PROCESS SAFETY IN ACTION

2013 ANNUAL REPORT

NORTH AMERICA

EUROPE

ASIA

SOUTH AMERICA

AUSTRALIA

AFRICA

Working Together to Meet the Global Process Safety Challenge

An AIChE Technology Alliance

CCPS

Center for Chemical Process Safety

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Acknowledgement:
CCPS thanks Steve Smith for editorial assistance.

An AIChE Technology Alliance
CCPS
Center for Chemical Process Safety

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 incidents. On March 23, 1985, AIChE formed the Center for Chemical Process Safety; CCPS completed Guidelines for Hazard Evaluation Procedures a short time later.

Subsequent CCPS Guidelines have codified the basic elements of process safety and provided key tools to manage, implement, and continually improve process safety programs. Focused workshops and annual international conferences have provided additional opportunities for integrated learning and formal discussion of process safety.

Unfortunately, occasional incidents still happen around the world. But CCPS and its more than 155 global members continue to learn from them—and eliminate them—leveraging our Global Community Committed to Process Safety to strengthen our broad, international program dedicated to improving process safety culture, understanding, knowledge, and implementation.

While addressing today's challenges, CCPS members actively envision a future incident-free process industries and are designing the programs that will get us there. Come join the Global Community Committed to Process Safety – be ready for the future by helping create it.

You Made an Impact in 2012

- DVD: Process Safety for Senior Executives
- Guidelines for Likelihood of Ignition
- Guidelines for Managing Process Safety Risks During Organizational Change
- Hazard Identification eLearning for Plant Personnel
- Key Performance Indicators for Risk Based Process Safety
- Process Safety Vision 2020

Get Your Company Involved

VOLUNTEER for a CCPS project subcommittee: get the opportunity to share your knowledge and help shape industry best practices.

EDUCATE your colleagues by hosting a Process Safety Boot Camp® training event.

SHARE your expertise by submitting an abstract to the Global Congress on Process Safety (GCPS) or a CCPS Regional Conference.

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

MODEL your company as a leader in process safety by being a contractor for a CCPS publication.

COMMUNICATE the word by forwarding the Beacon to your colleagues.

CONNECT with your process safety peers through CCPS LinkedIn.

JOIN CCPS as a member company and prevent catastrophic process safety incidents.

CHALLENGES AND CHALLENGES MET

Scott Berger
Executive Director, CCPS

VISION

In order to protect people, property and the environment, CCPS is committed to bringing the best process safety knowledge and practices to industry, academia, governments and the public around the world through collective wisdom, tools, training and expertise.

MISSION

Eliminate process safety incidents, in all industries, by:

- Promoting process safety as a key societal value and expectation.
- Establishing process safety as the foundation for responsible operations.
- Serving as the premier world-wide resource for process safety and development of "state-of-the-art solutions."
- Fostering knowledge, understanding and implementation of process safety by executives, management, technicians, engineers, students, government officials and the public.
- Advancing process safety technology, culture and management practices.

A Message From the Executive Director

I got into the car, buckled my seatbelt and opened the cover of my tablet. The screen showed a date in April, 2020. "Siri, take me to the Global Congress on Process Safety," I said. "Good morning, Scott," the pleasant voice replied. "Thank you for your commitment to process safety. Do you want me to drive you to the 17th GCPS which starts tomorrow, or do you want to watch the videos of the 16th GCPS while I take you to a different destination?"

Of course, we don't know if self-driven cars with lightning-fast Internet (and equally rapid access to the CCPS website) will be a reality in 2020. But, trying to understand what a day in the life of a chemical, petroleum, or biological engineer, manager, or executive might be like in that year can help immeasurably when determining how process safety needs to evolve in the intervening years.

What can we reasonably suppose about 2020? First, we can expect that our industries will be even more global. The process safety community needs to support this growth intentionally, ensuring that new installations have up-to-date approaches, that the workforce is competent, and jobs are done safely.

Second, we can expect that developed economies will also continue to grow, whether due to the growing supplies of shale gas or petroleum, new product or process innovations, or some as-yet-unknown opportunity. In this climate, we must ensure that aging facilities adhere to evolving standards, while working cooperatively with regulators and standard-developing bodies to make standards effective and efficient.

Third, we can be sure that global media will put accidents and incidents more in the public eye than ever. In a transparent world, we must cooperate with regulators and with each other to develop effective, non-punitive means of rapidly sharing lessons learned, as well as systems to use these lessons to drive improvement.

Fourth, industry and the public will need to challenge each other to improve. The public may challenge industry through means such as external verification. Industry may likewise challenge the public to improve and engage in science, technology, engineering and mathematics (STEM) education, including improved understanding of risk concepts. This may be supported by enhanced collaboration across technical, trade, labor, and public interest groups.

A principle long-espoused by CCPS will tie this all together: a deep culture of process safety driven by an unbridled passion to protect people, the facility, and the environment. Culture and passion will cross company boundaries and indeed go beyond industry itself.

