



2017 Annual Report

EXPANDING GLOBAL AND REGIONAL ENGAGEMENT

The CCPS Story

Just after midnight on December 3, 1984, water contamination of a methyl isocyanate tank 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 incidents. On March 23, 1985, AIChE formed the Center for Chemical Process Safety; CCPS completed *Guidelines for Hazard Evaluation Procedures* a short time later.

As we enter into 2017, we pause to reflect on the progress we've made and recommit ourselves to Vision 20/20, the future of process safety.

Key milestones have included:

- CCPS Global Conference on Process Safety (Houston, Texas, USA)
- CCPS Global Summit on Process Safety (Dammam, KSA)
- Regional Technical Steering Committee Meetings in China, Peru, Germany, India and Brazil
- Expanded Global Outreach through training, speaking and working with partner organizations
- Enhanced Responsible Collaboration (CSB, OSHA, EPA, SOCMA, SPE, EI, ACS, UEF, API and others)
- CCPS Process Safety Beacon celebrated 15 years of continuous publication (180 issues)
- Reactive Chemistry Worksheet 4.0 created; home transferred from NOAA to CCPS website
- Electronic app for CCPS Glossary published
- Full program for CCPS Credentialing launched
- Five CCPS books published in the guidelines and concept series
- Outreach to students and professors improved through Boot Camp and SACHE

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 roadmap. Come join the Global Community Committed to Process Safety—be ready for the future by working to create it.

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Executive Director's Message



Shakeel Kadri
CCPS Executive Director

Traveling around the world and meeting CCPS members, potential members and key stakeholders, we're heartened by the ways in which CCPS's message and influence continue to grow. During the past year, we had the pleasure of meeting with many of you, and we are so thankful for your engagement and support. One message received loud and clear is that CCPS needs to accelerate its global engagement. I would like to take this opportunity to recap our progress in this area.

The 12th Global Congress in Houston brought nearly 1000 diverse participants together to exchange best practices from many corners of the globe. The 4th China Conference, with nearly 300 delegates, was held in Qingdao in collaboration with China University of Petroleum/CCPS China Section. The 7th Latin America Process Safety Conference was held in Lima, Peru, with about 200 professionals from 60 companies. The 1st CCPS Conference on Process Safety and Big Data, in partnership with the European Process Safety Center, took place in Frankfurt, Germany, with more than 100 delegates from 62 companies enthusiastically exploring the power of big data analytics to improve process safety effectiveness. Last, we ended 2016 with the 3rd Global Summit on Process Safety, in Dammam, Kingdom of Saudi Arabia. With nearly 500 delegates, the conference highlighted the implementation of CCPS Vision 20/20. We held regional Technical Steering Committee (TSC) meetings in key regions, in addition to our usual face-to-face TSCs in the US.

CCPS saw good growth in global membership this year, welcoming 26 new members while unfortunately losing a few. We understand that lower oil prices have created economic challenges for several of our members,

and therefore we have closely monitored market conditions and worked to assist CCPS Members facing those financial hurdles.

In 2016, CCPS made important progress on two key initiatives: Undergraduate Process Safety Education and Process Safety Professional Certification. The Undergraduate Process Safety Education Initiative will deliver 10 new interactive SACHÉ modules, with five new modules already translated into Spanish. We trained 92 educators in four faculty workshops hosted by Dow, ADM, Cargill and Chevron. Ninety-five knowledge-thirsty students attended three Process Safety Student Boot Camps as well. The CCPS Credentialing team launched the CCPS Process Safety Professional Certification program [CCPSC] this past spring. We completed two certification exam cycles, resulting in 92 CCPSC certificants.

Our journey toward CCPS Vision 20/20 continues, with a special emphasis this year on "responsible collaboration." The Energy Institute and the Society of Petroleum Engineers joined us in new projects. We, in turn, supported the Synthetic Organic Chemical Manufacturing Association in responding to its members' process safety needs. And our working relationship with the US Chemical Safety Board has become deeper and stronger than it has been in years.

On behalf of CCPS, I want to thank our 196 member companies for continuing to work together, tirelessly, to pursue our shared vision: protecting people, property and the environment by bringing the best process safety knowledge and practices to stakeholders around the world. Through collective wisdom, tools, training and expertise, we are sure to reach that goal.

Vision 20/20

By the year 2020, leaders in process safety will value and demonstrate actionable commitment to the Vision 20/20 tenets that prevent, minimize and mitigate process safety incidents. Vision 20/20, developed by the Center for Chemical Process Safety (CCPS), looks into the not-too-distant future to demonstrate what great process safety will look like when it is championed by industry and driven by the Vision's five tenets and four global societal themes.

Five Tenets for Industry

At the heart of Vision 20/20 is adherence to five core principles that will help industry target and drive performance improvement and achieve process safety excellence:

- Committed Culture
- Vibrant Management Systems
- Disciplined Adherence to Standards
- Intentional Competency Development
- Enhanced Application of Lessons Learned

Four Societal Themes

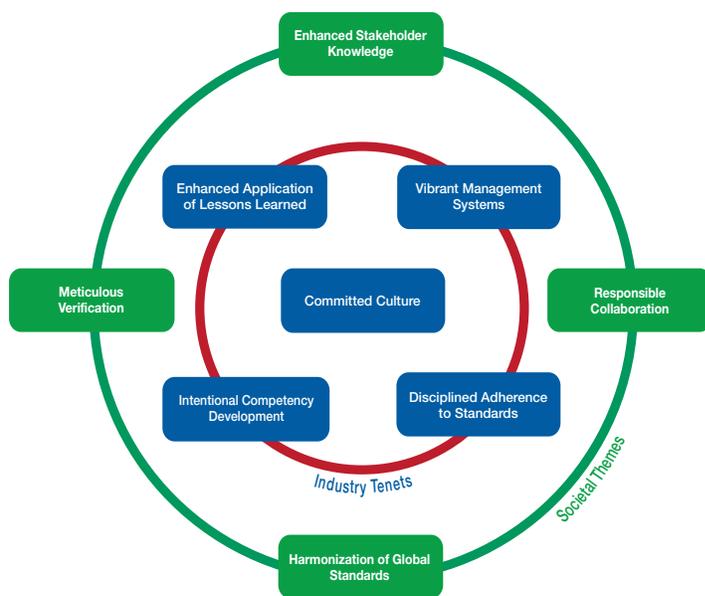
Vision 20/20 is a call to action for society, our leaders, governments and the public at large to be fervent about protecting people and property. The Vision 20/20 bridge to that commitment is its four societal themes:

- Enhanced Stakeholder Knowledge
- Responsible Collaboration
- Harmonization of Standards
- Meticulous Verification

Driving Improvement

As manufacturing and oil/gas production become more complex, the need to drive continuous improvement in process safety—not just for industry, but for all stakeholders—becomes increasingly urgent.

Vision 20/20 harnesses the collective expertise and best practices of CCPS to establish a global framework for excellent process safety, driven by industry tenets and global societal themes, that will achieve:



- Significant reduction of industrial and plant incidents
- Consistent overlap of corporate and plant employees, to ensure enhanced process safety understanding as well as rigorous adherence to standards and practices
- Persistent knowledge, cultural values, understanding and implementation strategies, which will be utilized by executives, management, technicians, engineers, students, government and the public
- A worldwide vision, guided by CCPS—a leader in state-of-the-art process safety solutions—for managing process safety improvements to fulfill Vision 20/20

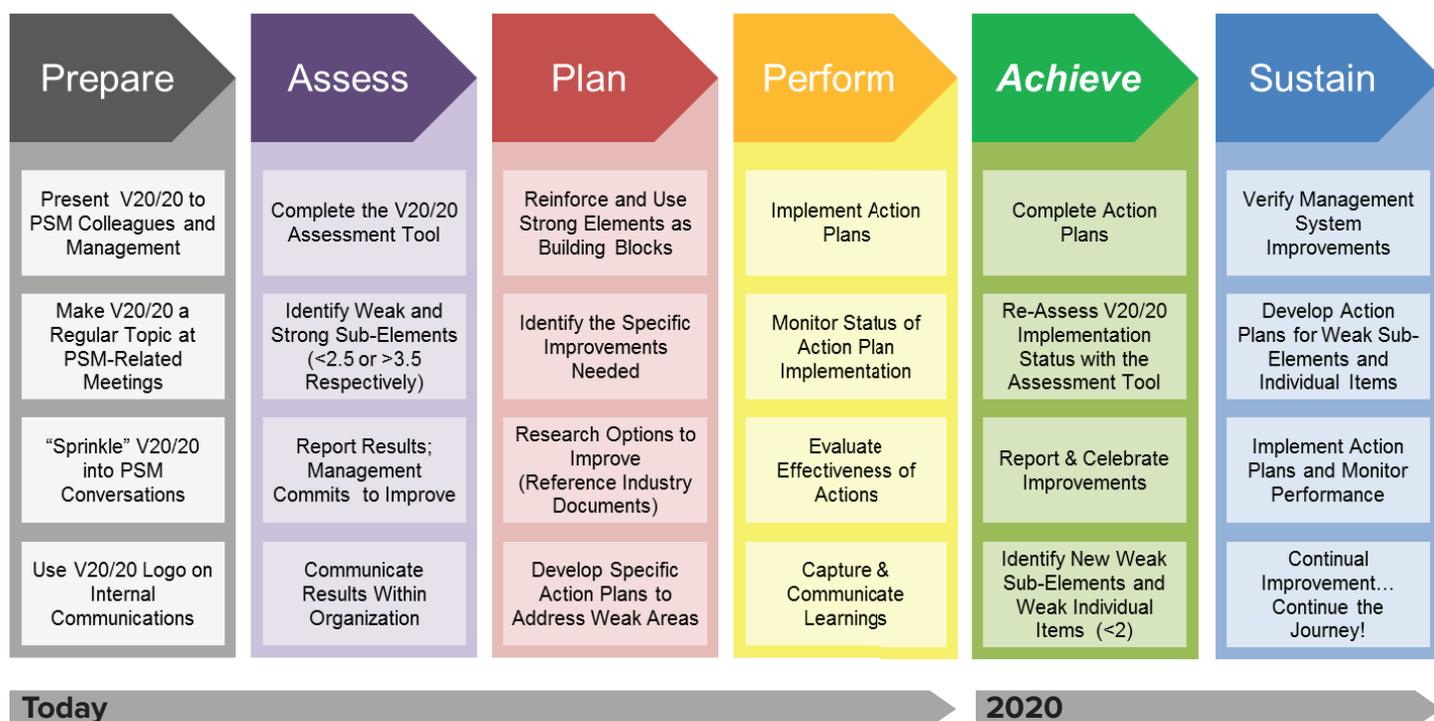
The 20/20 Difference

What does great process safety look like? CCPS asked top executives to walk us through a typical day in the life of a CEO, a unit manager and an academic, and then to imagine what that same day would look like if all industries were guided by Vision 20/20 tenets.

