CCPS by Dow Chemical, the Risk Analysis Screenings Tool (RAST) has been made available worldwide to help industry and academia better understand what is needed to make risk based decisions.

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 May 8, 2020.

**Chemical Hazards Engineering Fundamentals (CHEF)** is a Calculation Aid for those interested in understanding the engineering and 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/tools/risk-analysis-screening-tool-rast-and-chemical-hazard-engineering-fundamentals-chef](https://aiche.org/ccps/resources/tools/risk-analysis-screening-tool-rast-and-chemical-hazard-engineering-fundamentals-chef)

CHEF, also developed and donated by Dow Chemical provides the background behind the RAST tool.

## Safe Work Practices (SWP)

Various SWPs 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 to raise a sense of vulnerability for potential hazards.

CCPS member companies who contribute to the SWP initiative will receive a special acknowledgment.

[aiche.org/ccps/resources/tools/safe-work-practices](https://aiche.org/ccps/resources/tools/safe-work-practices)

## Risk Based Process Safety (RBPS) Resources

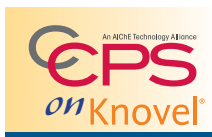
The CCPS RBPS approach has been used to help improve process safety performance for more than a decade. It is based on four pillars: Commitment to Process Safety, Understand Hazard and Risk, Manage Risks, and Learn from Experience. In addition to the CCPS Guidelines ([aiche.org/resources/publications/books/guidelines-risk-based-process-safety](https://aiche.org/resources/publications/books/guidelines-risk-based-process-safety)), there are many resources, such as webinars and book summaries, that can be used to help companies implement these pillars and their associated elements.

[aiche.org/ccps/resources/rbps](https://aiche.org/ccps/resources/rbps)

# Resources to Explore

## 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](mailto:CCPSonKnovel@elsevier.com).



Knovel ([www.knovel.com](http://www.knovel.com)) offers the largest standalone collection with several titles that contain importable Excel data. All CCPS Guidelines & Concept series titles such as those below are included. New titles are added as they are published.

- *Driving Continuous Process Safety Improvements from Investigated Incidents*
- *Guidelines for Process Safety During the Transient Operating Mode*
- *Process Safety in Upstream Oil and Gas*
- *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 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](http://aiche.org/ccps/resources/tools/lopa)

## Professional Services Directory

The Professional Services is a resource for manufacturing companies. All service providers listed are member companies specializing in process safety services.

[aiche.org/ccps/community/members/directory](http://aiche.org/ccps/community/members/directory)

## Chemical Reactivity Worksheet 4.0.3

The Chemical Reactivity Worksheet (CRW 4.0.3) 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/crw-overview](http://aiche.org/ccps/resources/crw-overview)







## 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.

Prior to March 2020, CCPS organized five in-person boot camps. Additionally, CCPS held the two virtual boot camps in October, to circumvent COVID-19.

In response to the increasing demand for the virtual boot camp, the course is now presented live online by CCPS consultants. It includes more interactive engagement and live polling. The virtual course also contains improved slide content, format, and references to enhance the virtual learning experience.

→ **2020 Dow Sponsored CCPS Student Boot Camp**  
January 11-12 | Michigan State University

→ **2020 Ecolab Sponsored CCPS Student Boot Camp**  
January 17-18 | University of Minnesota, Twin Cities

→ **2020 Eastman Sponsored CCPS Student Boot Camp**  
February 7-8 | Tennessee Technological University

→ **2020 Bayer Sponsored CCPS Student Boot Camp**  
February 14-15 | Montana State University

→ **2020 Lubrizol Sponsored CCPS Student Boot Camp**  
February 21-22 | University of Cincinnati

→ **2020 AdvanSix and FMC Sponsored CCPS Virtual Student Boot Camp**  
October 10-11 | Drexel University

→ **2020 Celanese Sponsored CCPS Virtual Student Process Safety Workshop**  
October 30-31 | Prairie View A&M University



Dow Sponsored CCPS Student Boot Camp



Eastman Sponsored CCPS Student Boot Camp






Lubrizol Sponsored CCPS Student Boot Camp

## 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 now you can graduate with a strong foundation in process safety.



32 FREE Courses	On-Demand	Interactive	Easy-to-Use
<b>NEW! LEVEL ONE COURSES</b> Introduction to Process Safety <a href="https://aiche.org/ela950">aiche.org/ela950</a> Hazard Recognition <a href="https://aiche.org/ela951">aiche.org/ela951</a> Identifying & Minimizing Process Safety Hazards <a href="https://aiche.org/ela952">aiche.org/ela952</a> An Introduction to Managing Process Safety Hazards <a href="https://aiche.org/ela953">aiche.org/ela953</a> Lab Safety <a href="https://aiche.org/ela954">aiche.org/ela954</a> <b>NEW! LEVEL TWO COURSES</b> Toxicological Hazards <a href="https://aiche.org/ela961">aiche.org/ela961</a> Chemical Reactivity Hazards <a href="https://aiche.org/ela962">aiche.org/ela962</a> Fire Hazards <a href="https://aiche.org/ela963">aiche.org/ela963</a> Explosion Hazards <a href="https://aiche.org/ela964">aiche.org/ela964</a>	Source Models <a href="https://aiche.org/ela965">aiche.org/ela965</a> Atmospheric Dispersion <a href="https://aiche.org/ela967">aiche.org/ela967</a> Understanding Hazards & Risk <a href="https://aiche.org/ela969">aiche.org/ela969</a> Hazards and Risk: What Can Go Wrong? <a href="https://aiche.org/ela970">aiche.org/ela970</a> Hazards and Risk: Introduction to Pressure Protection <a href="https://aiche.org/ela971">aiche.org/ela971</a> Hazards and Risk: Safeguards Other Than Relief Systems <a href="https://aiche.org/ela973">aiche.org/ela973</a> Hazards and Risk: Introduction to Hazard Identification and Risk Analysis <a href="https://aiche.org/ela974">aiche.org/ela974</a> Process Safety Ethics – A Brief Introduction <a href="https://aiche.org/ela975">aiche.org/ela975</a>	<b>NEW! LEVEL THREE COURSES</b> Risk Review Using LOPA (Layer of Protection Analysis) <a href="https://aiche.org/ela980">aiche.org/ela980</a> Human Factors <a href="https://aiche.org/ela981">aiche.org/ela981</a> Inherently Safer Design <a href="https://aiche.org/ela984">aiche.org/ela984</a> Practical Process Safety 1 <a href="https://aiche.org/ela985">aiche.org/ela985</a> Practical Process Safety 2 <a href="https://aiche.org/ela987">aiche.org/ela987</a> Damage Mechanisms <a href="https://aiche.org/ela988">aiche.org/ela988</a> Runaway Reactor & Overpressure Protection <a href="https://aiche.org/ela989">aiche.org/ela989</a> Facility Siting <a href="https://aiche.org/ela990">aiche.org/ela990</a> The Role of Inert Gases in Process Safety <a href="https://aiche.org/ela991">aiche.org/ela991</a>	Dust Explosions <a href="https://aiche.org/ela992">aiche.org/ela992</a> Common Chemicals and their Major Hazards <a href="https://aiche.org/ela993">aiche.org/ela993</a> Risk Based Process Safety: Commit to Process Safety <a href="https://aiche.org/ela995">aiche.org/ela995</a> Risk Based Process Safety: Training & Procedures <a href="https://aiche.org/ela996">aiche.org/ela996</a> Risk Based Process Safety: Manage Risk - Operations <a href="https://aiche.org/ela997">aiche.org/ela997</a> Risk Based Process Safety: Learn from Experience <a href="https://aiche.org/ela999">aiche.org/ela999</a> <div>    </div>

## Early Career Professionals

Engineering Professionals early in their career find that Process Safety training and the understanding of practical aspects of day-to-day work are typically challenging. In July 2019, a subcommittee of Early Career Professionals (ECP) in Process Safety was established. The subcommittee's charter was to identify the needs of the ECP to execute their responsibilities in the Process Safety field. The subcommittee recognized the variations in the level of training ECPs receive, prior to starting their careers. The subcommittee has identified key focus areas that ECPs encounter, to determine the best in-class training available and where the gaps in knowledge can be found. For various topics in each area, the team defined the required curriculum depth from Basic Understanding to Working Knowledge, with a focus on making the ECPs independently productive. CCPS intends to create a program to fill these in gaps with training geared to the target population, by using a variety of methods and techniques.

For more information about the program, please contact Anil Gokhale at [anilg@aiche.org](mailto:anilg@aiche.org).





**AIChE<sup>®</sup> Academy**

**is the place for process safety training**

## 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.**

**AIChE  
ACADEMY**

## Public Sessions, Company Training, e-Learning Courses, and Career Planning

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.

### 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 SChE 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

### Career Planning Courses

- Persistence: How to Handle Rejection in your Professional Life
- Marketing your Value

Some eLearning Courses are also available in Spanish, Portuguese, and Mandarin. Please visit [aiche.org/academy](https://aiche.org/academy) for details.

**CCPS MEMBERS  
BENEFIT IN  
TWO WAYS**

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

**FREE SEATS:** As each new Process Safety eLearning course is launched, CCPS Member companies are entitled to three free seats.

**For more information, contact [CCPS@aiche.org](mailto: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.

Due to the pandemic, the Faculty Workshops were conducted virtually in 2020.