Can all of this happen? Self-driven cars are a bit outside CCPS's scope. But if we're talking about the transformation of process safety culture, of course it can. It all comes back to the passion of CCPS member companies, volunteers, and supporters, which has taken us such a long way from Sevesso, Flixborough and Bhopal. Together, we will meet our global challenges.

CCPS UNIFIES

CHALLENGE:
Promoting process safety as a key societal and industry value and expectation.

CHALLENGE MET:
More than 1000 attendees, 170 companies, and 30 countries were represented at the 8th Global Congress on Process Safety in 2012.

The 9th Global Congress on Process Safety

Each year the Center for Chemical Process Safety (CCPS) and the AIChE Safety & Health Division present the world's largest gathering of process safety professionals, the Global Congress on Process Safety (GCPS). From April 28 to May 1, the 9th GCPS will be held at the Grand Hyatt San Antonio, San Antonio, Texas. More than 1000 attendees will convene to explore, share, and learn advanced methods and technologies in all aspects of process safety.

This year we strive to strengthen the process safety community by expanding our international theme and by continuing the Process Safety Management Mentoring track and the "Bring a Young Colleague" program.

Process Safety in Latin America

Opening the 4th Latin American Conference on Process Safety (LACPS) on July 3, 2012, Petrobras' Executive Manager for Exploration & Production Engineering (E&P) Solange Guedes described how pursuit of the goals of zero accidents and leaks shaped the company's practices. "Safety and operational discipline are mandatory" she said, referring to the company's production process. With a record attendance of 500, the 4th LACPS benefited from high-quality speakers, excellent presentations, and the excitement of Rio de Janeiro in the afterglow of Rio+20.

For the first time, CCPS introduced electronic poster sessions that engaged participants and generated spirited discussion.

The 5th LACPS will be held in Cartagena de Indias, Colombia, from August 12 to 14, 2013. Our member companies in the region look forward to exchanging information with colleagues and learning from experts from around the world.

With newly appointed Latin American Regional Manager Laura Turci facilitating activity, participation in CCPS's Latin American community has increased. On-site training has been provided with the addition of Spanish-speaking CCPS staff consultants. New projects to translate CCPS books into Portuguese and Spanish are also underway.

PROJECTS

Process Safety Vision 2020 (Project # 244)

Vision 2020 peers into the not-so-distant future, when great process safety performance will characterize all industries. The CCPS Vision 2020 concept outlines how five tenets of culture, standards, competency, management systems and lessons-learned are enhanced by the community's passion and supported by four global themes.

The Business Case for Process Safety, 2nd Edition (Project # 245)

Implementing good process safety management systems impacts your bottom line and enhances sustainability by improving equipment reliability, running times, process efficiencies and overall performance. This classic CCPS booklet is being updated to include the most current examples and to more fully reflect the interplay of process safety and sustainability.

Translation Projects (Project #255)

In 2013, CCPS will begin translating books and other materials into Mandarin, Portuguese and Spanish as part of our global outreach program. Books and materials for translation will be selected based on a five-year plan developed by member companies in those regions.

BUILDS

CHALLENGE: Establishing process safety as the foundation for responsible operations.

CHALLENGE MET: CCPS now has 156 members that are headquartered in 28 countries and operate in more than 150 countries.

PROJECTS

Process Safety Incident Database

The new, secure, web-based Process Safety Incident Database (PSID) is now fully operational. PSID provides access to lessons learned from nearly 800 incidents, which are categorized and searchable by chemical, process type and industry. Participants in the program include petroleum, petrochemical, chemical and pharmaceutical companies worldwide.

Guidelines for Implementing Process Safety Management Systems, 2nd Edition (Project #240)

Most companies now have some form of process safety management system, but a number of companies, especially smaller companies, need a roadmap of how to efficiently and effectively upgrade their systems. This second edition will include a practical approach and information on how to navigate this challenge successfully.

Guidelines for Process Safety in Pilot Plants and Laboratories (Project #251)

The current version of NFPA 45 (2011) clearly distinguishes between laboratories and pilot plants, but does not provide detailed guidance on many aspects of process safety in either. We will compile both literature and company experience that can be used to develop processes and procedures specific to bench and small-scale chemical operations.

Effective Process Safety Communications (Project #253)

Effective communication impacts many aspects of design, operation, maintenance, and testing. This project will identify ways of improving process safety communication, from operating procedures to warning signs, so that key, life-saving information can be transmitted and received in an effective manner. Illustrative examples will help identify both desirable and undesirable practices.