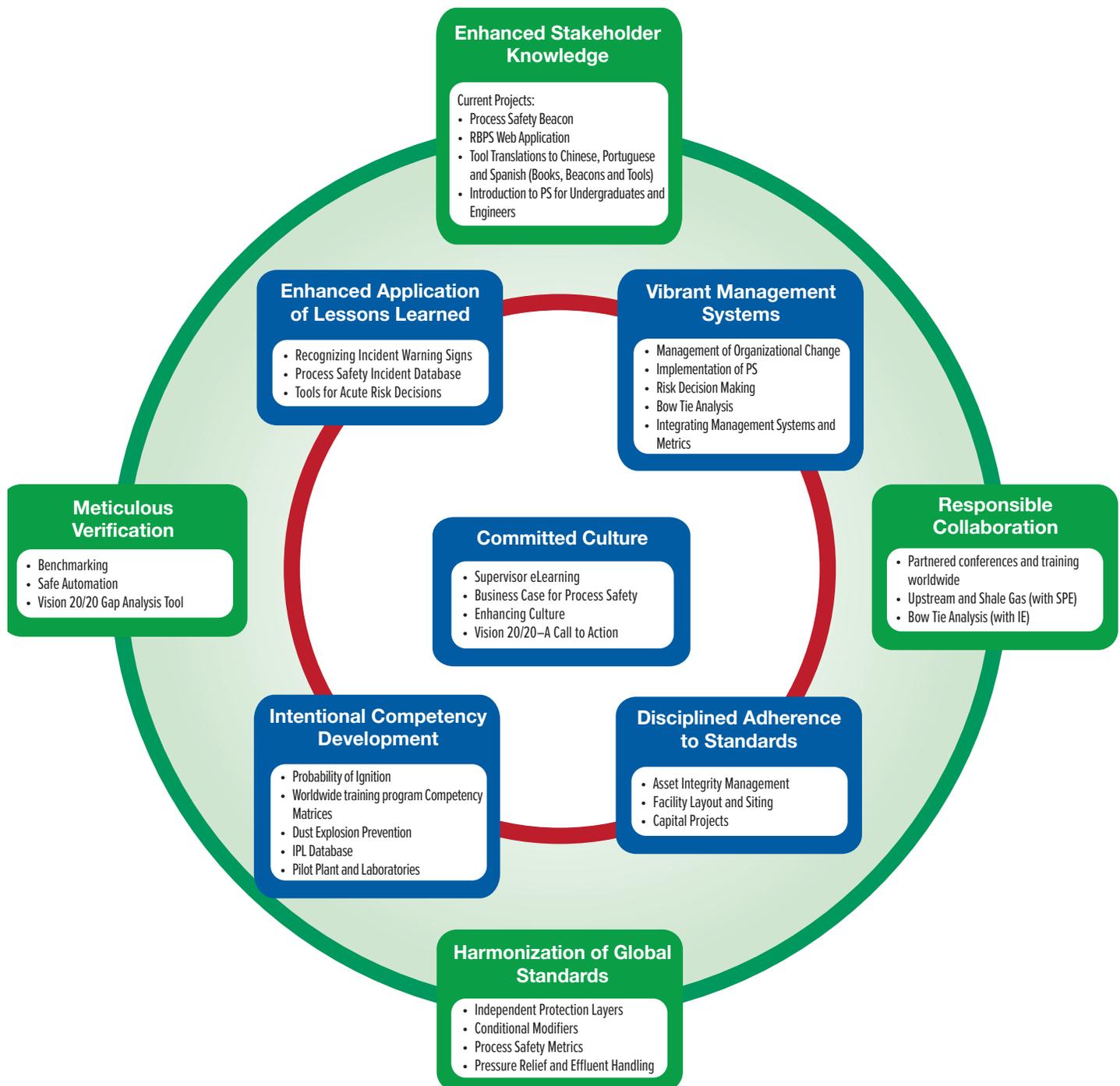
Visit aiche.org/ccps/about/vision-2020 to read more about the four societal themes and five tenets for industry, to envision a day in industry's not-too-distant future and to see more of what industry leaders are saying about this important journey of process safety.

VISION 20/20

Implementing Vision 20/20: An Overview



CCPS 2016 Projects in Support of Vision 20/20



Get Your Company Involved



Volunteer for a CCPS project subcommittee. Get the opportunity to share your knowledge and help shape industry best practices. You must be a CCPS member to volunteer for a project.

To volunteer, visit [aiche.org/ccps/resources/forms/become-volunteer-ccps-projects](https://www.aiche.org/ccps/resources/forms/become-volunteer-ccps-projects) (Note: You must be logged in as a CCPS member to volunteer for a project.)



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

To learn more, visit [aiche.org/ccps/resources/education](https://www.aiche.org/ccps/resources/education).



Share your expertise by participating in the Global Congress on Process Safety (GCPS), a CCPS Regional Conference or a Global or Regional TSC meeting.

For conference information, visit [aiche.org/ccps/resources/conferences](https://www.aiche.org/ccps/resources/conferences). For meetings information, visit [aiche.org/ccps/resources/conferences/events](https://www.aiche.org/ccps/resources/conferences/events).



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

For information, visit [aiche.org/community/sites/committees/young-professionals](https://www.aiche.org/community/sites/committees/young-professionals).



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

For information, email ccps@aiiche.org.



Communicate the message by forwarding CCPS's monthly business blast, the "Process Safety Beacon," to your colleagues.

Sign up for the Beacon at [aiche.org/ccps/resources/process-safety-beacon](https://www.aiche.org/ccps/resources/process-safety-beacon).



Connect with your process safety peers through CCPS LinkedIn.

Join CCPS LinkedIn at [ccpsonline.org](https://www.ccpsonline.org).



Participate by getting your company involved in CCPS's Vision 20/20 Responsible Collaboration activities throughout the year.

E-mail Louisa Nara for more information at Louna@aiiche.org.



Join CCPS as a member company and prevent catastrophic process safety incidents. Not a CCPS member yet?

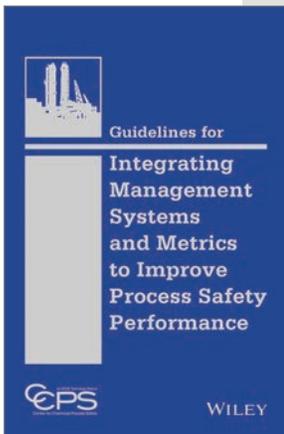
Join CCPS at [aiche.org/ccps/community/membership](https://www.aiche.org/ccps/community/membership).



Certify yourself now! Assure your company and colleagues that you are thoroughly versed in process safety. CCPS® Process Safety Professional Certification (CCPSC), based on a rigorous assessment process, verifies that your process safety knowledge is broad, deep and current. When you earn your CCPSC you show the world you have what it takes to be a CCPS Process Safety Professional.

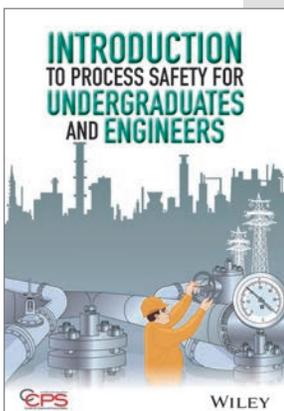
Get certified at [aiche.org/ccps/resources/certified-process-safety-professional](https://www.aiche.org/ccps/resources/certified-process-safety-professional).

Completed Book Projects



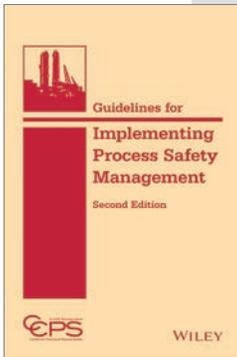
Guidelines for Integrating Management Systems and Metrics to Improve Process Safety Performance

This book combines the synergies between performance improvement systems to help ensure safe and reliable operations, streamline procedures and cross-system auditing, and support regulatory and corporate compliance requirements. Many metrics are common to more than one area, such that a well-designed and implemented integrated management system will reduce the load on the Process Safety, SHE, Security and Quality groups, and improve manufacturing efficiency and customer satisfaction. Systems to improve performance include: process safety, traditional safety, health and environment, and product quality.



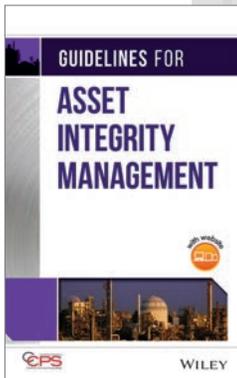
Introduction to Process Safety for Undergraduates and Engineers

This book familiarizes the student or an engineer new to process safety with the concept of process safety management and serves as a comprehensive reference for Process Safety topics for student chemical engineers and newly graduated engineers. It can act as a reference material for a stand-alone process safety course or as a supplemental material for existing curricula. The book includes the evaluation of SACHE courses for application of process safety principles throughout the standard Ch.E. curricula in addition to, or as an alternative to, adding a new specific process safety course.



