



**Building a
Global Community
Committed to
Process Safety**

CCPS
CENTER FOR
CHEMICAL PROCESS SAFETY

An **AIChE** Industry
Technology Alliance

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PROCESS SAFETY REPORT



Process Safety Report 2008

CONTENTS

- 1 Management Report
- 2 Operations Report
- 3 Milestones of 2007
- 4 Upcoming Projects and Events
- 6 Process Safety at a Glance
- 8 CCPS Global Members: An Even More Powerful Alliance
- 10 CCPS Organizational Structure
- 12 Project Committees
- 17 CCPS Staff
- 18 Members

CCPS MISSION STATEMENT

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, 17 chemical industry leaders asked the American Institute of Chemical Engineers (AIChE) to lead a collaborative effort to eliminate catastrophic process incidents by:

- **ADVANCING** state-of-the-art process safety technology and management practices
- **SERVING** as a premier resource for information on process safety
- **FOSTERING** process safety in engineering and science education
- **PROMOTING** process safety as a key industry value

On March 25, 1985, AIChE formed the Center for Chemical Process Safety and by the end of 1985 had enlisted 39 charter member companies. CCPS and its member companies quickly published CCPS' first book, *Guidelines for Hazard Evaluation Procedures*, and by 1990 more than a dozen books had been published along with CCPS' call to action publication, *A Challenge to Commitment*. In these initial publications, CCPS first codified the critical elements of process safety and provided key tools to manage, implement, and continually improve process safety programs. Focused workshops and annual international conferences provided additional opportunities for communal learning and formal discussion regarding process safety.

Still following this approach 23 years later, CCPS continues to address the most important process safety needs and encourage an overall culture of process safety. Over 100 corporate members from around the world now participate in CCPS, including most of the world's leading chemical, petroleum, and pharmaceutical companies. CCPS' body of work reflects the great strides made in the area of process safety. CCPS continues to expand its catalog of over 100 books and products, build on its legacy of 22 successful international conferences, and cultivate its Safety and Chemical Engineering Education (SACHE) university curriculum program.

AIChE[®] CENTER FOR CHEMICAL PROCESS SAFETY

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AIChE is a 501 (c) (3) not-for-profit educational organization. Annual member dues contributions to CCPS may be tax-deductible. Consult a tax advisor for further information.

Management Report



Realizing the Global Community Committed to Process Safety

CCPS' FOUNDERS ENVISIONED that the CCPS process safety mission would be world-wide. In the last few years, however, CCPS' leaders have recognized that CCPS must become more than a US-based organization serving the world; it must be a global organization. In 2006, we laid the foundation upon which to build the CCPS Global Community, and in 2007, we began construction in earnest.

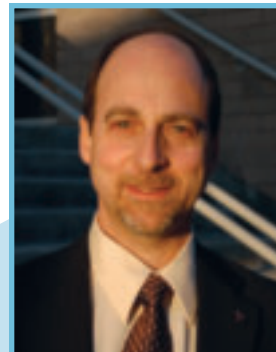
CCPS Global looks more like home with each new brick that is laid: our 100th member; our 20th non-US member; establishment of the CCPS-China Section; and partnerships in Argentina and Korea. We've begun connecting the utilities, the wiring and plumbing to facilitate collaboration and sharing of information around the world. Soon we hope to complete partnerships in India, Brazil, and elsewhere.

Amidst all this amazing growth and change, one important difference from prior years really stood out in 2007. For the first time in many years, the project planning process at CCPS did not begin with someone expressing the sentiment "I think our work in process safety is nearly done." This underscores the most important process safety lesson that the industry has learned: our work in process safety is never done. Technology changes, business changes, and people change, and as this happens, CCPS must adapt process safety to continue to meet the needs.

I'm pleased with the way that CCPS has anticipated these changes and is leading the way forward. Our new book *Guidelines for Risk Based Process Safety* was conceived before the lessons from Texas City were learned, as was *Guidelines for Implementing Safe and Reliable Instrumented Protective Systems*. Both were finished in conjunction with the final US Chemical Safety Board recommendations for Texas City, and are an important part of industry's response to the lessons learned.