The 1st CCPS Asia-Pacific Conference on Process Safety

Since 2006, CCPS has partnered with the China University of Petroleum to provide training and other support in China as the CCPS China Section (CCPS-CS). From September 8 to 10, 2013, CCPS, the China University of Petroleum, and the Chinese Chemical Safety Association will host the 1st CCPS Asia Pacific Conference on Process Safety at the Kempinski hotel in Qingdao. This conference aims to bring together government officials, professionals, and academics in China and internationally to learn about CCPS Risk Based Process Safety elements, and share tips on implementing process safety programs in China.

CCPS CHINESE CONFERENCE ON PROCESS SAFETY

CCPS in India

On May 17, 2012, CCPS held its 3rd Asia-Pacific Regional meeting in Mumbai, India, thanks to the generosity of member company Toyo Engineering India Ltd. The meeting began with a keynote speech by Chief Guest Hirak Datta, Executive Director, Oil Industry Safety Directorate, Ministry of Petroleum and Natural Gas, Government of India. The meeting featured presentations by experts drawn from many industries, who shared their respective experiences

CCPS in Malaysia

CCPS held its 4th Asia-Pacific Regional Meeting on October 15 – 16, 2012, hosted by PETRONAS Group HSE Division (GHSED). More than 40 participants from CCPS member companies attended the two-day meeting held in KL Sentral, Malaysia. Experts from the Asia-Pacific Region gathered to share their knowledge and experiences on Process Safety Metrics. Maureen Song, Head of GHSED's Strategy and Governance Department, welcomed all participants to the CCPS Meeting.

CCPS in the Middle East

In early November 2012, a Memorandum of Understanding was signed between the Saudi Arabian Local Section of the American Institute of Chemical Engineers (SAS-AIChE) and CCPS. SAS-AIChE is the organizer of MEPEC 2013, the Middle East Process Engineering Conference and Exhibition to be held in Bahrain, from September 29 – October 2, 2013. Pre-conference courses are being developed and a conference session focusing on process safety will be scheduled during MEPEC 2013. We expect this collaboration will lead to further joint efforts focusing on process safety. MEPEC will be followed by the 1st CCPS Middle East Regional Meeting on October 5 – 6, 2013, in Dubai.

CHALLENGE:
Serving as the premier world-wide resource for process safety and development of state-of-the-art solutions.

CHALLENGE MET:
Two CCPS books were published in Chinese in 2012 and a new project is accelerating translations into Chinese, Spanish, and Portuguese.

CCPS Thanks Pan American Energy

As part of the ongoing commitment to strengthening the culture of process safety in their company and in Latin America, CCPS member company Pan American Energy has translated more than ten U.S. Chemical Safety Board videos into Spanish. Translations are now available for viewing from the CCPS website.

Louisa Nara presented a certificate of appreciation to Ing. Oscar Prieto, CEO, and Ing. Mary Corsaro, Vice President HSE & Operation Assurance, of Pan American Energy.

CCPS at ACHEMA 2012

As part of its ongoing outreach, CCPS hosted a booth at ACHEMA, the world's largest chemical industry trade show, held every three years in Frankfurt am Main, Germany. Attendees from dozens of companies in Europe and around the world visited CCPS to catch up on the latest developments, browse CCPS books, discuss their process safety challenges, and plan for increased global involvement in CCPS projects.

ACHEMA 2012 Messe Frankfurt. Right, ACHEMA 2012 CCPS Booth

Vision 2020

Since its founding, CCPS has mapped and remapped the journey to great process safety. As we look forward to 2020, CCPS has a new vision. This new vision involves both industry and society as a whole. In industry, passion and felt leadership instill operational discipline to achieve highly reliable organizations, motivating a robust culture of process safety throughout the organization. Industries, governments, and associations cooperate to harmonize standards, drive global metrics, and break down barriers to open sharing of lessons learned to prevent repeat incidents. Academia, governments, and the public share increased risk literacy and productively engage in education, planning, and policy. Join CCPS on our journey to Process Safety Vision 2020.

PROJECTS

Process Safety Beacon

The Beacon is written for front-line plant workers – operators, technicians, shift supervisors, and maintenance workers. Engineers, managers, executives, government regulators and professors also use it. Register to receive the Beacon – FREE – at www.ccpsonline.org.

Guidelines for Process Safety Knowledge and Expertise (Project #239)

This guideline targets multiple audiences, including front-line operators, mechanics and instrument technicians through senior management and financial and business executives. A super-matrix of process safety knowledge / expertise versus competency is being developed to assist you in the identification of training gaps and to target needed follow-up.

Guidelines for Safe Automation, 2nd Edition (Project #241)

This second edition will cover state-of-the-art design and maintenance of Basic Process Control Systems (BPCS) and their role in overall safe operation, focusing on the BPSC / operator interface. Worked examples of control schemes in combination with Safety Instrumented Systems (SIS) are included with Risk Based Process Safety principles and a control strategy for cyber-attack security.

Essential Practices for Control and Mitigation of Dust Hazards (Project #252)

Dust fires and explosions can be fatal. Control and mitigation are essential for safe operations in metals, chemicals, electronics, pharmaceutical, food and agricultural operations. This concept book will provide guidance on how to control and mitigate dust hazards, focusing on methodologies for predicting and measuring parameters, design of suppression and venting systems, and other related topics.