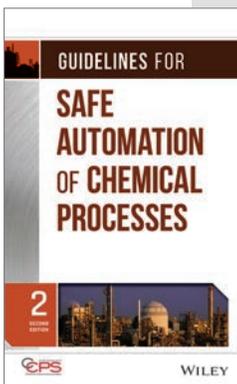
Guidelines for Implementing Process Safety Management

The second edition updates the first to include best practices for managing process safety developed by industry as well as incorporate the additional process safety elements. In addition, the book includes a focus on maintaining and improving a Process Safety Management (PSM) System. This edition also provides how-to information to determine process safety performance status, implement one or more new elements into an existing PSM system, maintain or improve an existing PSM system and manage future process safety performance.



Guidelines for Asset Integrity Management

This book is an update and expansion of topics covered in Guidelines for Mechanical Integrity Systems (2006). The new book is consistent with Risk-Based Process Safety and Life Cycle approaches and includes details on failure modes and mechanisms. Also, example testing and inspection programs for various types of equipment and systems are included. Guidance and examples are provided for selecting and maintaining critical safety systems.



Guidelines for Safe Automation of Chemical Processes

This book provides designers and operators of chemical process facilities with a general philosophy and approach to safe automation, including independent layers of safety. An expanded edition, this volume includes a revision of original concepts as well as chapters that address new topics such as the use of wireless automation and Safety Instrumented Systems. This book also provides an extensive bibliography to related publications and topic-specific information.

Education

AIChE Academy



CCPS eLearning Courses Launched in 2016

- The Importance of Codes and Standards for Process Safety
- Maintenance and Reliability for Chemical Engineers
- OSHA Process Safety Management Review
- What Every New Engineer Needs to Know about Process Safety
- Hazard Identification for Operators and Maintenance Workers—Spanish
- Process Safety Leadership for Front-Line Supervisors—Spanish



CCPS Safety and Chemical Engineering Education (SAChE)

**DOING
A WORLD
OF GOOD**

AIChE and CCPS recognize that the best way to lead the way to a safer world is through better process safety education. Although most companies have extensive safety training programs, experience has shown that

presenting process safety concepts earlier, as part of the undergraduate chemical engineering curriculum, proves most effective.

The Undergraduate Process Safety Learning Initiative

The Undergraduate Process Safety Learning Initiative is a multi-prong effort that will benefit companies, students, universities and ultimately society.

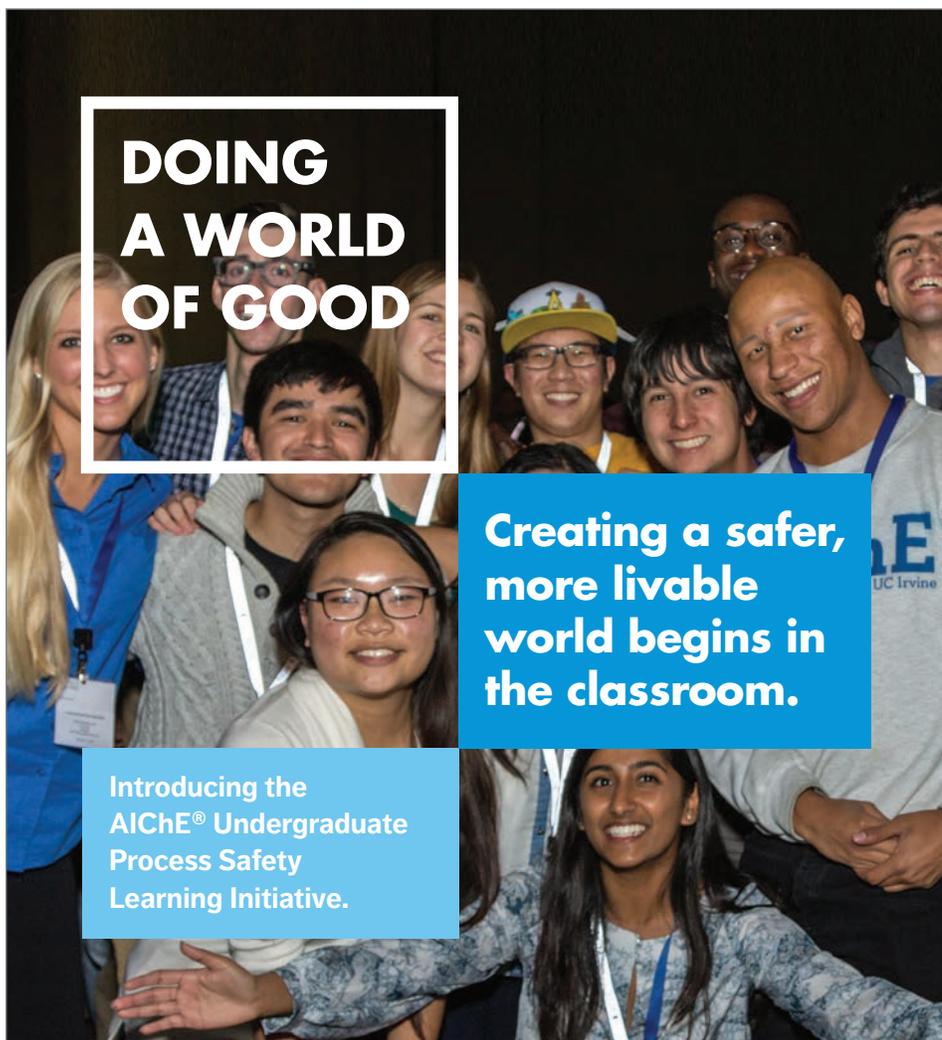
The Initiative concentrates on three primary areas:

- Curriculum
- Faculty Competence
- Undergraduate Boot Camps

Rollout of the Undergraduate Process Safety Learning Initiative is well underway, and it is poised to meet and exceed goals in faculty and student participation, module development and industry and university awareness of the program on a global level.

A core initiative of AIChE's Doing a World of Good campaign, the program incorporates process safety training into the chemical engineering curricula at universities throughout the world in order to ensure that *every chemical engineering graduate has a working knowledge of process safety.*

AIChE is collaborating with industry partners to introduce the Initiative to its 22,800 student members and over 50,000 global members through AIChE's extensive communication channels, university outreach, membership publications, meetings and conferences.



**DOING
A WORLD
OF GOOD**

**Creating a safer,
more livable
world begins in
the classroom.**

**Introducing the
AIChE® Undergraduate
Process Safety
Learning Initiative.**

**Doing a World of Good
Sponsor Companies**

FOUNDERS' CIRCLE

Benefactors



Patrons



CAMPAIGN PARTNERS

- Archer Daniels Midland Company
- Mitsui & Co. (U.S.A.), Inc.
- Olin
- PolyOne
- Wacker Chemical Corporation

CAMPAIGN SUPPORTERS

- Air Liquide
- Arkema Inc.
- Bouchard Transportation
- Cargill
- Evonik
- Exxon Mobil Corporation
- Intercontinental Terminals Company LLC
- Novus International, Inc.
- Trinseo LLC

CAMPAIGN FRIENDS

- | | |
|---|--------------------------|
| 3M | Honeywell |
| Accella Performance Materials | Jacobs |
| Air Products | Jenner & Block |
| Arsenal Capital Partners | Johnson & Johnson |
| Asset Management Company | Kirkland & Ellis LLP |
| Axalta Coating Systems | MANA |
| Bank of America | Morgan Stanley |
| Barclays | Peach State Labs, LLC |
| BASF | Pfizer |
| BBDO | Praxair |
| Biogen | Shearman & Sterling LLP |
| Centerview Partners | SNF Holding Company |
| Day & Zimmermann | Teneo Strategy LLC |
| Duff & Phelps | The Lubrizol Corporation |
| Fragomen, Del Rey, Bernsen & Loewy, LLP | UMUS |

2016 Events and Meetings

North America

The 12th Global Congress on Process Safety, held in Houston, Texas, from April 10–13, 2016, drew over 1,000 process safety professionals and more than 300 companies from over 40 countries.



12th GCPS Symposium and Track Chairs



GCPS Luncheon with over 500 attendees

The CCPS Spring Technical Steering Committee Meeting was held on April 14, 2016, in Houston, Texas, and had over 140 attendees from more than 100 companies.



Spring TSC group photo

The CCPS Fall Technical Steering Committee Meeting was held from November 8–9, 2016, in Atlanta, Georgia, with over 60 attendees from more than 55 companies.



Fall TSC Meeting in Atlanta, Georgia

The 2016 AIChE Gala, built around the theme “Innovation,” was held on November 28, 2016. The Gala recognized companies and their leaders for distinguished achievements in innovation. Funds raised will support programs for chemical engineering students and professionals in entrepreneurship, innovation and creativity.

They will aid the international growth of the Institute’s Chem-E-Car Competition®, the “Futures” program for high-achieving young researchers and the development of a new program that fosters manufacturing innovation through modular chemical process intensification.



AIChE Executive Director June Wispelwey with Ashish Khandpur, Senior VP of Research & Development and CTO, 3M Company; Teresa Szelest, President of Market & Business Development, BASF; George Scangos, CEO, Biogen; Robert Langer, Hoover Medal Recipient, and David Koch, Institute Professor at MIT

South America

The 7th CCPS Latin American Conference on Process Safety was held in Swissotel Lima, Peru, from August 21–22, 2016, with more than 200 attendees from 60 companies and 13 countries. Sponsored by Cargill, DuPont and PSRG, CCPS made a big impact at just the right time, with Peru soon implementing process safety regulations. The conference was preceded by a pre-conference workshop, “Incident Warning Signs,” which drew over 75 attendees.