→ **2020 BASF Sponsored CCPS Faculty Workshop**  
July 22-23, 2020

→ **2020 Chemours Sponsored CCPS Faculty Workshop**  
August 4-5, 2020

→ **2020 Dow Sponsored CCPS Faculty Workshop**  
October 6-7, 2020

*Sponsored by Chevron, CCPS conducted a survey of all educators that attended Faculty Workshops over the last 5 years. Initial responses indicate a clear growth in teaching of Process Safety principles as a result of taking the Faculty Workshop.*

*"I have been going through a lot of training this year, and this CCPS Faculty Workshop was the best learning experience and most impactful for my teaching and development. With 16 years in industry, and over 20 in academia, it was one of the most valuable Workshops, and, it provided me with the resources to pass to a new generation of students. Thank you so much."*

For more information: [aiche.org/ccps/resources/conferences/events/faculty-workshops](https://aiche.org/ccps/resources/conferences/events/faculty-workshops)



## Process Safety Boot Camps

One of the most popular public course offerings is the Process Safety Boot Camp, which uses the Risk Based Process Safety (RBPS) approach and comprehensively covers the 20 elements of RBPS. The CCPS instructors use a variety of teaching tools, including case studies, CCPS *Beacons*, videos, and regular polling questions along with quizzes after each section. This course is now offered in an instructor-led virtual format that comes with a detailed Participants Guide. It can also be customized to be taught to any sized company's specific needs. If you're interested in the Process Safety Boot Camp go to [aiche.org/academy/courses/ch900/process-safety-boot-camp](https://aiche.org/academy/courses/ch900/process-safety-boot-camp) for more information.



## 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. This rigorous certification process verifies your competency in the latest process safety tools and techniques.

The exam to obtain your CCPSC credential, offered multiple times per year, is receiving global recognition and is in high demand.

The requirements to qualify for this rigorous exam include 5 years' experience and a degree in a STEM (Science, Technology, Engineering or Math) field, or 10 years' experience. References, academic and employment information, and an in-depth knowledge of the CCPS Risk Based Process Safety concepts and applications are also required. The annual renewal, which includes a continuing education requirement, serves to prove your ongoing proficiency. It's the one certification every process safety professional needs.

For more information about the CCPSC certification program, please go to [aiche.org/ccps/resources/certified-process-safety-professional](https://aiche.org/ccps/resources/certified-process-safety-professional)





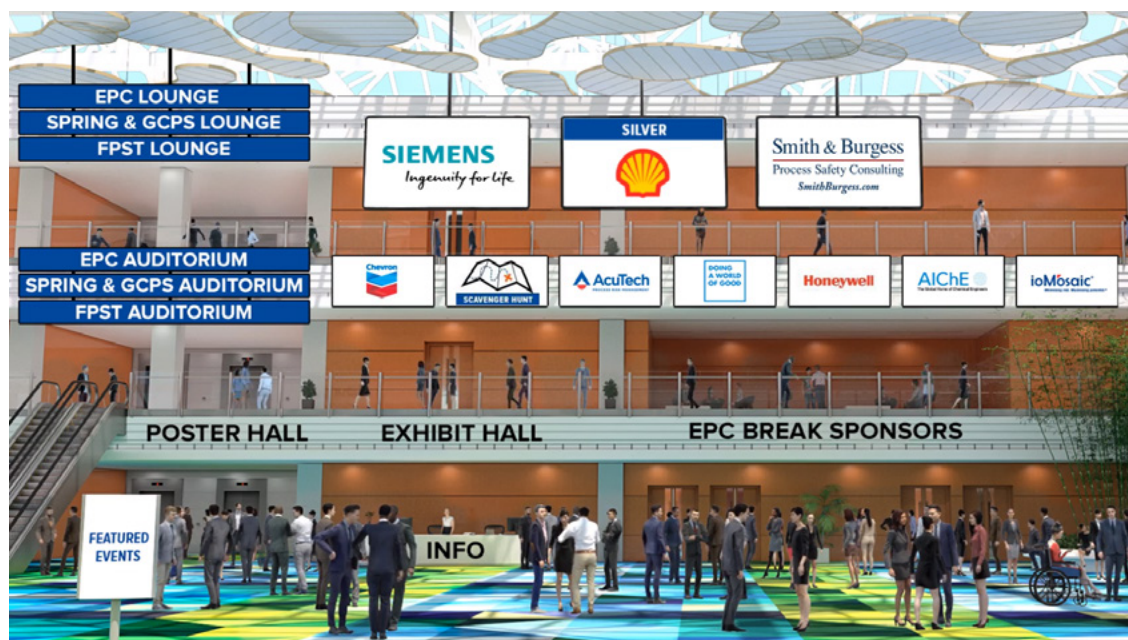
## NORTH AMERICA

On Wednesday, January 29, 2020 Shakeel H. Kadri, Executive Director & CEO of AIChE's Center for Chemical Process Safety (CCPS)<sup>®</sup>, testified before the Senate Committee on Environment & Public Works on the mission and role of the Chemical Safety Board (CSB).



### 16<sup>TH</sup> GLOBAL CONGRESS ON PROCESS SAFETY

The 16<sup>th</sup> Global Congress on Process Safety (GCPS) was held virtually, from August 17 -21, 2020, as a safety measure amid the COVID-19 pandemic. This world premier process safety conference offered 5 tracks containing 55 technical sessions (over 150 technical presentations), and 1 poster session (over 100 posters). The interactive online format allowed new flexibility for attendees to replay recorded presentations for a month after the conference.



Virtual Conference Lobby



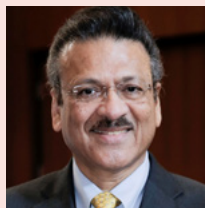
## 16<sup>TH</sup> GLOBAL CONGRESS ON PROCESS SAFETY (Continued)



**Bhavesh V. (Bob) Patel**  
Chief Executive Officer  
LyondellBasell



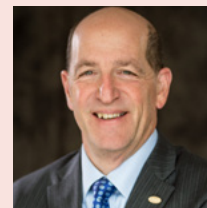
**Mark Johnson**  
Thomas F. Hash Endowed  
Chair in Sustainable  
Development & Professor  
of Materials Science  
Clemson University



**Shakeel H. Kadri**  
Executive Director & CEO  
Center for Chemical  
Process Safety (CCPS)



**Thomas Munoz**  
Emergency Manager  
and Homeland  
Security Director  
Texas City

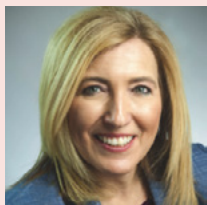


**Matt Loeb**  
CEO  
SECURE

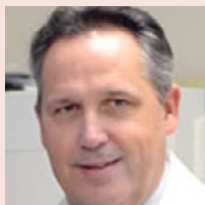
Featured Keynote Speakers

A special panel was programmed during the 16<sup>th</sup> GCPS to address how effective leadership in the time of COVID-19 has shaped a new corporate culture; including developments in the search for effective medical treatment and vaccines. The panel also reflected on the role of the scientific community in managing COVID-19-related risk and transforming safety incident investigation techniques.

### Moderator



**Ana Davis**  
Head of Health, Safety,  
and Environment,  
North America  
Syngenta

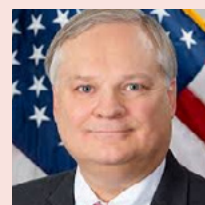


**Cornelius (Neil) J. Clancy**  
Chief, Infectious Diseases Section,  
VA Pittsburgh Health Care System;  
Director, Mycology Program;  
Associate Professor of Medicine  
University of Pittsburgh

### Panelists



**J. David (Dave) Payne**  
Vice President, Health,  
Environment and Safety  
Chevron









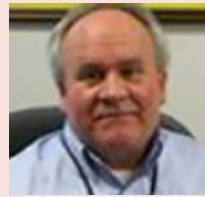




**Stephen Klejst**  
Executive Director  
of Investigations &  
Recommendations  
U.S. Chemical  
Safety Board

Frontlines of COVID-19: Lead, Learn and Cure Panel Moderator and Panelists

## CCPS PANEL DISCUSSION: LEARNINGS FROM MANAGING PROCESS SAFETY DURING COVID-19

On May 4, 2020, Dr. Anil Gokhale, CCPS, hosted a panel entitled, “*Learnings from Managing Process Safety During COVID-19*” to share the best practices from top PSM professionals at CCPS member companies on managing process safety during the pandemic. Moderators Ramesh Harrylal, National Gas Company of Trinidad & Tobago (NGC), and Jennifer Bitz, CCPS, facilitated the discussion as the panelists expanded upon the concepts from the CCPS Monograph, “*Risk Based Process Safety During Disruptive Times*,” and shared how their companies maintained and adapted their RBPS programs during the pandemic.

Jerry Forest, Celanese, shared the importance of managing organizational change (MOC) during uncertain times. Remote PHA (HIRA) and proper management of administrative controls were key focuses for panelist Rehan Baig, Bayer North America. Fred Henselwood, NOVA Chemicals, reminded us about past major incidents that were partially due to reduced staffing levels and cautioned us to keep our sense of vulnerability (Culture) during this time. David Cummings, DuPont, shared interesting insight regarding Tier 1 and 2 incident rate metrics that may appear to worsen due to reduced exposure hours. Elena Blardony, Repsol, offered insight into managing the staffing changes in a pandemic, while also seeing a decrease in demand for Oil and Gas. Sandro França, Braskem, discussed managing the Asset Integrity program using risk-based decision making. Vivek Bichave, Reliance Industries, Ltd., shared how his company engaged the workforce through increased communication and provided stress reduction resources to employees and their families. Martin Laycock, Celanese, shared how the pandemic has affected his company’s China locations and how they kept process safety focus at the forefront while continuing to remain vigilant to their crisis emergency management plan.

Host		Moderators	
			
<b>Anil Gokhale, P.E.</b> Director, CCPS Projects	<b>Jennifer Bitz, CCPS</b> CCPS Project Manager / Lead Engineer	<b>Ramesh Harrylal</b> VP Operations – National Gas Company of Trinidad & Tobago (NGC)	
Panelists			
			
<b>Jerry Forest</b> Celanese	<b>Rehan Baig</b> Bayer	<b>Fred Henselwood</b> NOVA Chemicals	<b>David Cummings</b> DuPont
			
<b>Elena Blardony</b> Repsol	<b>Sandro Franca</b> Braskem	<b>Vivek Bichave</b> RIL	<b>Martin Laycock</b> Celanese, China

## PANEL DISCUSSION – TSC MEETING MANAGING RISK AND CULTURE DURING COVID-19 AND AFTER – JUNE 20, 2020



**Lucas Ng**  
PCS



**Andrew Goddard**  
ARKEMA



**Mary Cosaro**  
Pluspetrol



**Karen Tancredi**  
Chevron



**Louisa Nara**  
CCPS

COVID-19 affects how we do business globally and has resulted in profound changes in how we interact, but some focuses did not change. Companies that focus on the conduct of operations and operational discipline have systems in place to move through this time of COVID a little easier. Louisa Nara moderated this discussion with panelists Lucas Ng, General Manager PCS, Andrew Goddard, Arkema, Mary Casaro, Pluspetrol, and Karen Tancredi, Chevron. Below is a synopsis of each presentation on how they manage Risk and Culture now and beyond COVID-19.