PROJECTS *continued*

Guidelines for Mechanical Integrity Systems, 2nd Edition (Project #243)

Mechanical integrity is a critical and integral part of any successful operation, regardless of industry classification. This second edition will include information that supplies additional guidance on selecting materials of construction, condition monitoring, critical safety equipment, and Risk-Based Inspection, and Mechanical Integrity metrics and many more.

Guidelines for Facility Siting and Layout, 2nd Edition (Project #246)

Recent global incident reports identified facility siting and layout as key or contributing factors to injuries and fatalities. As we gain such knowledge, it is imperative to update information and share with personnel who are designing and evaluating facilities. This second edition book will include new and practical information on occupied portable buildings, facility and plant layout, and more.

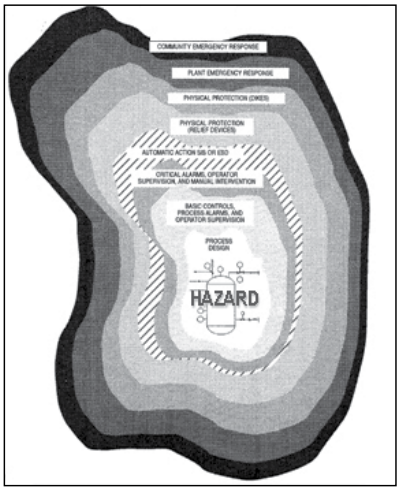
Integrating Management Systems and Metrics to Improve Process Safety (Project #247)

Metrics are a part of our day-to-day business, and this book will discuss ways to identify and implement synergistic opportunities in developing management systems and reporting metrics. Key topics include how to anticipate and alleviate resistance to integration, how to streamline audit functions by reducing or eliminating duplication of audits, operational reliability and highly reliable organization.

Layer of Protection Analysis (LOPA)

This new online course offers an overview of Layer of Protection Analysis (LOPA) to mitigate risk in your processes. The course covers the basic LOPA approach to analyzing potential incident scenarios. Concepts that are covered include:

- Understanding LOPA methodology,
- How to execute the detailed steps of the LOPA method for scenario analysis
- How to identify enabling conditions and conditional modifiers
- Closing the risk gap
- Managing LOPA documentation updates, revalidations and follow-up



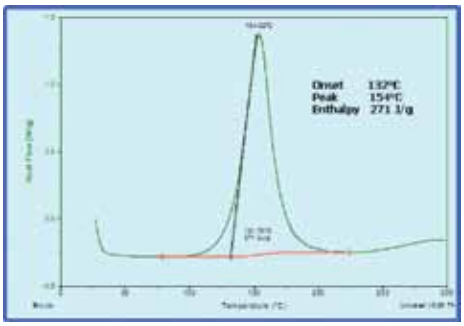
TEACHES

CHALLENGE:
Fostering knowledge, understanding, and implementation of process safety by all.

CHALLENGE MET:
Since 2009, nearly 1,000 individuals have attended Process Safety Boot Camps in Brazil, Canada, China, Egypt, India and the United States. Over 900 individuals worldwide completed the Process Safety for the Biofuels Industry e-learning course. Three new CCPS e-learning courses were introduced in 2012.

Safety in Undergraduate Education

For the last 20 years, the Safety and Chemical Engineering Education program (SAChE) has been at the forefront of supporting process safety as an integral part of undergraduate chemical engineering curricula. SAChE provides more than 50 prepared lectures and 8 self-study certificate modules on a range of process safety topics used worldwide at over 200 universities. Lectures can be integrated into mainstream chemical engineering courses, or used as part of a comprehensive process safety course. Self-study modules conclude with an online test. Students passing the test receive a certificate.



Advising Technical Policy Worldwide

CCPS engages in efforts to make policy-makers worldwide aware of best practices in process safety. Our efforts in 2012 focused on promoting the use of global process safety metrics in Argentina, Brazil, the European Union, India, Malaysia, and North America

Process Safety Boot Camp, Phase 2 (Project #254)

Since 2012, CCPS has conducted 36 Process Safety Boot Camps, training nearly 1000 participants. Boot Camp will be expanded into a series of courses for different segments of the workforce, such as awareness, executive overview, engineering design, operation and maintenance personnel, students, and professors.

PROJECTS

Process Safety Management for Front-Line Supervisors (Project #225)

Daily "enforcement" at the operator, technician and supervisor levels is essential to follow through on leadership commitment to process safety. This soon-to-be-released e-learning program is designed to increase understanding and buy-in at the front-line supervisory level through better understanding of process safety, its benefits and the interactions of the various process safety elements.