Attendees at the 3rd LACPS

The 3rd CCPS Latin America Regional Meeting was held in Rio de Janeiro, Brazil, on September 13, 2016, with more than 40 attendees.



CCPS Technical Director Louisa Nara delivering 7th LACPS keynote address



7th LACPS Chairs

2016 EVENTS AND MEETINGS

Europe

The 1st CCPS Europe Regional TSC Meeting was held in Zwijndrecht, Belgium, on March 15, 2016. This meeting was sponsored and hosted by the 3M Company. The meeting had 30 attendees from 25 CCPS Member companies.



European TSC Meeting at 3M Company in Zwijndrecht, Belgium

The 2016 European Conference on Process Safety and Big Data was held in Frankfurt am Main, Germany, from October 5–6. This conference was a joint event organized by CCPS and the European Process Safety Center (EPSC) with 108 attendees from more than 62 companies worldwide. Sponsors included TOTAL, Siemens, Orpic, Petrotechnics, Cefic, Rolls Royce and Sphera Solutions.



2016 ECPS & BD session

The 5th CCPS European Regional Meeting was held in Frankfurt am Main, Germany, on October 7, 2016, sponsored by DECHEMA. The meeting had 14 attendees from 11 companies.



European Regional Meeting at DECHEMA House

CCPS and AIChE participated and exhibited in the International Congress of Chemical and Process Engineering organized by the Czech Society of Chemical Engineering (CSCHE), in Prague, Czech Republic, from August 27–31.



AIChE/CCPS booth at the International Congress of Chemical and Process Engineering

Asia-Pacific

The 4th China Conference on Process Safety was hosted by AIChE, CCPS and the China University of Petroleum in Qingdao, China, from June 1–3. The conference drew more than 300 delegates worldwide, with representatives from government, academia and industry.



4th China Conference on Process Safety Opening Reception

The 10th Asia Pacific Regional Meeting, sponsored by Reliance Industries Ltd., was held on October 14, 2016, in Mumbai, India, with more than 65 participants.



10th Asia Pacific Regional Meeting sponsored by Reliance Industries Ltd.

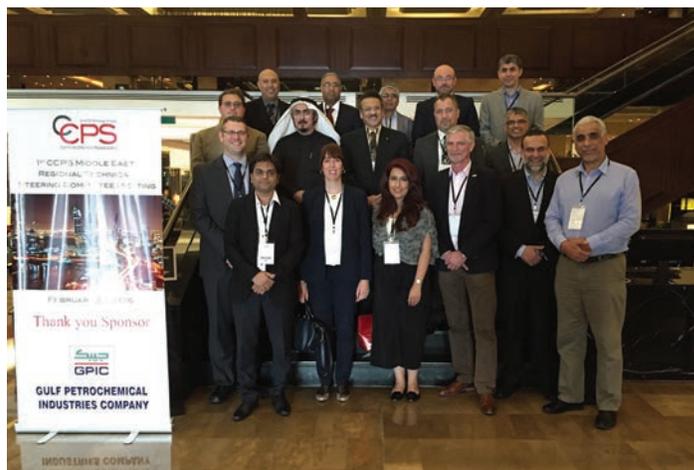
The 3rd Global Summit on Process Safety, with host sponsor SABIC, was held in Dammam, Saudi Arabia, from December 3–5, 2016, with nearly 500 attendees.



3rd Global Summit on Process Safety

Middle East and North Africa

The 1st CCPS Technical Steering Committee Meeting was held on February 29, 2016, in Manama, Bahrain. The meeting was sponsored by the Gulf Petrochemical Industries Company and was attended by more than 15 participants.



Middle East Technical Steering Committee Meeting sponsored by Gulf Petrochemical Industries Company

CCPS 2017 Meetings, Destinations and Global Offices

NORTH AMERICA

New York, NY

CCPS Advisory Board Dinner
3/8/17

CCPS Advisory Board Meeting
3/9/17

San Antonio, TX

13th Global Congress on Process Safety
3/26–3/29/17

CCPS Latin America Technical Steering
Committee Regional Meeting
3/29/17

CCPS Technical Steering
Committee Networking Dinner
3/29/17

CCPS Technical Steering
Committee Meeting
3/30/17

Houston, TX

Offshore Technology
Conference (OTC)
5/1–5/4/17

College Station, TX

Mary Kay O'Connor
Process Safety
Center Conference
10/24–10/26/17

Houston, TX

Fall Technical Steering
Committee Meeting
11/8–11/9/17

EUROPE

Colombes, France

CCPS European
Regional Meeting
3/16/17

Prague, Czech Republic

EUROCORR 20th International
Corrosion Congress & Process
Safety Congress 2017
9/5–9/6/17

Frankfurt am Main, Germany

Conference on Process Safety
and Big Data
11/14–11/15/17

SOUTH AMERICA

Rio de Janeiro, Brazil

CCPS Latin America
Regional Meeting
3/9/17

San Antonio, TX

CCPS Latin America Technical
Steering Committee
Regional Meeting
3/26/17

Buenos Aires, Argentina

CCPS Regional Meeting
Q2 2017

Bogota, Colombia

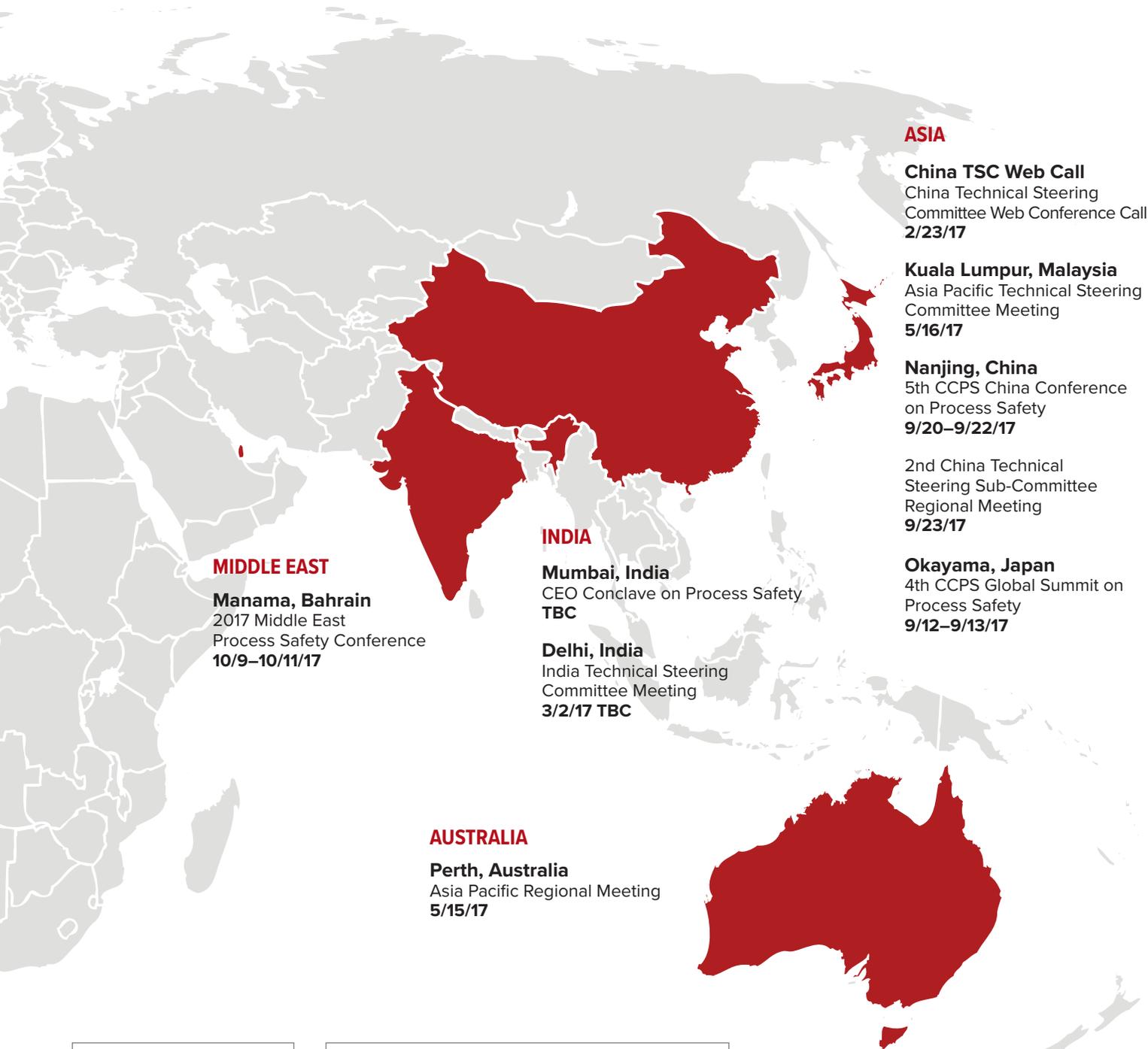
Latin America Technical Steering
Committee Regional Meeting
Q3 2017

Rio de Janeiro, Brazil

Offshore Technology
Conference (OTC)
10/24–10/26/17

Lima, Peru

CCPS Latin America
Regional Meeting
Q4 2017



ASIA

China TSC Web Call
China Technical Steering Committee Web Conference Call
2/23/17