First, you must lead the crisis response. All functions need to be represented when a change occurs. It is at this time that process safety competency is essential. Ensure lines of command and who is in charge. Assign trainers for new and transitioning employees and anticipate organizational changes due to sick-leave and personal loss. Reassign those who must self-isolate to work remotely. Communication during this time is essential, as is maintaining a sense of vulnerability.

Continue with all required regulatory training, recognizing the limitations of remote training. Reschedule non-regulatory training activities, where possible, until face-to-face meetings are allowed. Share COVID related safety events and ensure employees understand the hazards and risks. Maintain HIRA schedules, conduct those studies remotely with the walk-through's postponed. Transition from a smaller face-to-face audit team to a larger audit team remotely, and use a more specific SME focus with the larger group. This may require a higher level of competency.

Consolidate sustainability as a value of the organization, and developing conscious and committed leadership, keeping in mind the importance of maintaining a sense of vulnerability. Understand and act according to hazards and risks and develop and empower employees with open and effective communications in an environment of mutual trust. Combat the normalization of deviations, promoting operational discipline in a learning environment, and don't forget contractors.

The positive aspects of sound management systems ensure repeatability and reliability. It is vital to keep them evergreen. Communication and transparency of your intentions help to build trust. This trust, along with training and competency, supports human performance at a high level. Maintaining Conduct of Operations and Operational Discipline is vital to get through the pandemic and for future recovery. Collaboration, teaming, and agility lead to creative solutions. If you manage deferrals, you can manage risks more effectively. Celebrate and focus on accomplishments when appropriate.

The way an organization behaves in challenging times will leave a lasting impression.



### 5<sup>TH</sup> ANNUAL CALGARY REGIONAL MEETING

This year's Calgary Regional Meeting, held virtually on September 10th, featured its highest number of attendees with over 100 people for the 5-hour meeting. Fred Henselwood of NOVA Chemicals moderated and Frank Verbeek of Aon co-moderated and hosted the meeting.

The meeting began with updates from CCPS, CIAC PSN, CSChE, and CSA Z767, followed by COVID-19 business updates and approaches from Parkland Refining and NOVA Chemicals, as well as a presentation on Energy Engineering and Business Interruption Risk in the Face of COVID-19 given by Aon. Afternoon events began with 3 segments from Aon, starting with an Introduction to PSM and Insurance, followed by Improving Process Safety Reporting from an Insurance Perspective and concluded with Industry Incidents and Losses. The meeting wrapped up by featuring three University of Alberta students who presented their research. This portion of the meeting is always a big highlight, as attendees hear from the best and brightest, and have a chance to learn about topics such as Artificial Intelligence, and how it can reduce incident rates in the oil and gas industry.



**Fred Henselwood**  
Nova Chemicals



**Frank Verbeek**  
Aon

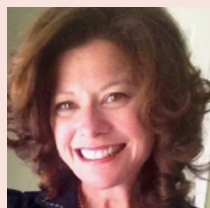


## NORTH AMERICAN VIRTUAL ROUNDTABLES

To continue member engagement during COVID-19, CCPS hosted two North American Regional Roundtables, hosted by Michele Horwitz, CCPS, Membership Manager and moderated by Louisa Nara, CCPS, Global Technical Director. The first event on October 15 entitled, ***"Making CCPS Resources Work for Your Company"*** featured topics such as providing an Overview of CCPS' Website, Networking, Member Engagement by using CCPS Programs, Products, and Services, Vision 20/20 Road-Mapping and Resources, and CCPS Tools. Speakers were CCPS' Jing Chen, Sr. Engineering Specialist; Cathy Pincus, ExxonMobil TSC Representative; Ken Tague, CCPS Emeritus Member; Bruce Vaughen, CCPS, Lead Process Safety Subject Matter Expert; and Louisa Nara.

The 2nd Roundtable, on October 28th, ***"Dealing with Aging Equipment and Fit for Purpose,"*** featured Louisa Nara as a moderator. Invited speakers were Brian Kelly, CCPS Emeritus and Fellow; Kathy Kas, Process Safety Expertise Leader at The Dow Chemical Company; Bruce Vaughen, CCPS, Lead Process Safety Subject Matter Expert; and Ken Tague, CCPS Emeritus Member. The two-hour meeting was highly engaging and featured the following topics:

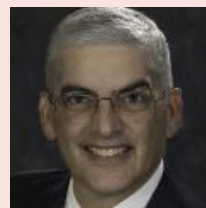
- **Dealing with Aging Facilities and Infrastructure** (Brian Kelly)
- **Approaches to Mechanical Integrity** (Risk-Based vs. Fixed Based) (Kathy Kas)
- **RAST Tool** – Reliability and Failure Frequency to Estimate Risk (Bruce Vaughen)
- **Member Experience** - Takeaways from Dealing with Aging Process Facilities and Infrastructure (Ken Tague)



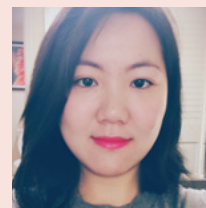
**Michele Horwitz**  
CCPS Membership  
Manager



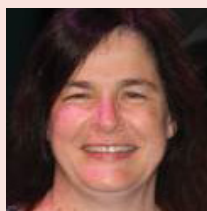
**Louisa Nara, CCPS**  
CCPS Global Technical  
Director



**Bruce Vaughen**  
CCPS Lead Process Safety  
Subject Matter Expert



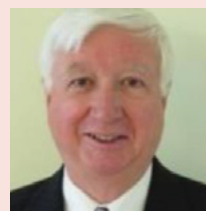
**Jing Chen**  
CCPS Senior  
Engineering Specialist



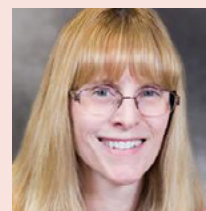
**Cathy Pincus**  
ExxonMobil Technical  
Steering Committee  
Representative



**Ken Tague**  
CCPS Emeritus



**Brian D. Kelly, P.Eng.**  
CCPS Emeritus /  
CCPS Fellow



**Kathy Kas, CCPS**  
Process Safety Fellow  
at The Dow  
Chemical Company

Roundtable Speakers



## LATIN AMERICA

### LATIN AMERICA VIRTUAL MEETING – MARCH 31, 2020

In response to COVID-19 and the postponement of the 16th GCPS, the Latin America region hosted a virtual meeting on March 31, 2020. There were 30 process safety engineering professionals in attendance, affiliated with 16 member companies and 14 nonmember companies.

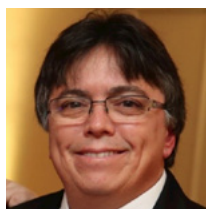
Topics discussed were:

- CCPS activities in Brazil, Colombia, and Argentina
- University student engagement for Process Safety in Brazil
- Latin American Conference on Process Safety

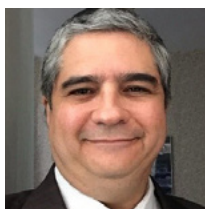
### CCPS VIRTUAL MEETINGS FOR LATIN AMERICA REGION

An average of 60 people from 20 organizations also met virtually on June 8 and July 8, 2020. CCPS Executive Director & CEO, Shakeel Kadri, attended the events alongside Latin America Regional Manager, Marvin Szoychen, and CCPS Global Technical Director, Louisa Nara. The attendees discussed process safety challenges in mining, biofuels, and metals operations.

A panel discussion titled “**Process Safety Management in Non-Chemical Industries**,” discussed specific challenges in Process Safety application in mining, steelmaking, agro, and the oil industries. Speakers representing these sectors in the Region were:



**Eduardo Francisco**  
Vale



**Eduardo Barbosa Almeida**  
USIMINAS



**Flavio Monteiro**  
Chevron



**Federico Hosenen**  
Cargill



**Enrique Campos-Sutter**  
Chevron

### JOINT REGIONAL WEBINARS

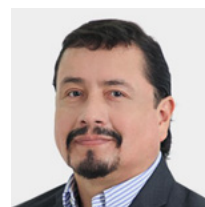
More than 60 people from 30 companies virtually attended three meetings on June 12, July 30 and October 9, 2020, which featured oil and gas, energy generation, and industrial manufacturing industries. Louisa Nara, CCPS Global Technical Director hosted the meetings; Marvin B. Szoychen, CCPS Latin America Regional Manager and Walter Sarmiento from WSI presented the webinars and responded to questions. During each webinar, companies discussed two different elements of Risk-Based Process Safety (RBPS), incident investigations, process safety culture, and asset integrity.



**Louisa Nara**  
CCPS



**Marvin B. Szoychen**  
CCPS



**Walter Sarmiento**  
WSI

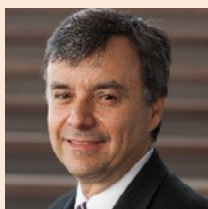


## LATIN AMERICAN VIRTUAL CONFERENCE ON PROCESS SAFETY

OCTOBER 28-29, 2020



CCPS organized the first Latin American Virtual Conference on Process Safety October 28 - 29, 2020, which attracted over 175 attendees. Topics included Process Safety Leadership, Lessons Learned, Human Factors, Outreach, and Remote Process Safety Management. Regional attendees at the meeting were from the chemical, agro, mining, steelmaking, and oil industries. The Conference had two session tracks, six keynote speakers, and a panel discussion.