In 2008, we will put the roof on CCPS' global home, move in the furniture, and begin living in it. Remember that CCPS is your home for process safety, a place to come to feed your need for knowledge, to share your accomplishments and concerns, and collaborate with others to advance the practice of process safety.

The next few years are going to be busy and exciting, and we need your help. When you come to our global home, bring your toolbox – and wear a hardhat because construction will continue for some time. We thank you for your continued dedication to process safety and for your support of CCPS.



Scott Berger
CCPS Director

**CCPS is your home for
process safety, a place to come
to feed your need for knowledge,
to share your accomplishments
and concerns, and collaborate
with others to advance
the practice of
process safety.**



Karen Person
Project Engineer and
Operations Lead

**Our Goal: Think Globally.
Serve Locally. Identify the
unique needs of all our
stakeholders, and produce
projects specific to their
work environments
and needs.**

OVER THE PAST two decades, CCPS has established itself as the leading international source for the most up-to-date information about process safety. Today, as the industry continues to grow in new regions of the world, CCPS has begun to change the way it operates so as to continue to serve our broad and growing constituent base. While thinking globally, our goal is to serve locally, identifying the various needs of our different stakeholders and running projects that are adapted for their various work environments and own unique situations.

In 2007, CCPS established the CCPS China Section (CCPS-CS), in partnership with the Safety Technology Center of the China University of Petroleum. CCPS-CS will function with its own technical steering committee, conduct process safety training, support the SACHE program in China, and ultimately conduct projects tailored to the Chinese industry. We also established an affiliate relationship with the Centro de la Seguridad dos Processos Quimicos (CSPQ) of the Argentina Association of Chemical Engineers and are planning our first CCPS Latin American Conference and Expo on May 27-29, 2008, in Buenos Aires. We have established a similar affiliate relationship with the Korean Institute of Chemical Engineers (KICChE), focused on training in Korea.

The Asia-Pacific region will be increasingly important to CCPS in the coming years. To help support efforts in this region, we plan to hire a CCPS Asia-Pacific Manager. This person will work towards establishing a local section or affiliate in India and support training efforts throughout the region.

We intend to continue to grow operationally abroad, developing affiliations and joint ventures in Europe, Brazil and the Middle East as appropriate. With this extended international network, CCPS can keep pace with the need for process safety guidelines and resources around the world, and work broadly to meet these needs with useable, relevant, and technically sound process safety resources.

To accommodate our new growth, we are reviewing our project process and looking at ways to gain broader input and perspective on projects. We aim to develop mechanisms to better provide our members a voice in the creation of the important work we do. We are using new web tools to bring greater value to our members, making CCPS a true internet community with resources and content available online, a process safety blog, and applications to enhance CCPS project work.

As we continue to operate globally, we will continue to invest in activities and opportunities that allow us to keep fulfilling our mission to provide state-of-the-art process safety information. If you are not already affected by CCPS, we encourage you to contact us to discuss ways to become involved. CCPS would not be successful without you, so we invite you to become part of the CCPS community and begin enjoying the benefits of membership.

Milestones of 2007



ADVANCING PROCESS SAFETY

During 2007, CCPS continued to add to its large body of process safety knowledge that now includes over 100 books, web tools, software and other products. We completed the following projects in the past year:

- *Guidelines for Risk-Based Process Safety*
- *Guidelines for Safe and Reliable Instrumented Protective Systems*
- *Human Factors Methods for Improving Performance in the Process Industries*
- *Guidelines for Performing Effective Pre-Startup Safety Reviews*
- *Incidents that Define Process Safety*
- *Guidelines for Hazard Evaluation Procedures, 3rd Edition*
- *Inherently Safer Processes, 2nd Edition*

We also completed the call to action document, *A Management Approach to Creating a Strong Process Safety Culture*.



INTERNATIONAL VENTURES

In 2007, CCPS solidified operations abroad, establishing a CCPS China Section for training and workshops and laying the groundwork for an Indian office. CCPS also began working in Latin America, planning for the 1st CCPS Latin American Process Safety Conference & Expo on May 27-29, 2008 and securing alliances with organizations in the region. To ensure optimal strategic cooperation, CCPS founded an "Affiliate" program for organizations abroad to partner with CCPS on programs and activities.