Student Handbook for Process Safety (Project #242)

In its Investigation Report of the T2 Laboratory, the Chemical Safety Board recommended that AIChE and ABET modify the university chemical engineering curricula to increase awareness of chemical reactivity hazards. In 2011, ABET approved new program criteria for accredited chemical engineering programs. This project includes development and evaluation tools for applying process safety principles throughout the standard curriculum in an interactive electronic format, supporting both the new ABET requirements and similar requirements worldwide.

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

Process safety culture is the combination of group values and behaviors that determine how process safety is managed. Without a good culture, even the best management system will achieve mediocre results or fail outright. Guidance and tools are being developed to help organizations establish, evaluate, improve and sustain a positive process safety culture.

INNOVATES

PROJECTS

Process Equipment Reliability Database

To analyze equipment performance in a statistically valid manner, you need more data on run time and failure rates than most companies can provide individually. The Process Equipment Reliability Database (PERD) gives you that expanded population by collecting data from participating companies using standardized taxonomies.

Joining PERD can be the difference between a guesstimate and accurate failure rate data. For more information, contact CCPS. To discuss or join PERD, contact Dave Belonger at (609) 654-4914 or by email at dbelonger@verizon.net.

Guideline for Barrier Risk Management — Bow Tie Analysis (Project #255)

Bow Tie Analysis is gaining popularity in upstream and offshore operations, as well as in the downstream and chemical sectors. This concept book will clarify the method, provide detailed instructions, and provide guidance on avoiding common errors. Constructs for process threats — corrosion, impact, improper operation / human error, operational upsets, etc. — will be demonstrated.

CHALLENGE:
Advancing process safety technology, culture, and management practices

CHALLENGE MET:
CCPS's new publication, "Recognizing Catastrophic Incident Warning Signs," helps reveal potential incidents that are just a step away.

Website Improvement

In 2012, AIChE and CCPS underwent a website makeover that included a bold look and implemented new features. The improvements created a more user-friendly environment, better search functions and expanded reference documents, including conference proceedings and recordings. The new website also incorporates on-line training to meet the needs and demands of an ever-changing workforce, and links have been added to connect information and make archived materials easier to find.

To meet the organization's vision on global expansion, the web pages can now appear in different languages with just a click. In the near future, a personalized website will be developed for our members. Members will have their data displayed once logged in, and these data will be directly retrieved from our database. To experience the new website please visit www.ccpsonline.org.

Technical Steering Committee

The Technical Steering Committee (TSC) consists of one representative from each CCPS Member Company. Additional representatives may be appointed by the CCPS Executive Director from academia, government agencies, and AIChE. The key functions of the TSC are to assist the CCPS Executive Director in developing an overall, multi-year program for CCPS; defining the priorities for project selection; selecting specific projects; defining and reviewing the scope for these projects; suggesting membership for the Project Subcommittees; and reviewing the status of projects and programs.

The CCPS Technical Steering Committee meets twice per year in person and three times by webconference. TSC meetings feature presentations on useful new developments, process safety technology and management, as well as discussions of ongoing CCPS projects and programs.

ORGANIZATIONAL STRUCTURE

The Technical Steering Committee (TSC) is CCPS's primary operating group, providing technical oversight of CCPS activities and selecting projects. TSC members serve voluntarily on CCPS project subcommittees and provide the technical expertise evident in CCPS publications. All member companies have one voting representative on the Technical Steering Committee.

CCPS activities are monitored and directed by a Managing Board, an Advisory Board, a Planning and Operations Committee and a 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, chaired by the Executive Director of AIChE, has fiduciary responsibility for CCPS's operations. Board members include the CCPS Executive Director and members of AIChE's Board of Directors, providing linkage to the chemical engineering profession.

The Advisory Board, chaired by the CCPS Executive Director, has strategic responsibility for CCPS. Board members, who include senior executives representing member companies, review CCPS's mission and strategies and recommend new initiatives.

The Planning and Operations Committee has responsibility for evaluating opportunities and gaps in CCPS programs relative to its strategy and generating potential initiatives to address them. Committee members are selected from the Technical Steering Committee.

Managing Board

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Scott Berger ..... CCPS Executive Director
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Otis Shelton ..... AIChE President Elect
David Rosenthal..... AIChE Past President
Andre Da Costa..... AIChE Treasurer
Christine Seymour ..... AIChE Secretary
Thomas Degnan..... AIChE Director
Jack Hipple ..... AIChE Director
Kate Ziemer..... AIChE Director

PROJECTS

Tools for Making Acute Risk Decisions with Chemical Process Safety Applications, 2nd Edition (Project #248)

Today's risk decisions are complex, including considerations for impact on personnel and the community, profitability, capital, risk reduction, alternatives, codes, standards, regulation, and good industry practice. The 2nd Edition will include modern decision-making processes based on current practices informed by new tools, such as LOPA and inherently safer design, etc.