**Marcelo Cerqueira**  
BRASKEM



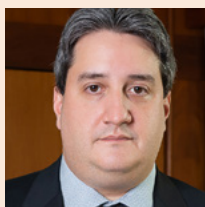
**Gustavo Correa**  
YPF



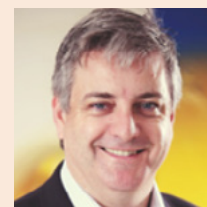
**Gilsa Monteiro**  
Petrobras



**Flaubert Machado**  
Petrobras



**Americo Ferreira**  
USIMINAS



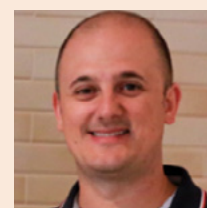
**Claudemir Peres**  
VALE



**Rodrigo Silveira**  
VALE



**Jan Hoenselaar**  
TATA Steel Europe



**Narciso Ruzzarin**  
BRASKEM

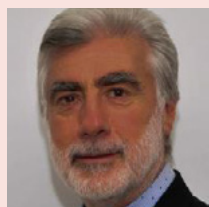
Keynote Speakers

Panel Discussion Speakers

## LATIN AMERICA REGIONAL VIRTUAL STUDENT BOOT CAMP (LASBC) – DECEMBER 5-6, 2020

This event sponsored by the AIChE Latin America Association Chapter (AIChE LATAM), provided an introduction to chemical engineering for students in the Latin America region. It showcased 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.

Held for the first time in the Latin America Region, this student boot camp opens the door for future events in upcoming years. In doing so, it will raise the awareness of Process Safety at the undergraduate level in the Region. Thirty-Six students participated, as well as four assisting Professors.



**Nestor Spósito**  
CCPS Staff Consultant



**David Herrick**  
CCPS Staff Consultant



**Louisa Nara, CCPSC**  
CCPS Global Technical  
Director

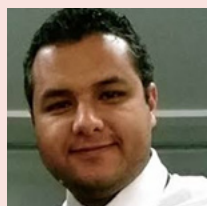


**Marvin B. Szoychen**  
America Regional  
Manager

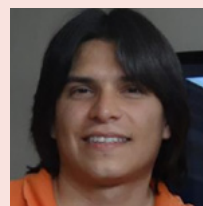
### Assisting Professors



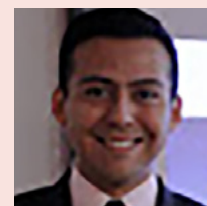
**Oscar Vladimir Ortiz**  
UNAH, Honduras



**Jeffrey Pulido**  
Universidad EAN,  
Colombia



**Gustavo Ramirez**  
UIS, Colombia



**Juan Sebastián  
Guerrero Pérez**  
Universidad del Valle  
Colombia

CCPS and AIChE LATAM looks forward to planning additional collaborations on projects in 2021.



## EUROPE

### 2020 CCPS EUROPE REGIONAL MEETING ON PROCESS SAFETY – MARCH 18, 2020

Due to COVID-19, the face-to-face meeting originally scheduled at the headquarters of Syngenta, in Basel, Switzerland was diverted to a 2 ½ hour virtual meeting. With the support of host, Nigel Atkinson from Syngenta, 4 speakers, Shakeel Kadri, CCPS Executive Director and CEO; and the European CCPS staff, an interesting and well-received meeting was attended by 30 people from both member and nonmember companies. Shakeel Kadri reported on CCPS 2019 events and upcoming global 2020 activities. CCPS member companies Syngenta, Celanese, TOTAL, and Yara gave presentations on process safety incident sharing and/or asset integrity.

## WEB-SEMINAR SERIES ON RBPS DURING COVID-19 AND SIMILAR DISRUPTIVE TIMES

The CCPS Europe web-seminar series started on May 18, 2020. It was created as a benefit for CCPS member companies to provide support during the COVID-19 pandemic with useful updates on COVID-19 related process safety topics. At the first event of this series, hosted by the CCPS Europe Regional Office and attended by 40 attendees, three presentations were given by speakers from Repsol, Arlanxco, and the CCPS Director of Projects Dr. Anil Gokhale, respectively.

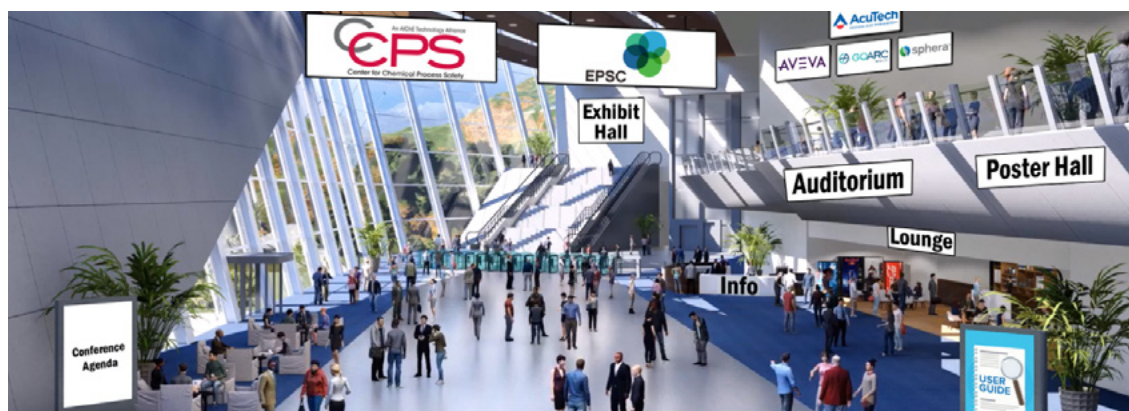
Additional web-seminars were conducted on June 22, July 20, September 21, November 16, 2020 and were attended by more than 100 participants in total. The events were supported by process safety experts from Ashland, BASF, Braskem, Covestro, DEKRA, DNV GL, DuPont, FMC, Ingenero, P&G, Tronox, and World Steel Organization.

## 2020 VIRTUAL EUROPEAN CONFERENCE ON PROCESS SAFETY AND BIG DATA

This first-time virtual event held October 13-14, and in its 5th year, included four keynote lectures, two panel discussions, and four sessions covering topics in the field of Big Data, which have the potential to improve process safety in the chemical process industry and related industries. The sessions covered topics in Big Data Analytics, Risk Assessment & Management, Predictive Maintenance, and Robotic & Emerging Technologies.

Among the highlights were a presentation by Dr. Katherine Lemos, CEO & Chair of the US CSB. She underscored the importance of knowledge derived from big data. Lloyd Colegrove, a retiree from Dow, talked about the digital transformation in the Chemical industry. He emphasized that in order to extract usefulness out of the big data, one must have a depth of context and subject matter (engineering, chemistry, etc.) expertise. Several other presentations had insights on Digital Twins, AI -Machine Learning & Predictive Maintenance, and Digitalization & Safety.

This event was co-organized by CCPS and the European Process Safety Center (EPSC). The organizers welcomed 22 presenting organizations and over 150 attendees from 100 companies around the globe.



vFairs Lobby for the 2020 Virtual European Conference on Process Safety and Big Data



vFairs Exhibit Hall for the 2020 Virtual European Conference on Process Safety and Big Data



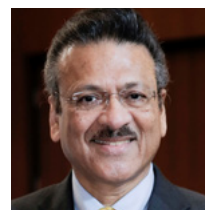


## AFRICA

### WEBINAR ON RISK MANAGEMENT IN THE TIME OF COVID-19 – JUNE 11, 2020

Aon and CCPS hosted their first-ever joint meeting in the South Africa Region with 80 attendees. The webinar took a look at lessons learned as well as best practices from both an insurance and process safety risk management perspective. The webinar covered HIRA (Hazard Identification and Risk Analysis), Workforce Involvement, Stakeholder Outreach, Asset Integrity and Reliability, Management of Change, Auditing, and Process Safety Culture.

The panel was hosted by CCPS Executive Director & CEO, Shakeel Kadri and Fabio Lupo, MD, Head of Energy Risk Engineering, Aon Global Risk Consulting.



**Shakeel Kadri**  
CCPS Executive Director  
& CEO



**Fabio Lupo, MD**  
Head of Energy Risk  
Engineering  
Aon Global Risk  
Consulting



**Jennifer Bitz, CCPSC**  
CCPS Project Manager /  
Lead Engineer



**Louisa Nara, CCPSC**  
CCPS Global Technical  
Director



**Anil Gokhale, P.E.**  
Director, CCPS Projects



**Neil Genders**  
Director and Team Leader,  
AON



**Emma Whitworth**  
Business Interruption  
Risk Engineer, AON



**Robert Colver**  
Risk Engineer, AON

Panelists



## ASIA PACIFIC & MIDDLE EAST

### CCPS MEMBER WORKSHOP

As a part of membership engagement, Umesh Dhake - CCPS Regional Manager, Asia-Pacific & Middle East Region facilitated a face-to-face workshop on January 7-8, 2020, at Bharat Oman Refinery Limited (BORL), Bina, India. The topics for the interactions were “Bow-ties in Risk Management” and the “RAST Tool”. The workshop was attended by 30 professionals from BORL.



### CCPS INDIA REGIONAL MEMBERS MEETING – FEBRUARY 6, 2020

On February 6, 2020, the Gas Authority of India Ltd. (GAIL) held a meeting at Jubilee Tower, Noida. A total of 84 participants from leading Oil & Gas sectors, chemical manufacturing, EPC contractors, academic institute and consultants i.e. GAIL, OISD, BORL, Reliance, HMEL, Tata Steel, Exida, DuPont, Fluor, Bechtel, L&T, BPCL, IIT, and others shared their experiences with participants.