THE PROCESS SAFETY BEACON

The Process Safety Beacon publication is now distributed to over 1 million people. In addition we have made the archived Beacons available online. To access past issues in all languages, go to www.sache.org/beacon/products.asp.

Beacon Languages

Arabic, Bahasa Indonesian, Dutch, English, French, German, Gujarati, Hebrew, Hindi, Italian, Japanese, Korean, Malay, Mandarin, Marathi, Persian, Portuguese, Spanish, Swedish, Thai, Vietnamese

NEW LEADING AND LAGGING INDICATORS OF PROCESS SAFETY PERFORMANCE

CCPS initiated a project in late 2006 to develop a focused set of Process Safety metrics to help industry monitor progress and drive improvement in process safety programs. The project, involving a large number of CCPS member companies and external stakeholders, has recommended a concise set of metrics. CCPS is working with US trade associations and other international organizations to adopt the metrics as a harmonized approach to improved industry benchmarking and transparency of industry performance. In addition to recommended industry-wide lagging metrics, CCPS suggests leading metrics and near miss reporting definitions.

View the report *Process Safety Leading and Lagging Metrics: You don't improve what you don't measure* at <http://www.aiche.org/ccps/metrics/index.aspx>.

2007 GLOBAL CONGRESS ON PROCESS SAFETY

The 3rd Global Congress on Process Safety held April 22-26 in Houston focused on advancing process safety through design and operations as demonstrated through case studies. The attendance exceeded 500 and the program included top quality presentations from experts in their fields.

HELP DRIVE PROCESS SAFETY INTO UNDERGRADUATE CHEM E EDUCATION

CCPS has teamed with AIChE to launch the Student Membership Initiative. With the help of corporate donations, all Chemical Engineering students in US universities are eligible for free membership in AIChE, and all universities become members of CCPS' Safety and Chemical Engineering Education (SACHE) program. Corporate donors receive increased interaction with promising future hires as well as a ready platform to talk to students about process safety and to insist that students include process safety in their studies. For more information, contact Scott Berger (scotb@aiiche.org, (+1) 212-591-7237).



Upcoming Projects and Events

COMING SOON

- **Guidelines for Chemical Transportation Risk and Security Analysis, 2nd Edition:** This book will provide introductory transport risk considerations for process engineers determining project viability. It will also provide guidance on route selection, equipment factors, and materials that may affect public risk as well as guidance on transportation security risk issues and industry practices to mitigate them.
- **Guidelines for Developing Risk Tolerance Criteria:** This project is to establish quantitative safety risk criteria. The book will show how to develop criteria reflecting company-specific operating needs, while maintaining consistency with industry-wide practices.

ONGOING PROJECTS

Join us in bringing these important projects to fruition:

- **Guidelines for Evaluating the Characteristics of Vapor Cloud Explosions, Flash Fires, and BLEVES, 2nd Edition:** This project is an update to the classic 1994 CCPS book. The new edition will include many new technologies and approaches proven over the past 12 years.
- **Guidelines for Pressure Relief and Effluent Handling Systems, 2nd Edition:** This update is being written in conjunction with the Design Institute for Emergency Relief Systems (DIERS) and will include new data gained since original publication.
- **Tools to Enhance Hazard Identification:** This project will provide guidance to enhance awareness and identification of process safety hazards by front line personnel. The tool will address the general concept of process safety hazard identification as well as provide for ongoing activity to target awareness in more focused areas of process safety.
- **Non-SIS Independent Protection Layers:** This publication will be a companion to both the CCPS *Layers of Protection Analysis (LOPA)* concept book and *Guidelines for Safe and Reliable Instrumented Protective Systems*. It will address issues such as how to ensure effectiveness and maintain reliability for administrative controls or "inherently safer, passive" concepts.
- **Guidelines for Auditing Process Safety Management Systems, 2nd Edition:** The second edition of the 1992 CCPS book will update the fundamental skills, techniques, and tools of auditing, including integration into risk-based process safety.
- **International Regulations and Standards:** This project will be a database that shows for each element of process safety:
 1. How different countries / regulating authorities treat the element in their regulatory framework, and
 2. Standards and guidelines that are either referenced in these regulatory frameworks and/or address the element on stand-alone basis.
- **Guidelines for Engineering Design for Bioprocess Safety:** This Guideline book is addressing safe design considerations for biotechnology processes, including biopharmaceuticals and biological processes to produce chemicals.
- **Guidelines for Mergers & Acquisitions:** The project will culminate in a Guideline book for evaluating process safety risk of potential acquisitions and integrating new facilities after a merger.
- **Dose-Response Relationships/Probits:** This collaborative project with the American Industrial Hygiene Association will establish a publicly available database of probit constants and other approaches to dose-response modeling for emergency exposure limits, supporting short-term hazardous material exposure evaluations and quantitative risk analysis.