Guidelines for Integrating Process Safety into Engineering Projects (Project #250)

Time is money and redesign can be costly. This book will provide guidance on scope definition and performance validation of Engineering and Contracting (E&C) firms, and provide examples of how to incorporate adequate process safety considerations into their designs. The book will address a range of projects, from the design of an individual facility component to major capital projects.

ORGANIZATIONAL STRUCTURE

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Jatin Shah BakerRisk

Mike Smith Shell

John Stoney BP

Tony Thompson Retired

Florine Vincik Syngenta Crop Protection

Jan Windhorst CCPS Emeritus

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Debra McDaniel Koch Nitrogen – Vice Chair

Brian Kelly CCPS Staff Consultant

Jon Bernardi The Lubrizol Corporation (retired)

Chris Buehler Exponent

Mark Futrell Nexen Inc.

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Jonas Duarte Chemtura

John Herber CCPS Emeritus

Dan Housenga LyondellBasell

Susan Lee-Martin Arkema

Sheri Sammons TPC

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Chris Devlin Celanese

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CCPS STAFF

Scott Berger, Executive Director joined CCPS in 2001 after 23 years at Owens Corning and at Rohm and Haas Company, with leadership positions in R&D, engineering, and EHS Management. Scott received a BSChE and MSChE from the Massachusetts Institute of Technology.

Louisa Nara, Technical Director joined CCPS in 2010 after a 30 year career, most recently at Bayer, where she was Director of Risk Management, NAFTA. Louisa received a BSChE from West Virginia University, an MS in Environmental Engineering from Villanova University and is a Certified Compliance and Ethics Professional (CCEP).

Laura Turci, Latin America Regional Manager joined CCPS in 2011 after specializing in process safety during R&D and scale-up at Sanofi Aventis, L'Oreal, and other pharma companies. Laura is also an Adjunct Professor in Process Safety at NJIT. Laura received a BSChE and MSChE from Universidad Tecnologica Nacional, Argentina.

Umesh Dhake, Asia Pacific Regional Manager joined CCPS in 2012. Umesh has more than 13 years of experience in risk consulting with ABS Consulting and Germanischer Lloyds GmbH. Umesh received a BSChE from Mumbai University. Umesh has been involved in various PSM related activities such as PHA, QRA, and ALARP. He is also a Lead Auditor, Lead Tutor and Skilled Examiner for management system certifications programs (Quality, Environmental, and Occupational Health & Safety) and PSM audits.

Lamese Bader, Membership and Communications Coordinator joined CCPS in late 2011. Before joining CCPS, Lamese was the Associate Director of the Arab American Association of New York and was the Dean of Discipline at A. Fantis Parochial School. Lamese is also an Adjunct Professor at the Metropolitan College of New York. Lamese received her BA from Hunter College and an MA in International Affairs from The New School University.

Jing Chen, CCPS Operations Associate joined CCPS in 2012. Jing received her BS and MS degrees in Chemical Engineering from Polytechnic Institute of NYU. At NYU she worked in the DNA probe biosensor kinetics and surface stability laboratory. She also worked as a research fellow on the optimization of carbon nanotube synthesis, and as a tutor and orientation leader.

Shami Nayak, Asia Pacific Region Logistics Manager joined CCPS in 1999. Shami received a BS in Psychology and an MBA from Mumbai University as well as an International MBA from Phoenix University. During Shami's off time, Shami volunteers at several children's English language education non-profit organizations in Mumbai.

Anne A. Schaeffer, Director of Education has led the AIChE and CCPS Education Department since 2012. Anne has over 30 years of experience in Professional Development and Training. Anne also served as an adjunct professor at Virginia Commonwealth University. Anne received her BA in English and Secondary Education from SUNY Oswego and her MBA from Bernard M. Baruch College City University of New York.

Colleen Dean, Project Manager, Instructor-Led Training has worked in the AIChE and CCPS Education Department since mid-2012. Before joining CCPS, Colleen worked over 16 years in non-profit Education and now continues her commitment to professional education helping chemical engineers achieve their learning objectives. Colleen received a BA in Political Science from Manhattanville College.

Suman Patil, Product Manager, eLearning has worked in the AIChE and CCPS Education Department since 2012. Suman is responsible for eLearning, webinars and web forums. Previously, Suman worked for New York University where she was the Associate Director for Membership and Business Development for an international healthcare program. Suman has also worked at Bostrom Corporation and SmithBucklin. Suman has a BA from Ohio University and an MBA from DePaul University.

Denise Deluca, Education Specialist for In-Company training and Global Recruitment Sales Manager, has been with AIChE and CCPS for over 20 years, working in numerous departments.

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CCPS STAFF CONSULTANTS

Don Abrahamson joined CCPS in 2011 after retiring from Celanese Corporation as the Global Process Safety Manager. Don has a BS in Chemical Engineering from Cleveland State University and over forty years of experience in operations, engineering and process safety.