1. Shakeel Kadri and Umesh Dhake visit Tata Steel in Jamshedpur, India, February 13, 2020
2. Shakeel Kadri and Umesh Dhake participate in the 2020 Middle East CCPS Technical Steering Committee Meeting in Bahrain
3. Shakeel Kadri presenting the keynote at the International Process Safety Conference, February 11-12 in New Delhi, India
4. Umesh Dhake represented CCPS at the India Bromine Association meeting on February 18, 2020, and presented on the CCPS Risk-Based Process Safety Management framework and CCPS Vision 20/20. Representatives from ten India Bromine Manufacturers attended the meeting



## REGIONAL MEMBER OUTREACH

### Virtual Meeting with Qatar Petroleum and Abu Dhabi National Oil Company (ADNOC) – June 2020

Shakeel Kadri – Executive Director & CEO, CCPS, hosted panel discussions with two CCPS member companies in the Middle East Region: Qatar Petroleum and ADNOC. CCPS panelists shared best practices for managing process safety programs during COVID-19. Umesh Dhake – CCPS Regional Manager, Asia-Pacific & Middle East Region, presented an overview of Risk-Based Process Safety as a basis for decision making during the pandemic. Panelist Jennifer Bitz – CCPS Project Manager / Process Safety Lead Engineer, presented key points for managing HIRA and Audits during the pandemic, including remote meeting options and staffing for safeguards and actions. Louisa Nara – CCPS Global Technical Director, discussed remote support for the Workforce of Management of Change, and the importance of Management of Organizational Change during a pandemic. Dr. Anil Gokhale – Director, CCPS Projects, provided insights into risk-based approaches for prioritization in Asset Integrity programs, and the importance of communication to maintain a good Process Safety Culture and a sense of vulnerability.

### Virtual Meeting with Tata Steel, India – April 2, 2020

On April 2, 2020, a 2-hour virtual engagement workshop was conducted with Tata Steel employees by Mr. Umesh Dhake - Regional Manager, Asia Pacific, and Middle East Region. The topic of the workshop was CCPS RAST (Risk Analysis Screening Tool). One hundred and fifty-five employees from various TATA Steel locations participated in the session. Following the session, Tata Steel TSC representative, Mr. Ramesh Kumar, stated in a written testimonial, “The workshop was very informative, the content was relevant and well presented. It gave us a chance to put RAST into practice for ongoing process safety activity at Tata Steel Ltd.” Tata Steel now wants to further explore and consider the RAST approach for hazard evaluations and risk assessments to improve process safety performance. Going forward, Tata Steel is looking for a similar workshop on various topics coming under the scope of CCPS.



**CCPS South East Asia Regional Members Meeting – May 13, 2020**

The CCPS South East Asia Regional Members Meeting was held virtually on May 13, 2020, jointly hosted by CCPS and Petronas, Malaysia, and attended by 41 representatives from 20 CCPS member companies in South East Asia (including Singapore, Malaysia, Japan, Thailand, Vietnam, and Australia). Presenters from Petronas, Petrochemical Corporation of Singapore (PCS), and Reliance Industries shared lessons learned as well as best practices in managing process safety during organizational changes (COVID-19).

Mr. Shakeel Kadri, CCPS Executive Director, and CEO presented an update of CCPS financials, new members, and new initiatives in 2020. Following, Ms. Louisa Nara, CCPS Global Technical Director explained 'The Importance of Global Regions in the Proposal / Planning Process' and Dr. Anil Gokhale, Director of Projects, presented on 'CCPS Life Cycle of Projects' and provided a CCPS Projects update. During the next session of experience sharing, M Bashir B. Ngah, GM, Process Safety from Petronas presented a case study on 'Shared Facilities Effective Barrier Management.' At the conclusion, he emphasized key learnings to ensure competency and subject matter expertise of personnel, who are involved in the assessment of shared facilities.

Mr. NG H Kiang Lucas, General Manager from PCSPCS, presented 'Managing Process Safety Risks during Organization Changes and OCM Tools (COVID-19),' and also acknowledged the CCPS Monograph *Risk-Based Process Safety during Disruptive Times* as very timely, relevant, and helpful during this challenging COVID-19 pandemic. He further appealed to all Process Safety practitioners to promote the CCPS Monograph.

Mr. Vivek Bichave shared best practices in 'Workforce Engagement and Safe Work Practices' at Reliance Industries during COVID-19. The use of digital platforms for health monitoring as well as engaging external yoga experts to ensure physical and mental fitness were some of the noteworthy initiatives. M. Nazri B. Jaafar, Manager, Process Safety from Petronas, shared his experience and insights on Managing Process Safety Risks during Organization Change and OCM Tools (COVID-19).

Mr. Shakeel Kadri, CCPS, thanked the presenters and participants on behalf of the CCPS team and appreciated the steadfast support by the South East Asia members to fulfill CCPS' vision and mission in process safety.



**HMC Polymers Process Safety Inspirational Leadership Sharing Session – May 14, 2020**

On May 14, 2020, an interactive session was organized for the leadership team of HMC Polymers on 'Process Safety Inspirational Leadership.' Shakeel Kadri, CCPS Executive Director, and CEO delivered the session. Ms. Kunthira Kheanprasit, Manager Process Safety, and Mr. Siridech Kumvongdee, President, HMC Polymers were also on hand.

Mr. Kadri presented the topic 'Driving Excellence through Process Safety Leadership.' His communication with the HMC Leadership team on Process Safety challenges included key topics such as, Managing Operational Risk, Risk Elevation Process, Importance of Senior Incident Review Board and Alignment of Leaders, and Goals with Front-Line Management. During the presentation, a video featuring interviews with renowned Global Leaders from the chemical industries was shown. It showcased their experiences and success stories with process safety to prevent incidents and improve process safety performance. Mr. Kadri sensitized the leadership team about the importance of top management's participation in process safety programs and encouraged leaders to share information, especially when it comes to lessons learned and incident sharing.

Mr. Siridech Kumvongdee acknowledged that the thoughts shared by Mr. Kadri provided the impetus to foster an open dialogue between HMC Polymers senior management and the team responsible for process safety matters.





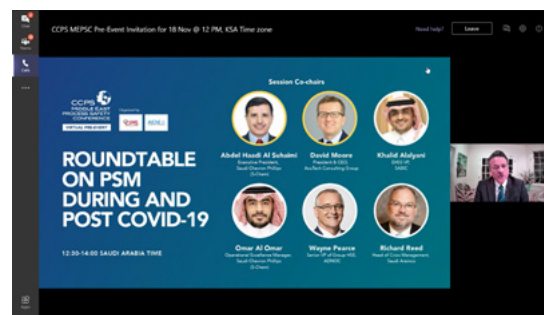
## CCPS INDIA REGIONAL MEMBERS MEETING

On September 22, 2020, CCPS held its India Regional Members Meeting [virtually]. The meeting, hosted by L&T Hydrocarbon Engineering Ltd., was attended by 140 process safety professionals from 35 companies across India. The primary goal of this meeting was to bring CCPS Member companies, academia, professors, and students together to discuss and share CCPS activities in the region, as well as share experiences by member companies on process safety related topics. The diverse and dynamic group of speakers provided in-depth insight, as well as actionable and practical tools on various process safety topics. Of significant importance during this meeting, CCPS and OISD (Oil Industry Safety Directorate, India) announced the signing of an MoU for responsible collaboration in the field of process safety.



## 3<sup>RD</sup> MIDDLE EAST PROCESS SAFETY VIRTUAL MINI-CONFERENCE – NOVEMBER 18, 2020

The Middle East Process Safety, 3rd Edition Virtual Mini-Conference concluded on a high note. Middle East operators, HSE leaders, academia, and chemical engineering students were among more than 200 process safety professionals who registered for this event from the MENA region. The 3.5 hour briefing had leaders and process safety technical experts get to the heart of finding alternative ways to manage process safety during COVID-19 and went as far as making these new practices the new normal of tomorrow.



The presentation topics were selected from over 100 abstracts, by speakers from different Middle East companies, who addressed best practices, shared their knowledge and rich experience with examples in the application of process safety practices from their companies. Presentation topics included; “Plant Safety Override Assessment” by Kuwait Oil Company, “Issues to be Considered during the Early Stage of HFE Screenings” by Ristec-TUV Rheinland, “Dust Explosion Prevention in Polymer Additive Areas” by S-Chem, “Overcoming Barriers to ORM Digital Twin Adoption - Knowing how to Articulate it for Business Case and Translate the Concept into Operational Practice” by Sphera, and “Process Safety Management Governance” by SIPCHEM.

One of the primary learning outcomes from the event was the affirmation that COVID-19 has brought extraordinary challenges to employees and Industry. As such, companies have been forced to develop a better understanding of the pandemic and find alternative ways to manage process safety during and beyond COVID-19. The conference provided an important springboard for initiating discussions on the development of process safety centered strategies across a range of operational environments in public and private sector companies. This CCPS-MEPSC Virtual Mini-Conference concluded with the announcement that the 3rd Process Safety Conference will take place in person from October 25-26, 2021 at the Sheraton Dammam Hotel & Convention Centre, Dammam, Kingdom of Saudi Arabia.

## IMPORTANT HIGHLIGHTS FROM THE AP/ME REGION

### Responsible Collaborations

#### Memorandums of Understanding (MoU) in 2020

- CCPS and the Jordanian Engineers Association (JEA) signed an MoU to provide a knowledge sharing platform for Jordanian industries, process safety professionals, and academia in the country.
- CCPS and the OISD (Oil Industry Safety Directorate, India) continued their MoU in 2020 to exchange experience and increase reach to the Oil & Gas Industry in India for process safety related matters
- CCPS and the National Institute of Chemical Safety (NICS), South Korea, continued its MoU to explore new opportunities to collaborate in the field of process safety in South Korea

#### Event Participation

Throughout the year, CCPS actively participated in many National and International forums in the Asia Pacific and Middle East region. These events were organized by leading Government and Private organizations that work in promoting awareness in the field of process safety. Through these efforts, CCPS successfully reached out to thousands of process safety professionals and shared initiatives taken up by AIChE-CCPS in the field of process safety. Following are some of the notable responsible collaborations done in 2020.