Kuala Lumpur, Malaysia
Asia Pacific Technical Steering Committee Meeting
5/16/17

Nanjing, China
5th CCPS China Conference on Process Safety
9/20–9/22/17

2nd China Technical Steering Sub-Committee Regional Meeting
9/23/17

Okayama, Japan
4th CCPS Global Summit on Process Safety
9/12–9/13/17

MIDDLE EAST

Manama, Bahrain
2017 Middle East Process Safety Conference
10/9–10/11/17

INDIA

Mumbai, India
CEO Conclave on Process Safety
TBC

Delhi, India
India Technical Steering Committee Meeting
3/2/17 TBC

AUSTRALIA

Perth, Australia
Asia Pacific Regional Meeting
5/15/17

CCPS Offices

- New York, NY, U.S.
- Frankfurt, Germany
- Houston, TX, U.S.
- Mumbai, India
- Qingdao, China
- Singapore

Global Web Conferences

- 2/2/17 **TSC Winter Web Conference**
- 6/15/17 **TSC Summer Web Conference**
- 9/19/17 **TSC Fall Web Conference**
- 9/19/17 to 9/27/17 **TSC Fall Web Conference**

For the latest information on upcoming events, please visit **ccpsonline.org**

2017 Important Dates and Events

Event	Location	Date
CEO Conclave on Process Safety	Mumbai, India	TBC
Technical Steering Committee Winter Web Conference Call	CCPS Global Web Conference	2/2/17
Web Conference	China TSC Web Conference	2/23/17
Asia-Pacific Technical Steering Committee Meeting	Delhi, India	3/2/17 TBC
China Technical Steering Committee CCPS Advisory Board Dinner	New York, NY	3/8/17
CCPS Advisory Board Meeting	New York, NY	3/9/17
CCPS Latin America Regional Meeting	Rio de Janeiro, Brazil	3/9/17
CCPS Europe Regional Meeting	Colombes, France	3/16/17
CCPS Latin America TSC Regional Meeting	San Antonio, TX	3/26/17
13th Global Congress on Process Safety	San Antonio, TX	3/26–3/29/17
CCPS Spring Technical Steering Committee Networking Dinner	San Antonio, TX	3/29/17
CCPS Spring Technical Steering Committee Networking Meeting	San Antonio, TX	3/30/17
CCPS Regional Meeting	Buenos Aires, Argentina	Q2 2017
Offshore Technology Conference	Houston, TX	5/1–5/4/17
Asia Pacific Regional Meeting	Perth, Australia	5/15/17
Asia Pacific Technical Steering Committee Meeting	Kuala Lumpur, Malaysia	5/16/17
Technical Steering Committee Summer Web Conference Call	CCPS Global Web Conference	6/15/17
Latin America Technical Steering Committee Regional Meeting	Bogota, Colombia	Q3 2017
EUROCORR 20th International Corrosion Congress & Process Safety Congress 2017	Prague, Czech Republic	9/5–9/6/17
4th CCPS Global Summit on Process Safety	Okayama, Japan	9/12–9/13/17
5th CCPS China Conference on Process Safety	Nanjing, China	9/20–9/22/17
CCPS 2nd China Technical Steering Sub-Committee Regional Meeting	Nanjing, China	9/23/17
Technical Steering Committee Fall Web Conference	CCPS Global Web Conference	9/27/17
CCPS Latin America Regional Meeting	Lima, Peru	Q4 2017
2017 Middle East Process Safety Conference	Manama, Bahrain	10/9–10/11/17
Mary Kay O'Connor Process Safety Center Conference	College Station, TX	10/24–10/26/17
Offshore Technology Conference (OTC)	Rio de Janeiro, Brazil	10/24–10/26/17
Fall Technical Steering Committee Evening	Houston, TX	11/8–11/9/17
Conference on Process Safety and Big Data	Frankfurt am Main, Germany	11/14–11/15/17

For the latest information on events, please visit ccpsonline.org.

Organizational Structure

Technical Steering Committee (TSC)

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

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

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

CCPS Activities Management

Activities are monitored and directed by the:

- CCPS Managing Board
- Advisory Board
- Project Planning Committee
- Technical Steering Committee

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

Managing Board

June C. Wispelwey

AIChE Executive Director, Chair

Shakeel Kadri

CCPS Executive Director

Gregory Stephanopoulos

AIChE President

Cheryl Teich

AIChE Past President

Bond Calloway

AIChE President-Elect

Freeman Self

AIChE Secretary

Tim Odi

AIChE Director

Dan Lambert

AIChE Director

Alan Nelson

AIChE Director

Billy B. Bardin

AIChE Director

ORGANIZATIONAL STRUCTURE

CCPS Advisory Board

Shakeel Kadri

CCPS, Chair

Laura Ambrose

The Dow Chemical Company

Per Bagge Angelo

Maersk Oil

Bob Bahr

ExxonMobil Chemical Company

Steve Burton

TOTAL

Ana Davis

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BP

Derek Farclough

BASF Corporation

Cheryl Grounds

BP

Linda Hicks

Vertellus Specialties, Inc.

Robin Higgs

3M Company

Robert Kelley

Formosa Plastics Corporation

Matthew Koenings

DuPont Company

David Lewis

Occidental Chemical Corporation

Anne O'Neal

Chevron Corporation

Louisa Nara

CCPS

Carl Parker

Eastman Chemical Company

Joe Pietrantonio

Air Products and Chemicals, Inc.

Khaled Saleh Kharboush-AI

SABIC

Kieth Silverman

Ashland, Inc.

Deborah Small

Monsanto Company

Michael Snyder

Dow Corning Coporation

Prasad Tipnis

Reliance Industries, Ltd.

Akio Ueda

Mitsubishi Chemical Corporation

Thomas Walsh

Honeywell, Inc.

June C. Wispelwey

AIChE

John Wnek

Evonik

Project Planning Committee

Pete Lodal

Eastman Chemical Company, Chair

Chris Aiken

Cargill, Inc.

Todd Aukerman

LanXess

Anthony M. Downes

Honeywell, Inc.

Jerry Forest

Celanese Corporation

Jeffery L. Fox

Dow Corning Corporation

Eric Freiburger

Praxair, Inc.

Cheryl Grounds

BP

Shakeel Kadri

CCPS

Neil Maxson

Covestro LLC

Jack McCavit

CCPS Emeritus

Louisa A. Nara

CCPS

Cathy Pincus

ExxonMobil Chemical Company

Jatin Shah

BakerRisk

Ken Tague

Archer Daniels Midland Company

Karen Tancredi

Chevron Corporation

Kevin Shaughnessy

The Dow Chemical Company

Scott Wallace

Olin Corporation

John Wincek

Croda, Inc.

Projects and Volunteers

Project 152 Process Safety Beacon

John W. Herber
CCPS Emeritus, Co-Chair

Rüdiger Lenz
Celanese Corporation, Co-Chair

Dennis C. Hendershot
CCPS Staff Consultant

Donald W. Abrahamson
CCPS Staff Consultant

Katherine M. Anderson
ioMosaic Corporation

Pedro A. Bonilla
Buckman North America

Seshu Dharmavaram
Dupont Company

Jeffrey L. Fox
Dow Corning Corporation

David Guss
Nexen, Inc.

Carolina Herrera
BP

Kathy Kas
The Dow Chemical Company

David A. Krabacher
BASF Corporation

Michael W. Korst
LyondellBasell

Antonio Lauzana
Petrobras (retired)

Larry K. LeMesurier
Syn crude Canada Ltd.

Marc E. Levin
Washington State University

Georges A. Melhem
ioMosaic Corporation

Jack L. McCavit
CCPS Staff Consultants

Louisa A. Nara
CCPS

Albert Ness
CCPS

William M. Olsen
Merck & Company, Inc.

Yasser A. Rahim
Gulf Petrochemical Industries
Company

Roy Sanders
PPG, retired

Nicholas P. Sands
Dupont Company

Sara K. Saxena
BP Corp North America

Adrian L. Sepeda
CCPS Staff Consultant

Jatin N. Shah
BakerRisk

Mike Smith
Shell Downstream Manufacturing

John C. Stoney
BP Corp North America

Tom Spicer
University of Arkansas

Anthony A. Thompson
Monsanto Company (retired)

John C. Wincek
Croda, Inc.

Jan Windhorst
Emeritus

Project 233 Key Performance Indicators for Risk-Based Process Safety (Process Safety metrics)

Eric Freiburger
Praxair, Inc., Chair

Daniel E. Sliva
CCPS Staff Consultant

Elroy M. Christie
Koch Industries

Sean Dee
Exponent, Inc.

Nancy Faulk
Siemens Energy

Jeffrey L. Fox
Dow Corning Corporation

R. Wayne Garland
Eastman Chemical Company

Andrew Goddard
Arkema, Inc.

Gil Guillory
Burns and McDonnell

Mahendran Guru
Orpic

Scott Allen Haney
Marathon Petroleum Company

Astor Harris
Petrotrin

Michell LaFond
Dow Corning Corporation

Sue Lee-Martin
Arkema, Inc.

Darrell Loewe
Formosa Plastics Corporation

Steven R. Marwitz
Formosa Plastics Corporation

Louisa A. Nara
CCPS

Mark Paradies
System Improvements, Inc.

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PROJECTS AND VOLUNTEERS

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Cesar Puma
Pluspetrol

Marcela Recaman
Equión Energía Ltd.

Sonny Sachdeva
PSRG

Dan Sorin
Nova Chemicals Corporation

Scott Wallace
Olin Corporation

Dan Wilczynski
Marathon Petroleum Company

Rukyah Hennessey
CCPS

Project 237 Guidelines for Barrier Risk Management (Bow Tie Analysis)

Kiran Krishna
Shell Downstream Manufacturing,
Chair

Charles Cowley
CCPS Staff Consultant

Umesh Dhake
CCPS

Zsuzsanna Gyenes
EC JRC MAHB

Joanne Hill
Risktec Solutions, Inc.