David J. Belonger joined CCPS in 1996. He spent most of his career in various assignments with Rohm and Haas Company, including Corporate Safety Director and Plant Manager. Dave has a BS in Chemical Engineering from the University of Wisconsin and an MBA from Temple University.

Jim Conner joined CCPS in 2011. He retired from Celanese in 2010 as VP Operations and Technology after a 34-year career spanning process engineering, process safety, and manufacturing. Jim holds a BS Chemical Engineering and an MS Environmental Engineering from Rice University.

Charles Cowley, C. Eng. joined CCPS in 2012 after 30 years in industry. He worked for Shell on major projects, maintenance and technical safety. Charles has a BSc in Mechanical Engineering from the University of Nottingham and an MBA from Henley Management College.

Walt Frank, PE joined CCPS in 2008. His experience includes 24 years with DuPont and 15 years in consulting practice. He has a BS in Chemical Engineering from Rose-Hulman Institute of Technology. Walt focuses on process safety management system design and improvement and safety culture.

Dennis Hendershot joined CCPS in 2005 after a 35-year career with Rohm and Haas Company. Dennis is one of the world's foremost champions of inherently safer design. Dennis has a BS in Chemical Engineering from Lehigh University and an MBA from the University of Pennsylvania.

John Herber joined CCPS in 2009 after a 33-year career with 3M Company that included positions in process and project engineering, production operations and corporate safety. John has a BS in Chemical Engineering from Purdue University.

Jerry L. Jones, PE joined CCPS in 2012 after more than 40 years in the chemicals, polymers, pharmaceuticals, and electronics materials industries. He earned BS and ME degrees in Chemical Engineering from Cornell and an MS in Environmental Engineering from Stanford.

Greg Keeports joined CCPS in 2008 after retiring from Rohm and Haas Company. He has over 38 years experience in the chemical industry. Greg has BS and MS degrees in Chemical Engineering from Penn State and University of Pennsylvania and an MBA from the Wharton Business Management program.

Brian Kelly PE, joined CCPS in 2005 after 35 years with Imperial Oil and Syncrude Canada Ltd. where he held senior positions in engineering, operations, risk management and process safety. Brian received his BASc and MASc degrees in chemical engineering from the University of Ottawa.

John Murphy, PE retired from the U.S. Chemical Safety and Hazard Investigation Board as lead investigator. John also retired from Dow Chemical Company as a leader in process safety. He has a BS in Chemical Engineering from Tufts University and an MBA from Central Michigan University.

Robert W. Ormsby, PE joined CCPS in 2003 after 27 years of service with Air Products and Chemicals, Inc. Bob served as Global Manager of Process Safety. Bob has a BS in Chemical Engineering from Penn State University and an MS in Chemical Engineering from Lehigh University.

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Adrian L. Sepeda, PE joined CCPS in 2002 after 33 years with Occidental Chemical Corp. where he held a variety of technical and management positions, retiring as Director of HES Risk Management. Adrian holds a BS in Mechanical Engineering from Lamar University.

Daniel E. Sliva joined CCPS after he retired from GE, where he held a variety of management positions over his 30-year career. Dan received his BS and PhD in Chemical Engineering from Rensselaer Polytechnic Institute and an MS in Chemical Engineering from the University of Rochester.

Néstor Sposito joined CCPS in 2011 after 32 years with Dow Argentina. He is actively involved in the leadership of NFPA and the United Nations Environmental Program's APPEL Process. Nestor has BS degrees in Chemistry and Chemical Engineering and an MS in Hygiene and Safety Engineering.

Byron Sun joined CCPS in 2012 after a successful career with DuPont in Shanghai, China. Byron holds a Diploma in Chemical Process from Shanghai University of Science and Technology and an MBA from Tongji University.

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Prof. Zhao Dongfeng has worked in the China University of Petroleum since 1992. He is now the Director of theCCPS China Section.

Dr. Yi Liu works at the China University of Petroleum as Associate Professor and is a state registered safety engineer. He received his PhD from the State Key Laboratory of Fire Science in the University of Science and Technology of China in 2003 and is now serving as the Assistant Director of the CCPS China Section and serves on the TSC.

2013 IMPORTANT DATES

2013 Important Dates

EVENT	DATE
TSC Web Meeting	February 12 @ 8:00 pm & February 13 @ 10:00 am EST
Advisory Board Meeting, Houston	March 6
Latin America Regional Meeting, Brazil	March 12
CCPS Workshop in Goa, India	March 14 – March 15
Hazards AP KL, Malaysia	April 16 – April 18
9th Global Congress on Process Safety, San Antonio	April 28 – May 1
TSC Meeting, San Antonio	May 2
5th Asia Pacific Regional Meeting, India	May 20
Public Boot Camp Training, Thailand	Spring 2013
2nd European Boot Camp co-hosted with AEL	Spring 2013
TSC Web Meeting	June 25 @ 10:00 am EDT
5th CCPS LACPS, Cartagena de Indias, Colombia	August 12 – August 14
Asia Pacific Conference, Qingdao, China	September 8 – 10
TSC Web Meeting	September 17 @ 10:00 am EDT
MEPEC	September 28 – October 2
6th Asia Pacific Regional Meeting (Middle East)	October 5
TSC Meeting, San Francisco	November 6-7
7th CCPS Asia Pacific Regional Meeting (San Francisco)	November 7