CCPS Representation in National/International Events					
<b>INPSC Conference</b>	<b>All India Bromine Manufacturers Association Meeting</b>	<b>Webinar on "Ensuring Safe and Reliable Operations Post Prolonged Lockdown."</b>	<b>Webinar on "Running or Restarting Chemical Facilities During or After COVID-19"</b>	<b>Webinar on "Operational Excellence through PSM"</b>	<b>Panel Discussions on "Process Safety: Challenges and Opportunities"</b>
India: 11-12 Feb	Topic - CCPS VISION 20-20 18 Feb	Indian Society of HSE Professionals (iHSE) 3 June	Co-organized with Indian Chemical Weekly 26 June	National Safety Council, Kerala Chapter, 15 July	Confederation of Indian Industry (CII), Virtual Panel Discussion, 29 August

Total Number of Professionals Reached through these Events  
**1,000**

#### Outreach Programs during COVID-19

To actively engage with member companies in the Asia Pacific Middle East Regions during COVID-19, CCPS conducted various virtual events, webinars, workshops with member companies across the region to share 'Learnings from Managing Process Safety during COVID-19.' More than 1,000 process safety professionals attended these virtual events during the COVID-19 period from March-December 2020.

##### Sponsored & Live Webinars

- Process Safety Webinars available to employees of Member company
- Region/Country specific support
- "How to access" Guide developed

##### Virtual Workshops

- CCPS Tools & Guidelines Explained
- Duration: 1 to 2-hours
- Interactive sessions
- Delivered by Umesh Dhake

##### CHEF/RAST Virtual Workshops

- 10 Recorded Sessions
- Duration: 2-hours/session
- Delivered by Ken Tague & Dr. Bruce Vaughn

Number of Professionals from CCPS Member Companies that Attended Virtual Workshops  
**1,000**



## CHINA

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 SECTION ACTIVITIES AT A GLANCE

#### Translation Activities

- *Process Safety Metrics: Guide for Selecting Leading and Lagging*
- *RAST User Manual*
- *Monograph: RBPS During COVID-19 & Similar Disruptive Times*
- *Be Smart: Safe Restart*
- *Guidelines for Inherently Safer Chemical Processes – A Life Cycle Approach, 3rd Edition*



#### Books translation to Chinese in Progress

- *Guidelines for Siting and Layout of Facilities, 2nd Edition*
- *Introduction to Process Safety for Undergraduates and Engineers*

### VIRTUAL CHINA REGIONAL TECHNICAL STEERING COMMITTEE MEETING

A virtual China Regional TSC meeting was conducted in May of 2020 and addressed the following hot topics:

- CCPS Conference and Regional Projects Status Update – CCPS China Section Leads
- Coronavirus Impact & Challenges – CCPS member companies
- Chemical Reactivity Worksheet Demonstration by CCPS China TSC Chair, Malcolm Pu



# 2021 Meetings, Destinations and Global Offices

## NORTH AMERICA

### VIRTUAL MEETINGS

- **DIERS Spring Meeting**  
March 10-12, 2021
- **Advisory Board Meeting**  
March 24, 2021  
8:30am-11:30am EST
- **17th Global Congress on Process Safety**  
April 18 - 23, 2021
- **CCPS Technical Steering Committee Meeting**  
April 28, 2021
- **TSC Planning Committee Meeting**  
June 10-11, 2021
- **Advisory Board Meeting**  
June 30, 2021  
8:30am-11:30am EST
- **Advisory Board Meeting**  
October 6, 2021  
8:30am-11:30am EST

### HOUSTON

- **Offshore Technology Conference**  
August 16-19, 2021

### CALGARY, CANADA

- **6th Annual Canadian Regional Technical Steering Committee Meeting**  
September 9, 2021

### SUGAR LAND, TX

- **Fall Technical Steering Committee Meeting**  
November 10-11, 2021
- **TSC Planning Committee Meeting**  
November 12, 2021

### HOUSTON, TX

- **DIERS Fall Meeting**  
Date TBD

## EUROPE

- **6th European Virtual Regional Technical Steering Committee Meeting**  
March 10, 2021
- **European Regional Meeting**  
September 15-16, 2021  
Location TBD

### FRANKFURT, GERMANY

- **6th Europe Process Safety and Big Data Conference**  
October 13-14, 2021

## SOUTH AMERICA

### REGIONAL TECHNICAL STEERING COMMITTEE MEETINGS

Meeting dates to be determined for:

- March 2021
- June 2021
- August 2021
- November 2021

### RIO DE JANEIRO, BRAZIL

- **9th Latin America Conference on Process Safety (LACPS)**  
November 17-18, 2021

## GLOBAL TECHNICAL STEERING COMMITTEE WEB CONFERENCES

- February 17, 2021
- July 1, 2021
- September 15, 2021

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



## INDIA AND MIDDLE EAST

### VIRTUAL MEETINGS

- **CCPS India Virtual Regional Meeting**  
February 2, 2021  
*Hosted by Chola MS Risk Services*  
(1st Meeting of 2021)

### INDIA

- **CCPS India Regional Member Meeting**  
September 23, 2021  
(2nd Meeting of 2021)

### DAMMAM, SAUDI ARABIA

- **3rd Middle East Process Safety Conference**  
October 25-26, 2021

### MUMBAI, MAHARASHTRA, INDIA

- **6th Global Summit on Process Safety**  
December 15-16, 2021

## ASIA

- **CCPS Southeast Asia Regional Virtual Meeting**  
March 2, 2021

### PERTH, AUSTRALIA

- **Australia Regional Meeting**  
Date TBD - 2nd Quarter 2021

### QINGDAO, CHINA

- **8th CCPS China Conference on Process Safety**  
End of September/Early October 2021  
(Dates TBD)
- **6th CCPS China Regional Technical Steering Committee Face to Face Meeting**  
End of September/Early October 2021  
(Dates TBD)

## CCPS OFFICES

- New York, NY
- Houston, TX
- Frankfurt, Germany
- Mumbai, India
- Qingdao, China

Please note that any meeting that is designated with a face-to-face location in 2021, can be changed to Virtual if deemed unsafe to meet due to COVID-19. Please keep up to date with all events at [aiche.org/ccps/conferences-events](https://www.aiche.org/ccps/conferences-events).

Look for upcoming events on our website —  
[aiche.org/ccps](https://www.aiche.org/ccps)

# 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 a 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.

## 2021 CCPS MANAGING BOARD

**June Wispelway**  
*AIChE Executive Director & CEO (Chair)*

**Rick Cain**  
*AIChE, Chief Financial Officer*

**Shakeel Kadri**  
*CCPS Executive Director & CEO*

**Deborah L. Grubbe**  
*AIChE President*

**Christine Grant**  
*AIChE President-Elect*

**Monty Alger**  
*AIChE Past President*

**Ana Davis**  
*AIChE Director*

**Pete Lodal**  
*AIChE Director*

**Elsa Reichmanis**  
*AIChE Director*

**Joseph Smith**  
*AIChE Secretary*

**Wendy Young**  
*AIChE Treasurer*

**Sincere gratitude to the outgoing 2020 Managing Board Members**

**Lori McDowell**  
*AIChE Director*

**Kim Ogden**  
*AIChE Past President*

**Rose Wesson**  
*AIChE Treasurer*



## ADVISORY BOARD

**Shakeel Kadri**

CCPS  
(Chair)

**Khaled KAA Alalyani**  
SABIC

**Bob Bahr**  
ExxonMobil

**Beth Ballard**  
Ecolab

**Garry Bryan**  
Bayer

**Michelle Caveness**  
Eastman Chemical

**Yong Sai Chung**  
PETRONAS

**Ana Davis**  
Syngenta Corporation

**Rob DiValerio**  
BP Corp

**Dave Greganti**  
DOW

**Karen Koster**  
Honeywell

**Perry W. Logan**  
3M

**Anne O'Neal**  
Chevron

**Senyo Opong**  
DuPont Company

**Mark Patterson**  
BASF

**Richard Pawulski**  
Air Liquide

**Kuddallur Seshadri**  
Reliance Industries, Ltd.

**Mike Snyder**

DEKRA Insight

**June Wispelwey**  
AIChE

**John Wnek**  
Evonik Corporation

**Masahiro Yoshizumi**  
Mitsubishi Chemical  
Company

**Sincere gratitude to the  
outgoing 2020 Advisory  
Board Members**

**Al Cusson, IV**  
Air Liquide

**Derek A. Fairclough**  
BASF

**Abdullah A. Ghamdi**  
Saudi Aramco

**Cheryl Kennedy**  
DuPont Company

**Cari Parker**  
Eastman Chemical

**Keith Silverman**  
Ashland

**Prasad Tipnis**  
Reliance Industries, Ltd.

**Kristie Williams**  
Ecolab

## PROJECT PLANNING COMMITTEE

**Fred Henselwood**

NOVA Chemicals  
(Chair)