Martin Johnson
BP Corp North America

Mark Richard Stening Manton
ABS Consulting

Darrin J. Miletello
LyondellBasell

Louisa A. Nara
CCPS

Americo Diniz Carvalho Neto
Braskem (retired)

Sudhir Kumar Phakey
Linde Gas

Robin M. Pitblado
DNV GL

Keith Serre
Nexen, Inc.

Ryan Supple
ConocoPhillips

Thiruvaiyaru V. Venkateswaran
Reliance Industries Ltd.

Stephanie Wardle
Husky Energy

Robert J. Weber
PSRG, Inc.

Danny White
BHP Billiton Petroleum

Project 237 Members from the Energy Institute

Ahmed Alzouibi
Tullow Oil

Dennis Evers
Centrica

Peter Jeffries
Phillips66

Rob Miles
Hu-Tech

Rob Saunders
Shell Downstream Manufacturing

Mark Scanlon
Energy Institute

Don Smith
Eni

Project 241 Guidelines for Safe Automation, 2nd Edition

R. Wayne Garland
Eastman Chemical Company, Chair

Daniel E. Sliva
CCPS Staff Consultant

Mohammed Rehan Baig
Bayer CropScience

Troy F. Bennett
ExxonMobil

William G. Bridges
Process Improvement Institute, Inc.

Michael P. Broadribb
BakerRisk

Michael Boyd
Husky Energy

John R. Campbell
ConocoPhillips

John D. Day
Air Products & Chemicals, Inc.

David A. Deibert
Air Products & Chemicals, Inc.

Rick Dunn
Dupont Company

William S. Fink
Sage Environmental, Inc.

Andrew Goddard
Arkema, Inc.

Bill Hearn
SIS-Tech Solutions

Kevin L. Klein
Celanese Chemicals

Suhas Kulkarni
Toyo Engineering India, Ltd.

Len Laskowski
Emerson Process Management

Victor J. Maggioli
Feltronics Corporation

John Martens
Exponent, Inc.

Norm Mcleod
Arkema, Inc.

Ken J. O'Malley
aeSolutions

Russell A. Ogle
Exponent, Inc.

Justin Ogleby
Solutia, Inc.

Eloise Roche
SIS-Tech Solutions

Bob Roubion
Shell Downstream Manufacturing

Raymond P. Stickles
ioMosaic Corporation

Angela E. Summers
SIS-Tech Solutions

Joe Veasey
aeSolutions

Gregory G. Weidner
Huntsman Corporation

**Project 244 Process Safety–
Vision 2020**

Cheryl A. Grounds
BP International Ltd., Chair

Jack McCavit
CCPS Staff Consultant

Walter L. Frank
CCPS Staff Consultant

Todd Aukerman
LanXess Corporation

Jeffrey L. Fox
Dow Corning Corporation

Rukyah Hennessey
CCPS

Peter N. Lodal
Eastman Chemical Company

Louisa A. Nara
CCPS

Samantha N. Scruggs
BP International, Ltd.

Karen Tancredi
Chevron Corporation

**Project 246 Guidelines
for Siting and Layout of
Facilities, 2nd Edition**

Martin L. Timm
Praxair, Inc., Chair

Charles Cowley
CCPS Staff Consultant

Susan E. Bayley
Linde Engineering North America

Chris Buchwald
ExxonMobil

Bruce D. Bullough
Pfizer

Andrew R. Carpenter
Exponent, Inc.

Andy Crerand
Shell Downstream Manufacturing

Donald J. Connolley
BP Corp North America

Christopher P Devlin
Celanese Chemicals

Jonas Duarte
Chemtura Corporation

Randy Hawkins
AON Energy Risk Engineering

Manuel Herce
DuPont Company

David D. Herrmann
Baker Engineering & Risk
Consultants, Inc.

David Hill
Occidental Chemical Corporation

Casey G. Johnson
Covestro LLC

Jayant Kulkarni
Risktec Solutions, Inc.

Annette Kyle
Risktec Solutions, Inc.

Bill D. Lindberg
Air Liquide Large Industries US

Reid McPhail
Canadian Natural Resources, Ltd.

Timothy Murphy
Arkema S.A.

Pamela M. Nelson
Solvay USA, Inc.

Eric Peterson
MMI Engineering

Ruifeng Qi
Huntsman Corporation

Mark Saunders
Koch Industries

Adrian L. Sepeda
CCPS Staff Consultants

Florine Williams Vincik
BASF

PROJECTS AND VOLUNTEERS

Project 248 Tools for Making Acute Risk Decisions

Fred Henselwood
NOVA Chemicals Corporation,
Co-Chair

Jeffrey C. Stawicki
The Lubrizol Corporation, Co-Chair

Dave Belonger
CCPS Staff Consultant

Christopher S. Buehler
Exponent, Inc.

Sorin Dan
NOVA Chemicals Corporation

Seshu Dharmavaram
Dupont

Marc A. Guindon
Suncor Energy

Elizabeth Lutostansky
Air Products & Chemicals, Inc.

Derek Miller
Air Products & Chemicals, Inc.

Guilherme Da Silva Telles Naegeli
Petrobras

Russell A. Ogle
Exponent, Inc.

Anne-Michael Pelupessy
Akzonobel

Robin M. Pitblado
DNV GL

Richard W. Sarnie
CCPS

Adrian L. Sepeda
CCPS Staff Consultant

Jatin N. Shah
BakerRisk

Martin L. Timm
Praxair, Inc.

John H. Traynor
Evonik Corporation

Dinesh Vaidya
Reliance Industries Ltd.

David Weimer
MMI Engineering

Florine Williams Vincik
BASF

Project 249 Essential Practices for Developing, Strengthening and Implementing Process Safety Culture

Eric Freiburger
Praxair, Inc., Co-Chair

Karen Tancredi
Chevron Corporation, Co-Chair

Robert M. Rosen
CCPS Staff Consultant

Steve Arendt
ABS Consulting

Henry Brinker
Monsanto Company

Michael A. Dossey
Contra Costa Health Services

Walter L. Frank
CCPS Staff Consultant

Michael J. Hazzan
AcuTech Consulting Group

Louis Higgins
Solvay Specialty Polymers

Gretel Ivana D'amico
Pluspetrol S.A.

David W. Jones
Chevron Corporation

Dan Miller
BASF (Retired)

David A. Moore
AcuTech Consulting Group

Lou Musante
Echo Strategies

Cho Nai Cheung
Contra Costa Health Services

Anne E. O'Neal
Chevron Corporation

Gilisa Pacheco Monteiro
Petrobras

Ravi Ramasamy
Nghi Son Refinery and
Petrochemical LLC

Randy Sawyer
Contra Costa Health Services

Project 250 Process Safety in Capital Projects

Eric Freiburger
Praxair, Inc., Chair

Dave Belonger
CCPS Staff Consultant

Ignacio Alonso
CSP-LA

Michael Broadribb
BakerRisk

Christopher Buehler
Exponent, Inc.

Robert Dayton
Chevron Corporation

Jonas Duarte
Chemtura Corporation

Andrew Goddard
Arkema, Inc.

Emmanuelle Hagey
NOVA Chemicals Corporation

Jim Johnstone
Contek Solutions LLC

Graeme Leggett
BP Corp North America

Leisa Porter
Fluor Corporation

Richard Sarnie
CCPS

Kevin Watson
Chevron Corporation

**Project 251 Process
Safety in Pilot Plants and
Laboratories**

Kathy Anderson
ioMosaic, Chair

Jerry Jones
CCPS Staff Consultant

Bruce Bullough
Corden Pharma Colorado

David Caspary
Michigan Technological University

Michael Cleary
DuPont Company

L. Mark Delong
SABIC

Russell Dunn
Vanderbilt University

Khateeta Emerson
Merck & Co.

Jeffrey Foisel
Dow Corning Company

Jeff Grant
Albemarle Corporation

William Flemming
Bristol Myers Squibb

Michael Grossman
Buckman Laboratories International

Bill Hargest
PPG Industries, Inc.

Jeffrey Hedges
Chevron Corporation

Randy Keller
Dow Corporation

Paul McAllister
Shell Downstream Manufacturing

Andrew Minister
DOE-Pacific Northwest National
Laboratory

Kabier Moideenkutty
Abu Dhabi Oil Refining Company
(TAKREER)

Richard Palluzi
ExxonMobil (retired)

Christian Rauchegger
Linde Process Plants, Inc.

Sebastien Righini
Solvay/Rhodia

Atanas Serbezov
Rose-Hulman Institute

Amy Theis
Fauske & Associates LLC

Marathe Vinayak
Reliance Industries Ltd.

Joel Young
BASF Corporation

**Project 255 Evergreen
LOPA/IPL Database**

J. Wayne Chastain
Eastman Chemical Company, Chair

John F. Murphy
CCPS Staff Consultant

William G. Bridges
Process Improvement Institute, Inc.

Art Dowell
Process Improvement Institute, Inc.

Christopher Ilies
Evonik Corporation

Kimberly Mullins
Occidental Chemical Corporation

Kathy Shell
aeSolutions

Angela Summers
SIS-Tech Solutions

Scott Wallace
Olin Corporation

**Project 268 Dealing with
Aging Process Facilities and
Infrastructure**

Eric Freiburger
Praxair, Inc., Chair

Brian D. Kelly
CCPS Staff Consultant

Derin Adebekun
Air Products & Chemicals, Inc.

Bennie Barnes
Pacific Gas and Electric Company

Laura E. Bellman
Covestro LLC

Larry O. Bowler
SABIC Innovative Plastics

Bill Callaghan
NOVA Chemicals Corporation

Jonas Duarte
Chemtura Corporation

Nancy Faulk
Siemens Energy, Inc.

Reyyan Koc
ExxonMobil Chemical Company

Susan Lubell
Nexen, Inc.