For more details e-mail ccps@aiche.org

THANK YOU

CCPS wishes to thank the Beacon Translators for their outstanding contributions to the Beacon. The Beacon translators provide invaluable insight and effort to support process safety. Each month, the Beacon is sent to over 28,000 people in 31 languages. The Beacon is freely shared and the actual readership likely exceeds 1.5 million. Special thanks to:

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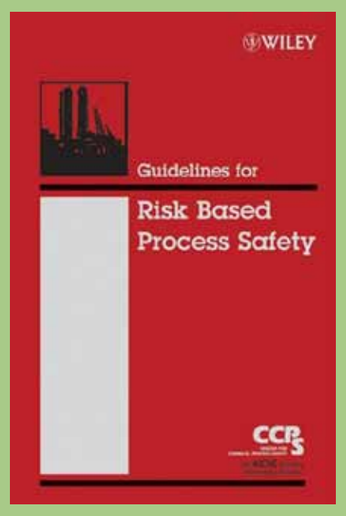
Find CCPS resources to meet your needs from the chart on this page.

It always makes sense to start with "Guidelines for Risk Based Process Safety." When you're ready to learn more:



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CCPS Technical Resource Tools

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Most CCPS Books are Available

at www.wiley.com/go/ccps

Deep Search CCPS

by searching on "CCPS" and keywords on Knovel.com.
See page 6 for more details.

CCPS RESOURCE MANAGEMENT TOOLS

20 CCPS ELEMENTS OF PROCESS SAFETY

CCPS TECHNICAL RESOURCE TOOLS

GUIDELINES (G/L) FOR RISK BASED PROCESS SAFETY

COMMIT TO PROCESS SAFETY

- G/L for Implementing Process Safety Management Systems
- G/L for Process Safety in Outsourced Manufacturing Operations
- Local Emergency Planning Committee Guidebook: Understanding the EPA Risk Management Program Rule
- Executive Process Safety Seminar
- Process Safety Boot Camp
- Process Safety Culture Toolkit

Process Safety Culture

Standards, Codes, Regulations, and Laws

Process Safety Competency

Workforce Involvement

Stakeholder Outreach

UNDERSTAND HAZARDS AND RISK

- A Practical Approach to Hazard Identification
- HAZOP E-Learning
- LUPA E-Learning
- Hazard Identification E-Learning
- G/L for Chemical Process Quantitative Risk Analysis, 2nd Ed.å
- G/L for Chemical Transportation Safety, Security, and Risk Management
- G/L for Developing Quantitative Safety Risk Criteria
- G/L for Hazard Evaluation Procedures, 3rd Ed. Layer of Protection Analysis
- Recognizing Catastrophic Incident Warning Signs in the Process Industries

Process Knowledge Management

Hazard Identification and Risk Analysis

MANAGE RISK

- Conduct of Operations and Operational Discipline
- G/L for Management of Change for Process Safety
- G/L for Improving Plant Reliability Through Data Collection and Analysis
- G/L for Mechanical Integrity Systems
- G/L for Performing Effective Pre-Startup Safety Reviews
- G/L for Process Safety Documentatio n
- 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
- G/L for Managing Process Safety Risks During Organizational Change
- Front-Line Supervisor E-Learning
- G/L for Writing Effective Operating and Maintenance Procedures
- Process Equipment Reliability Database

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

- CCPS Process Safety Benchmarking Program
- CCPS Process Safety Metrics Online Reporting Application
- 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.
- G/L for Process Safety Metrics
- Incidents that Define Process Safety
- Process Safety Incident Database
- Tools for Making Acute Risk Decisions with Chemical Process Safety Applications

Incident Investigation

Measurement and Metrics

Auditing

Management Review and Continuous Improvement

VENTING AND EMERGENCY RELIEF

- Deflagration and Detonation Flame Arrestors
- 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, Petrochemica, 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 and Fires and Toxic Releases, 2nd ed
- G/L for Evaluating the Characteristics of Vapor Cloud Explosion, Pressure Vessel Bursts, BLEVE, and Flash Fire Hazards, 2nd Edition
- Understanding Explosions
- Wind Flow and Vapor Cloud Dispersion at Industrial and Urban Sites

BIOPROCESS SAFETY

- G/L for Process Safety in Bioprocess Manufacturing Facilities

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

R&D

- Making EHS an Integral Part of Process Design

UPSTREAM

- (Most CCPS titles apply equally to upstream processes. Please see appropriate RBPS element or technical topic)