**Chris Aiken**  
Cargill  
(1<sup>st</sup> Vice Chair)

**Jerry Forest**  
Celanese Chemicals  
(2<sup>nd</sup> Vice Chair)

**Abdul Aldeep**  
Siemens

**Steve Arendt**  
Emeritus

**Todd Aukerman**  
LanXess Corporation

**Vivek Bichave**  
Reliance Industries, Ltd.

**Gustavo Correa**  
YPF

**Tony Downes**  
Honeywell

**Eric Freiburger**  
Linde plc

**Anil Gokhale**  
CCPS

**Cheryl Grounds**  
Emeritus

**Greg Horton**

SABIC

**Shakeel Kadri**  
CCPS

**Gregg Kiihne**  
BASF

**Pete Lodai**  
Emeritus

**Jack McCavit**  
Emeritus

**Louisa A. Nara**  
CCPS

**Cathy Pincus**  
ExxonMobil

**Jatin Shah**  
BakerRisk

**Karen Tancredi**  
Chevron Corporation

**Scott Wallace**  
Olin Corporation

**John Wincek**  
Dekra Insight



# Projects and Volunteers

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

**Anne O'Neal, Chair**  
Chevron Corporation

**Ken Tague**  
CCPS Staff Consultant

**Denise Albrecht**  
3M

**Steve Arendt**  
Emeritus

**Todd Aukerman**  
LanXess Corporation

**Eline Beulens**  
Cargill

**Vivek Bichave**  
Reliance Industries, Ltd.

**Michelle Bryner**  
AIChE

**Jing Chen**  
CCPS

**David Cummings**  
DuPont

**Umesh Dhake**  
CCPS

**Jeffrey L. Fox**  
Emeritus

**Anil Gokhale**  
CCPS

**Leonard Gomes**  
Cheniere

**Cheryl Grounds**  
Emeritus

**Fred Henselwood**  
NOVA Chemicals

**Greg Horton**  
SABIC

**Gregg Kiihne**  
BASF

**Peter N. Lodai**  
Emeritus

**Jack McCavit**  
Emeritus

**Jennifer Mize**  
Eastman Chemical Company

**Louisa A. Nara**  
CCPS

**Myles Peterson**  
SI Group

**Cathy Pincus**  
ExxonMobil

**Caitlin Prigge**  
3M

**Ellen Ross**  
Chevron Corporation

**Samantha Scruggs**  
BP Corp

**Kathy Shell**  
aeSolutions

**Karen Tancredi**  
Chevron Corporation

**Scott Wallace**  
Olin Corporation

## PROJECT 251: PROCESS SAFETY IN PILOT PLANTS AND LABORATORIES

**Katherine M. Anderson, Co-Chair**  
ioMosaic Corporation

**Monica R. Stiglich, Co-Chair**  
3M, Retired

**David Herrick**  
CCPS Staff Consultant

**Jerry Jones**  
CCPS Staff Consultant

**Jennifer Bitz**  
CCPS

**Bruce Bullough**  
Corden Pharma Colorado

**David Caspary**  
Michigan Technological University, Retired

**Michael T. Cleary**  
DuPont

**Khateeta M. Emerson**  
Merck & Company, Inc.

**William Flemming**  
Bristol Meyers Squibb, Retired

**Jeffrey Foisel**  
Dow Corning

**Jeffrey A. Grant**  
Albemarle Corporation

**Jeffrey Hedges**  
Chevron Corporation

**Randy Keller**  
The Dow Chemical Company, Retired

**Paul McAllister**  
Shell Projects & Technology

**Andrew Minister**  
DOE - Pacific Northwest National Laboratory, Retired

**Kabier Moideenkutty**  
Abu Dhabi Oil Refining Company (TAKREER)

**Richard Palluzi**  
ExxonMobil, Retired

**Christian Rauchegger**  
Linde Engineering North America Inc.

**Sebastien Righini**  
Solvay

**Amy E. Theis**  
Dekra Insight

**Ronald J. Willey**  
Northeastern University

**Joel B. Young**  
BASF

## PROJECT 270: PROCESS SAFETY IN UPSTREAM: OIL AND GAS

**Jean Bruney, Chair**  
Chevron Corporation

**Eric Freiburger, Co-Chair**  
Linde plc

**Cheryl Grounds**  
CCPS Staff Consultant

**Steve Arendt**  
Emeritus

**Michael Broadribb**  
BakerRisk

**Christopher S. Buehler**  
Exponent, Inc.

**Rajender Dahiya**  
AIG

**Anil Gokhale**  
CCPS

**Kevin He**  
Shell

**David R. Mohler**  
Delek

**Carolina Morales**  
Ecopetrol

**Jason W. Nicholls**  
XTO Energy

**Kevin D. Watson**  
Chevron Corporation

**Tracy Whipple**  
BP Corp

## PROJECT 270 MEMBERS FROM THE SPE

**Charlie Williams, Co-Chair**  
Center for Offshore Safety

**John Gidley**  
Atwood Oceanics, Retired

**Brad Smolen**  
BP Corp

**Terrance Sookdeo**  
Baker Hughes, Inc.

**Rebekah Stacha**  
Society of Petroleum Engineers

## PROJECT 275: GUIDELINES FOR PROCESS SAFETY DURING THE TRANSIENT OPERATING MODE - MANAGING RISKS DURING PROCESS START-UPS AND SHUT-DOWNS

**Theresa Broussard, Chair**  
Chevron Corporation

**Daniel Sliva**  
CCPS Staff Consultant

**Susan Bayley**  
Linde Engineering

**Donald Conolley**  
AcuTech

**Eddie Dalton**  
BASF

**Reyyan Koc Karaboccek**  
ExxonMobil

**Pamela Nelson**  
ioMosaic Corporation

**Jitesh Patel**  
New Jersey DEP

**Scott Schiller**  
BakerRisk

**Sandeep Vipra**  
Reliance Industries, Ltd.

**Elliot Wolf**  
The Chemours Company

## PROJECT 276: GUIDELINES/ ESSENTIALS OF SAFE WORK PRACTICES

**Vivek Bichave, Chair**  
Reliance Industries, Ltd.

**Brian Farrell**  
CCPS Staff Consultant

**Katherine M. Anderson**  
ioMosaic Corporation

**Jonas Duarte**  
LanXess Corporation

**Sarah Eck**  
Dekra Insight

**Pamela Feldman**  
Chevron Corporation

**Anil Gokhale**  
CCPS

**Kevin He**  
Shell

**Julio Jeronimo**  
Petrobras

**Jerry Keezer**  
Bostik

**Gregg Kiihne**  
BASF

**Steve Lindemann**  
Mallinckrodt Pharmaceuticals

**Jitesh Patel**  
New Jersey DEP

**Robert J. Weber**  
PSRG, Inc.

**Daniel Wilczynski**  
Marathon Petroleum Company

## PROJECT 281: HUMAN PERFORMANCE FOR PROCESS SAFETY PROFESSIONALS

**Chris Aiken, Chair**  
Cargill

**Eric Freiburger, Vice Chair**  
Linde plc

**Charles Cowley**  
CCPS Staff Consultant

**Sandra Adkins**  
BP Corp

**Mayara Carbono**  
SBM Offshore

**Carlos Carvalho**  
Petrobras

**Erin Collins**  
Jensen Hughes

**Ruskin Damani**  
Reliance Industries, Ltd.

**Gretel D'Amico**  
Pluspetrol

**Joseph Deeb**  
ExxonMobil

**Alexandre Glitz**  
Emeritus

**Cheryl Grounds**  
Emeritus

**Anil Gokhale**  
CCPS

**Jeff Hazle**  
Marathon Petroleum Company

**Gregg Kiihne**  
BASF

**Caroline Morais**  
ANP (Brazil Petroleum Regulator)

**Andrew Moulder**  
Inter Pipeline

**Louisa A. Nara**  
CCPS

**Christa Pennino**  
CCPS

**Meg Reese**  
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**Scott Wallace**  
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## PROJECT 283: GUIDELINES FOR THE REVALIDATION OF PHAs, 2ND ED

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## PROJECT 289: GOLDEN RULES OF PROCESS SAFETY FOR SPECIFIC TECHNOLOGIES

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3M

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**Jatin Shah**  
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## PROJECT 291: GUIDELINES FOR MANAGEMENT OF ABNORMAL SITUATIONS

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**SP Garg**  
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**Stephen Greco**  
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**April Lovingood**  
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**Marcus Miller**  
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**Louisa A. Nara**  
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**Assem Saleh**  
Petro Rabigh



**Nicholas Sands**  
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**Bryant Sartor**  
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**Bruce Spencer III**  
SABIC

**Todd Stauffer**  
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**Stephanie Wardle**  
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### PROJECT 292: LESSONS LEARNED YEARS LATER

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**Elliot Wolf**  
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### PROJECT 293: GUIDELINES FOR PROCESS KNOWLEDGE MANAGEMENT

**Michelle Brown, Chair**  
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**Jerry Yuan**  
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### PROJECT 294: MANAGING CYBERSECURITY – A RISK BASED APPROACH BUILDING ON THE PROCESS SAFETY FRAMEWORK

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DuPont, Retired

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**Felix Azenwi Fru**  
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**Anil Gokhale**  
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**David Thaman**  
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### PROJECT 299: INTRODUCTION TO PROCESS SAFETY FOR UNDERGRADUATES, 2ND ED.

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CCPS Staff Consultant

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**Ken First**  
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**Robin Pitblado**  
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**Bala Raman**  
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**Jonathan Slater**  
3M

**Bruce Vaughan**  
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### PROJECT 300: BOOK OF BEACON

**John Herber, Chair**  
Emeritus

**Rüdiger Lenz, Vice Chair**  
Celanese, Retired

**Dennis Hendershot**  
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**Jing Chen**  
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**Vishal Chavan**  
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**Elroy Marcelino Christie**  
SABIC

**Jeffrey L. Fox**  
Emeritus

**Anil Gokhale**  
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**Marc Levin**  
Washington State University

**Peter N. Lodal**  
Emeritus

**Louisa A. Nara**  
CCPS

**Albert Ness**  
Emeritus

**Nicholas Sands**  
DuPont

**Sara Saxena**  
BP Corp

**Jatin Shah**  
BakerRisk



## Programs 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

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Emeritus

**Rüdiger Lenz, Co-Chair**  
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**Jing Chen**  
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**Don Abrahamson**  
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**Christopher Devlin**  
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**Jatin Shah**  
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BP

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**John C. Wincek**  
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**Jan Windhorst**  
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### 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**  
Sinopec Yangzi Petrochemical Company Ltd

**Yifei Meng**  
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**Jing Li**  
Arlanxco High Performance Elastomers (Changzhou Co., Ltd)

**Ning Li**  
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**Ning Liu**  
Shanghai Aviation Industrial (Group) Co., Ltd

**Yi Liu**  
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**Yangli Zhang**  
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**Yichen Zhang**  
Fuyuan Industrial & Commercial Development Co., Ltd (Gulei Branch)

**Xiaoming Zeng**  
DEKRA Insight (Shanghai)

### PROJECT 260: TRANSLATION OF CCPS BOOKS INTO SPANISH

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YPF

**Laura Turci, Co-Chair**  
Ashland

**Nestor Spósito**  
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**Gretel D'Amico**  
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**Luis Andres Landa**  
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**Heber Varela**  
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**Sergio Leandro Vilches**  
Pluspetrol

**Josefina Yañez**  
Técnicas Reunidas

#### PROJECT 261: TRANSLATION OF CCPS BOOKS INTO PORTUGUESE

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**Marcal Leite**  
Fuzzy Engenharia