John F. Murphy
CCPS Emeritus

Sudhir Kumar Phakey
Linde Gas

Tom Sandbrook
The Chemours Company

Jatin N. Shah
BakerRisk

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PROJECTS AND VOLUNTEERS

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Kenneth E. Tague
Archer Daniels Midland Company

Rob Van Sickle
Koch Industries

Robert F. Wasileski
NOVA Chemicals Corporation

Terry White
Pacific Gas and and Electric
Company

Project 269 Preventing Normalization of Deviation

Jennifer F. Mize
Eastman Chemical Company, Chair

Daniel Silva
CCPS Staff Consultant

Dan Wilczynski
Marathon Petroleum Company

Steve Arendt
ABS Consulting Group

Michelle L. Brown
FMC Corporation

Kelly-Ann Charles
Methanex Trinidad, Ltd.

Joey Cranston
Albemarle Corporation

Scott Haney
Marathon Petroleum Company

Greg Horton
SABIC Innovative Plastics

Patti Jones
Praxair, Inc.

Jai Karia
Chevron Corporation

Neil L. Maxson
Covestro LLC

Louisa Nara
CCPS

Mark Parades
System Improvements, Inc.

Michael (Mick) Pelupessy
AkzoNobel Chemicals, Inc.

Manuel Alberto Rodriguez
FMC Corporation

Joan Schork
BakerRisk

Tony Strawhun
NewMarket

Kenneth E. Tague
Archer Daniels Midland Company

Karen Tancredi
Chevron Corporation

John C. Wincek
Croda, Inc.

Elliot M. Wolf
Syngenta

Project 270 Guidelines for Process Safety in Upstream Oil, Gas and Shale Ops

Eric Freiburger
Praxair, Inc., Co-Chair

Jean Bruney
Chevron Corporation, Co-Chair

Dave Belonger
CCPS Staff Consultant

Amar Ahiuwakia
DNV GL

Steve Arendt
ABS Consulting Group

Michael P. Broadribb
BakerRisk

Christopher S. Buehler
Exponent, Inc.

Jonas Duarte
Chemtura Corporation

Sergio Luiz Guedes
Petrobras

Kevin He
Shell Downstream Manufacturing

Jim Johnstone
Contek Solutions LLC

Graeme Leggett
BP Corp North America

David R. Mohler
Honeywell, Inc.

Jason W. Nicholls
ExxonMobil

Richard Piette
Suncor Energy

Kevin D. Watson
Chevron Corporation

Robert J. Weber
PSRG

Project 271 Process Safety Applications for Electronic Devices (Smart Phones/ Tablets/Desktop, etc.)

Jerry Forest
Celanese Chemicals, Chair

Daniel Sliva
CCPS Staff Consultants

Rukyah Hennessey
CCPS

Christopher Keller
BASF

Nguyen Trung Kiet
Binh Son Refining & Petrochemical
Co., Ltd (BSR)

Dave Moore
AcuTech Consulting Group, Inc.

Project 275 Process Safety During Transient Operations (Start-up/Shutdown)

Theresa Lynne Broussard
Chevron Corporation, Chair

Daniel Sliva
CCPS Staff Consultant

Donald J. Connolley
BP Corp North America

Eddie G. Dalton
BASF Corporation

Astor W. Harris
PETROTRIN

Jitesh Patel
New Jersey Dept. of Environmental Protection

Pamela M. Nelson
Solvay USA, Inc.

Scott Schiller
BakerRisk

Mario Enji Yamaguchi Sumida
BASF Corporation

Robert J. Weber
PSRG, Inc.

Elliot M. Wolf
Syngenta

Project 276 Guidelines/ Essentials of Safe Work Practices/Conduct of Operations

David Lewis
Occidental Chemical Corporation,
Chair

Dave Belonger
CCPS Staff Consultant

Katherine M. Anderson
ioMosaic Corporation

Steve Arendt
ABS Consulting

Jonas Duarte
Chemtura Corporation

Pam Feldman
Chevron Corporation

Kevin He
Shell Downstream Manufacturing

Jerry Keezer
Arkema

Dan Miller
BASF Corporation (retired)

Mikelle C. Moore
Buckman North America

Mike Neill
Petrotechnics USA, Ltd.

Jitesh Patel
DEP NJ

Robert J. Weber
PSRG, Inc.

Carlos Wigstrom
Pluspetrol S.A.

Dan Wilczynski
Marathon Petroleum Company

Project 277 Guidelines for Inherently Safer Design

John C. Wincek
Croda, Inc., Chair

Daniel Sliva
CCPS Staff Consultant

Steve Arendt
ABS Consulting Group

Oliva Cheng
Chevron Corporation

Robert Coover
Praxair, Inc.

Russ Davis
MISTRAS Group

Jonas Duarte
Chemtura Corporation

Andrew P. Hart
NOVA Chemicals Corporation

Dennis Hendershot
CCPS Staff Consultant

Nicole B. Loontjens
Americas Styrenics

Jitesh Patel
New Jersey Dept. of Environmental Protection

Katherine Perm
Arkema, Inc.

Leisa Porter
Fluor Corporation

Morgan Reed
MMI Engineering

Sabrina Putruele
Pluspetrol S.A.

Sonny Sachdeva
PSRG, Inc.

Randy Sawyer
Contra Costa Health Services

Scott Wallace
Olin Corporation

Robert J. Weber
PSRG, Inc.

Project 278 Risk-Based Process Safety Web Application Tool

Karen Tancredi
Chevron Corporation, Co-Chair

Tony M. Downes
Honeywell, Inc., Co-Chair

Jing Chen
CCPS

PROJECTS AND VOLUNTEERS

Project 279 Incidents That Define Process Safety, Volume II

David Prior

Honeywell, Inc., Chair

Steven G. Eason

CCPS Staff Consultant

Albert Ness

CCPS

Sean J. Dee

Exponent, Inc.

Jerry Forest

Celanese Chemicals

Derek Miller

Air Products & Chemicals, Inc.

Karen Tancredi

Chevron Corporation

CCPS Staff

Shakeel Kadri

Executive Director

Orlando Acosta

Latin American Regional Manager

Lamese Bader

Membership & Communications Manager

Jing Chen

Engineering Specialist

Umesh Dhake

Asia Pacific Regional Manager

Rukyah Hennessey

Engineering Specialist

Angela Louis

Projects Coordinator

Horst Massong

European Regional Manager

Louisa Nara

Technical Director

Shami Nayak

Asia-Pacific Business Development Manager

CCPS China Section

Professor Zhao Dongfeng

Director China Section

Dr. Yi Lie

Assistant Director China Section

CCPS Staff Consultants and Instructors

Don Abrahamson

Dave Belonger

Jim Conner

Charles Cowley

Steve Eason

Walt Frank

Warren Greenfield

Dennis Hendershot

John Herber

Jerry L. Jones

Brian Kelly

Jack McCavit

Dan Miller

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Bob Rosen

Adrian L. Sepeda

Daniel E. Sliva

Nestor Sposito

Byron Sun

CCPS Staff



Shakeel Kadri
Executive Director



Louisa Nara
Technical Director



Orlando Acosta
*Latin American
Regional Manager*



Lamese Bader
*Membership &
Communications
Manager*



Umesh Dhake
*Asia-Pacific
Regional Manager*



Rukyah Hennessey
*Engineering
Specialist*



Horst Massong
*European Regional
Manager*



Shami Nayak
*Asia-Pacific
Associate*



Jing Chen
*Engineering
Specialist*



Angela Louis
*Project
Coordinator*

Moving On

Albert Ness joined CCPS in 2013 as a Process Safety Writer and subsequently took on the Senior Process Safety Specialist role. He has been influential in the technical writing and publishing of a number of CCPS books over the past four years, most recently the *Guidelines for Pressure Relief and Effluent Handling Systems, 2nd ed.* and *Guidelines for Combustible Dust Hazard Analysis*. Al retired at the end of 2016, but will return to CCPS in 2017 as a staff consultant.

Rich Sarnie joined CCPS in 2015 as the CCPS Projects Director and took on additional oversight roles in DIERS and DIPPR. Rich made important contributions in the completion of the CCPS Credentialing Program (CCPSC) and worked to increase the number of faculty workshops offered. He was involved in responsible collaboration with other organizations by giving presentations on process safety for non-chemical manufacturing.

CCPS thanks both individuals for their service to CCPS and AIChE over the past several years and wishes them good luck in their future endeavors.

AIChE Academy Staff



Anne Schaeffer
Director, AIChE Academy



Denise DeLuca-Mallon
In-Company Training, Account Manager



Jeffrey Perez
Education Associate



Kandice Ross
eLearning Associate



Ashley Smith
Education Specialist

CCPS Staff Consultants



Don Abrahamson



Byron Sun



Dave Belonger



Dennis Bernhard



Charles Cowley



Jim Conner



Steve Eason



Walt Frank



Dennis Hendershot



John Herber



Jenny Wang



Jerry L. Jones



B. Karthikeyan



Brian Kelly



Jack McCavit



John Murphy



Bob Rosen



Adrian L. Sepeda



Daniel E. Sliva



Nestor Sposito

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Ecopetrol S.A.
Eli Lilly & Company
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Engro Polymer & Chemical, Ltd.
Equión Energía
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ExxonMobil Chemical Company
Fauske & Associates LLC
Fluor Corporation
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Formosa Plastics Corporation
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Gateway Consulting Group, Inc.
Gexcon India
Gulf Petrochemical Industries Company
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Honeywell, Inc.
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Huntsman Corporation
Husky Energy
Idemitsu Kosan Co., Ltd.
ioMosaic Corporation
IRESC
Jacobs Company
Johnson & Johnson
KBR Energy & Chemicals
King Industries
Koch Industries, Inc.
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Map Ta Phut Tank Terminal
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Mitsubishi Chemical Corporation
MMI Engineering
Monsanto Company
The Mosaic Company
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New Jersey Dept. of Environmental Protection
NewMarket

Nexen, Inc.
NOVA Chemicals Corporation
Nuclear Fuel Services
Occidental Chemical Corporation
Oil Industry Safety Directorate
Olin Corporation
Optima Chemical Group, LLC
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Petrochemical Corporation of Singapore (Pte), Ltd.
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Petrotechnics Ltd.
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Phoenix Park Gas Processors Ltd.
Pluspetrol S.A.
Potash Corporation
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Process Improvement Institute, Inc.
Procter & Gamble
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Quaker Chemical Corporation
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Reliance Industries, Ltd.
REPSOL
Rhodes Technologies
Risk Integrity Safety Knowledge
SABIC Innovative Plastics
Sadara Chemical Co.
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SIS-TECH Solutions
Solvay USA, Inc.
Spectra Energy Transmission West
Starr Technical Risks Agency Inc.
Strem Chemicals
Suncor Energy
Syngenta Crop Protection, Inc.
System Improvements, Inc.
TAKREER Abu Dhabi Refining Company
Tejin Aramid
Tesoro Companies, Inc.
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TPC
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US EPA/OEM
Valspar Corporation
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Woodside Energy, Ltd.
WorleyParsons
Yara Trinidad Ltd.
YPF – Yacimientos Petroliferos Fiscales



Center for Chemical Process Safety | An AIChE Technology Alliance
NY (home office), Frankfurt, Houston, Mumbai, Qingdao and Singapore
Tel: **(+1) 646.495.1371** | E-mail: **ccps@aiche.org** | **ccpsonline.org**



AIChE
120 Wall Street, New York, NY 10005
ccps@aiche.org | ccpsonline.org

PROCESS SAFETY AT A GLANCE

A Roadmap to CCPS Tools,
Management Systems and
Technical Resources

PROCESS SAFETY AT A GLANCE

CCPS MANAGEMENT RESOURCE TOOLS

COMMIT TO PROCESS SAFETY

- G/L for Implementing Process Safety Management Systems, 2nd ed. (2016)
- G/L for Process Safety in Outsourced Manufacturing Operations
- Local Emergency Planning Committee Guidebook: Understanding the EPA Risk Management Program Rule
- Inspiring Process Safety Leadership: The Executive Role (online and DVD)
- Process Safety Boot Camp - 2nd Generation
- Foundations of Process Safety for Offshore Operations
- Process Safety Culture Toolkit



20 CCPS ELEMENTS OF PROCESS SAFETY

- Process Safety Culture
- Standards, Codes, Regulations and Laws
- Process Safety Competency
- Workforce Involvement
- Stakeholder Outreach

UNDERSTAND HAZARDS AND RISKS

- G/L for Defining Process Safety Competency Requirements
- Introduction to Process Safety for Undergraduates and Engineers (2016)
- A Practical Approach to Hazard Identification**
- HAZOP eLearning
- LOPA eLearning
- Hazard Identification eLearning
- Hazard Identification for Operations and Maintenance Workers eLearning
- G/L for Chemical Process Quantitative Risk Analysis, 2nd ed.
- G/L for Chemical Transportation Safety, Security, and Risk Management, 2nd ed.
- G/L for Developing Quantitative Safety Risk Criteria
- G/L for Hazard Evaluation Procedures, 3rd ed.
- Layer of Protection Analysis**
- G/L for Enabling Conditions and Conditional Modifiers in Layer of Protection Analysis
- Guidelines for Initiating Events and Independent Protection Layers in Layer of Protection Analysis
- Recognizing Catastrophic Incident Warning Signs in the Process Industries



- Process Knowledge Management
- Hazard Identification and Risk Analysis

MANAGE RISK

- G/L for Integrating Management Systems and Metrics to Improve Process Performance
- Conduct of Operations and Operational Discipline
- G/L for Management of Change for Process Safety**
- G/L for Managing Process Safety Risks during Organizational Change
- G/L for Improving Plant Reliability through Data Collection and Analysis
- Process Equipment Reliability Database
- G/L for Mechanical Integrity Systems
- G/L for Performing Effective Pre-Startup Safety Reviews**
- G/L for Process Safety Documentation
- G/L for Technical Planning for On-Site Emergencies
- Revalidating Process Hazard Analysis
- G/L for Analyzing and Managing the Security Vulnerabilities of Fixed Chemical Sites
- Process Safety for Front-Line Supervisors eLearning
- G/L for Writing Effective Operating and Maintenance Procedures



- Operating Procedures
- Safe Work Practices
- Asset Integrity and Reliability
- Contractor Management
- Training and Performance Assurance
- Management of Change
- Operational Readiness
- Conduct of Operations
- Emergency Management

LEARN FROM EXPERIENCE

- Wisdom of Chemical Process Safety: Beacon Lessons and Accident Prevention (*Currently available in Japanese.)
- CCPS Process Safety Benchmarking Program
- CCPS Process Safety Metrics Online Reporting Application
- G/L for Process Safety Metrics
- Process Safety Leading and Lagging Metrics: "You Don't Improve What You Don't Measure"*/**
- Process Safety Leading Indicators Industry Survey
- G/L for Acquisition Evaluation and Post Merger Integration
- G/L for Auditing Process Safety Management Systems, 2nd ed.
- G/L for Investigating Chemical Process Incidents, 2nd ed.
- Incidents That Define Process Safety
- Process Safety Incident Database
- Tools for Making Acute Risk Decisions with Chemical Process Safety Applications
- Vision 20/20 Process Safety: The Journey Continues



- Incident Investigation
- Measurement and Metrics
- Auditing
- Management Review and
- Continuous Improvement

CCPS TECHNICAL RESOURCE TOOLS

ELECTRONIC APPLICATIONS

- CCPS Glossary
- CCPS Process Safety Incident Evaluation Tool
- NOAA Reactive Chemistry Worksheet Tool

VENTING AND EMERGENCY RELIEF

- Deflagration and Detonation Flame Arresters
- Emergency Relief Systems Design Using DIERS Technology
- G/L for Pressure Relief and Effluent Handling Systems
- Safe Design and Operation of Process Vents and Emission Control Systems

CHEMICAL REACTIVITY HAZARDS

- Chemical Reactivity Hazard Training CD-ROM
- Essential Practices for Managing Chemical Reactivity Hazards
- G/L for Process Safety in Batch Reaction Systems
- G/L for Reactivity Evaluation and Application to Process Design
- G/L for Safe Storage and Handling of Reactive Materials
- Reactivity Evaluation Software Tool

SAFE DESIGN

- Continuous Monitoring for Hazardous Material Releases
- G/L for Engineering Design for Process Safety, 2nd ed.
- G/L for Fire Protection in Chemical, Petrochemical, and Hydrocarbon Processing Facilities
- G/L for Safe Warehousing of Chemicals
- Inherently Safer Design, 2nd ed.

CONSEQUENCE MODELING

- G/L for Consequence Analysis of Chemical Releases
- G/L for Evaluating Process Plant Buildings for External Explosions, Fires, and Toxic Releases, 2nd ed.
- G/L for Vapor Cloud Explosion, Pressure Vessel Burst, BLEVE, and Flash Fire Hazards, 2nd ed.
- Understanding Explosions
- Wind Flow and Vapor Cloud Dispersion at Industrial and Urban Sites
- G/L for Determining the Probability of Ignition of a Released Flammable Mass

BIOPROCESS SAFETY

- G/L for Process Safety in Bioprocess Manufacturing Facilities
- PSM Biodiesel eLearning
- PSM Bioethanol eLearning

DUST EXPLOSION HAZARDS

- G/L for Safe Handling of Powders and Bulk Solids

HUMAN FACTORS

- Human Factors: Methods for Improving Performance in the Process Industries
- G/L for Preventing Human Error in Process Safety

SAFETY INSTRUMENTED SYSTEMS

- G/L for Safe and Reliable Instrumented Protective Systems
- G/L for Safe Automation of Chemical Processes, 2nd ed.

R&D

- Making EHS an Integral Part of Process Design

UPSTREAM

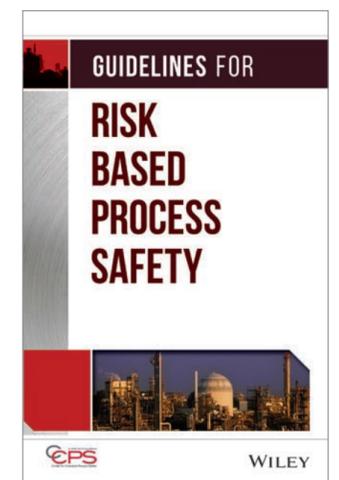
- G/L for Process Safety in Upstream and Shale Operations
- Most CCPS titles apply equally to upstream processes. (Please see appropriate RBPS element or technical topic.)

ADDITIONAL RESOURCES

View the **CCPS Video** "Leading the Way to a Safer World" at aiche.org/ccps/safety.



Find **CCPS resources** to meet your needs from the chart on this page. Additional information can be found at aiche.org/ccps.



It always makes sense to start with **Guidelines for Risk Based Process Safety**.*

Find CCPS Management Resource Tools

Look up CCPS resources based on the 20 CCPS Elements of Risk Based Process Safety categories. Find the applicable elements from the center column and look left to find more detailed resources.

CCPS Technical Resource Tools

Look up CCPS resources for specific technical topics by searching the right-hand column for the topical area, then searching for a title within the area.

Most **CCPS books** are available at wiley.com/go/ccps.

Deep Search CCPS by searching for "CCPS" and keywords on Knovel.com.

CCPS Education Tools and courses are available at aiche.org/ccps/resources/education.

Translated Materials Mandarin, Japanese, Portuguese, Spanish and Italian versions available at aiche.org/ccps/QuickLinks.

* Available in Spanish, Japanese and Portuguese

** Available in Chinese