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**Paula Onishi**  
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**Gustavo Peron**  
Cargill

**Sergio Silva**  
Petrobras

**Limberg Estremadoiro Suárez**  
ADM Nutrition América do Sul

**Renato Tupimanbá**  
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#### PROJECT 274: CCPS PROCESS SAFETY CERTIFICATION (CCPSC)

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Emeritus

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CCPS Staff Consultant

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CCPS

**Denise Chastain-Knight**  
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**Walt Frank**  
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**Jennifer Mize**  
Eastman Chemical Company

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#### PROJECT 297: PROCESS SAFETY TRAINING FOR EARLY CAREER PROFESSIONALS

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**Vera Javier**  
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**Nancy J. Ko**  
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**Amorette Kwan**  
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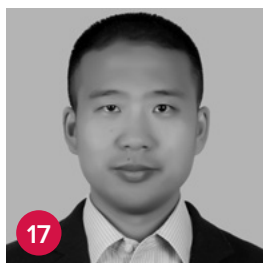
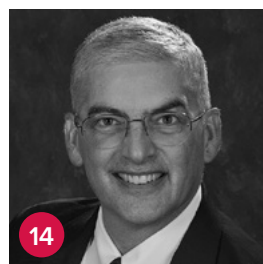
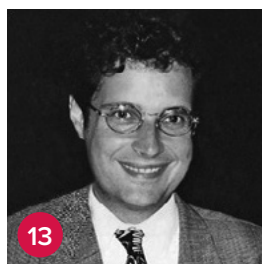
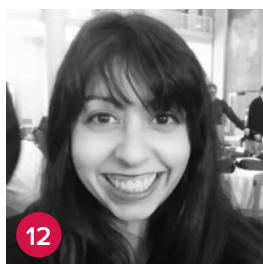
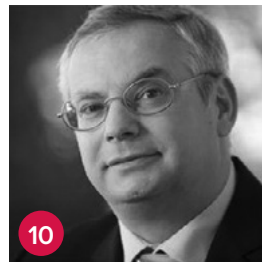
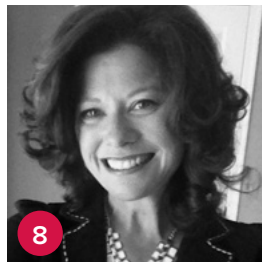
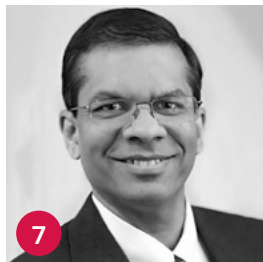
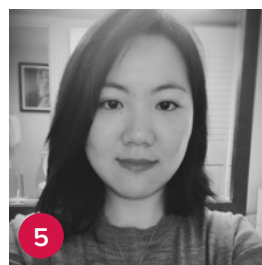
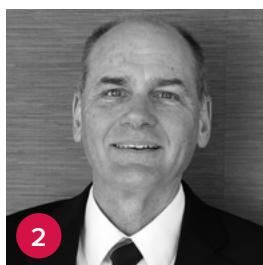
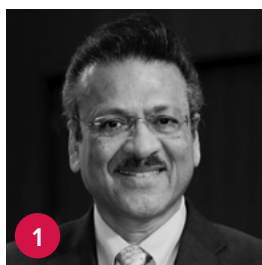
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**Greg VanOmmeren**  
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# CCPS Staff



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5. **Jing Chen**  
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16. **Dr. Yi Liu**  
Assistant Director, CCPS China Section
17. **Yifei Meng**  
Assistant Director, CCPS China Section

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Victor Edwards



James K. Farr



Brian Farrell



Ken First



Walt Frank



Alexandre Glitz



Warren Greenfield



Cheryl Grounds



Daniel E. Sliva

*Daniel "Dan" E. Sliva, 77, passed away on June 3, 2020. Dan earned his degree at RPI, obtaining both a B.S. and a Ph.D. in Chemical Engineering. Dan retired after a thirty year career in management at General Electric and spent the last 20 years facilitating the writing of books on chemical process safety as a Fellow for the Center for Chemical Process Safety.*

*Thanks Dan. We will miss you. RIP*



Dennis Hendershot



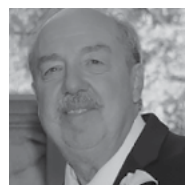
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David Herrick



David Hill



Greg Hounsell



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Pete Lodal



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Dan Miller



John Murphy



Albert Ness



Frank Renshaw



Bob Rosen



Nestor Spósito



Byron Sun



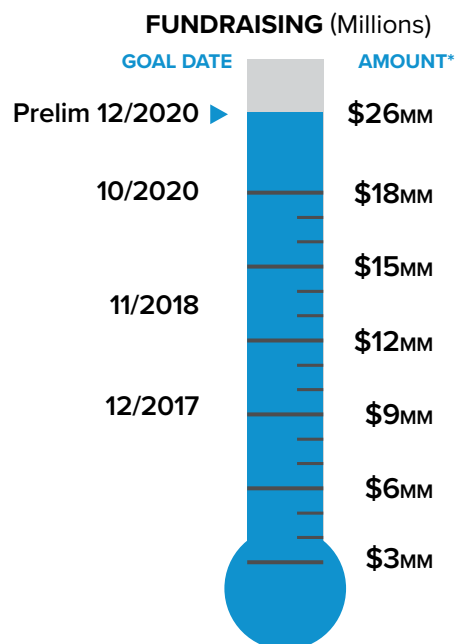
Ken Tague



Jenny Wang

# Updates and Impact

## Where We Are Today



**507**

**UNIVERSITIES PARTICIPATING**  
IN UNDERGRADUATE PROCESS SAFETY  
LEARNING INITIATIVE CURRICULUM

**171,040+**

**SAFETY CERTIFICATES AWARDED TO**  
STUDENTS WORLDWIDE

**622**

**NEW FACULTY MEMBERS**  
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To learn more, visit  
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Stepan Company  
Syngenta  
Teneo Strategy LLC  
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AC&S Inc.	Cheniere	Gulf Petrochemical Industries Co.	Occidental Chemical Corporation	Solano County
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Amgen	CPKelco	Inter Pipeline	Petro Rabigh	The Bahrain Petroleum Company (BAPCO)
Amplify	Croda	Iomosaic Corporation	Phillips 66	The Chemours Company
Aon Energy Risk Engineering	DASIS Corp	IRES Inc.	Phoenix Park Gas Processors Ltd.	The Dow Chemical Company
Aperam Inox America Do Sul SA	Deccan Fine Chemicals (I) PVT. Ltd.	Jay Chemicals	Pluspetrol S.A.	The Lubrizol Corporation
Archer Daniels Midland	Dexco Polymers LP	Jensen Hughes	Point Lisas Nitrogen Limited	The Mosaic Company
Arkema Inc.	DNV GL	Johnson & Johnson	PPG	The National Gas Company of Trinidad and Tobago Ltd.
Arlanx	DuPont	Jordan Engineers Association	Procesadora De Gas Parinas	Total
ARPEL	Dyno Nobel	KBR Energy and Chemicals	Process Improvement Institute, Inc.	TPC
Ascend Performance Materials	Eastman Chemical Company	King Industries Inc.	Procter & Gamble	Trans-Northern Pipelines, Inc.
Ash Stevens	Ecolab	Koch Industries	PSRG Inc.	Trinseo
Ashland	Ecopetrol	Kraton Corporation	Qatar Petroleum	Tronox
Baker Hughes, Inc.	Elanco Animal Health	Kuraray America Inc.	Reliance Industries Ltd.	TÜV Rheinland (Shanghai) Co., Ltd.
BakerRisk	Eli Lilly and Company	Kuwait Oil Company	REPSOL	TÜV Rheinland (Taiwan) Co., Ltd.
BASF Corporation	Emerson Automation Solutions	L&T Hydrocarbon Engineering Limited	Resolver Consultoria	Unwin Company
Bayer Corporation	Eneos	LanXess	Rhodes Technologies	US EPA / OEM
Bazan Group	Engro Polymer and Chemical Ltd MS	Linde plc	Rio Tinto	Usiminas
Beijing Strong Information System Co., Ltd.	Engro Powergen	LiquidPower Specialty Products	Risk Alive Analytics	Vale, Brazil
Berkshire Hathaway Specialty Insurance	Equate Petrochemical Company	Lumms Technology	SABIC	Vertellus Specialties Inc.
Bharat Oman Refineries Ltd.	essencia	LyondellBasell	Sadara Chemical Co.	W. R. Grace and Company
BHP Billiton Petroleum	Evonik Corporation	Mallinckrodt	Sahara International Petrochemical Co. (SipChem)	Wanhua Chemical Group Co., Ltd.
Binh Son Refining and Petrochemical Co., Ltd. (BSR)	Exida	Map Ta Phut Tank Terminal	Sajjan India Limited	Wesfarmers Chemicals Energy and Fertilisers
BP Corp North America	Exponent Inc	Massy Energy Engineered Solutions	Saudi Aramco Oil Company	Western Midstream
Braskem	ExxonMobil Chemical Co.	Merck & Co., Inc.	Saudi Aramco Total Refining & Petrochemical (SATORP)	World Steel Association
Bright Calcs LLC	Fauske and Associates LLC	Michelman, Inc.	Saudi International Petrochemical Co.	WSI Ingeneria
Buckeye Partners, LP	Fluor Corporation	Mistras Group, Inc.	Scientific Protein Labs	Yashashvi Rasayan Pvt. Ltd.
Buckman North America	FM Global	Mitsubishi Chemical Corporation	Shell	YPF - Yacimientos Petroliferos Fiscales
Burns and McDonnell	FMC Corporation	National Grid	Shenyang Research Institute of Chemical Industry Co., Ltd.	
Calumet Specialty Products Partners, L.P.	Formosa Plastics Corporation	New Jersey Dept of Environmental Protection		
CAMBREX	Future Fuel Chemical Company	Newcrest Mining Limited		
		Nghi Son Refinery and Petrochemical LLC		