We invite new participants and peer reviewers to join these projects, as well as new projects we launch in 2008.

PROCESS SAFETY INCIDENT DATABASE

CCPS established the Process Safety Incident Database (PSID) to capture high-value lessons from process safety incidents. PSID combines anonymously submitted incident reports and important lessons learned with a search mechanism that allows retrieval of specific data in areas such as process design, hazard analysis, and incident investigation. As participation in PSID increases, the number of lessons learned grows while the cost of participation decreases. To learn more or to obtain a demonstration, contact Adrian Sepeda at psid@aiiche.org.



2008 CCPS PROJECTS

Guidelines for Evaluating Process Plant Buildings for External Fire & Explosions, 2nd Edition –

Given the emphasis on facility siting by both OSHA and CSB as well as industry in general since the BP Texas City incident, this project will provide an update to the existing Guidelines for Evaluating Process Plant Buildings for External Fire and Explosions to address the issue of facility siting including that of portable buildings.

Likelihood of Ignition of Released Flammables – This research project will collect and evaluate the experiences and methodologies of operating companies on the topic of ignition of released flammables as well as additional published information. This project may be the basis for a consensus methodology for CPQRAs including LOPAs.

Guidelines for Conduct of Operations – Operational Discipline, also called Conduct of Operations in *Guidelines for Risk-Based Process Safety*, is the ability of an organization to rigorously execute PSM system requirements correctly every time in order to avoid injuries and incidents and to achieve high levels of safe performance. This project will develop new guidance and tools on establishing, evaluating, and improving Operational Discipline to help organizations ensure consistent completion of critical job tasks.

Benchmarking Study on Process Safety Management Systems – This benchmarking study is a first of a kind approach that allows participating companies to understand how their internal process safety management practices compare to those of their peer companies.

Human Reliability Data Analysis – This project will culminate in a critical paper study of human error data, with consensus recommended values supporting QRA and other purposes, along with recommendation for future experimental work where appropriate.

Process Safety Culture – Having been identified by CCPS as one of the key root causes of recent major industry incidents, culture remains an active focus for CCPS. This committee will expand on the work that was started after the Columbia Shuttle disaster.

2008 GLOBAL CONGRESS FOR PROCESS SAFETY

The 4th Global Congress will be held in New Orleans April 6-9, 2008. The theme for the conference is Risk-Based Process Safety (RBPS) which is a management approach to design, correct, and improve process safety management activities, and commensurate with the risk-based need for these activities, the availability of resources, and the existing process safety culture. The four main concepts of RBPS that we hope to address during this conference are: Committing to Process Safety, Understanding Hazards and Risks, Managing Risks, and Learning from Experience. For more information about the conference, please visit our website at <http://www.aiche.org/GCPS>.





Process Safety at a Glance

PROCESS SAFETY STANDARDS

	20 CCPS ELEMENTS	OSHA 29 CFR 1910.119	EPA 40 CFR 68	TECHNICAL AREAS (SEE FACING PAGE)
COMMIT TO PROCESS SAFETY	■ Process Safety Culture			Process Safety Management
	■ Standards, Codes, Regulations and Laws	(o) Compliance audits	.58 Compliance audits	Process Safety Management
	■ Process Safety Competency			Process Safety Management; Safe Design; Venting and Emergency Relief
	■ Workforce Involvement	(c) Employee participation	.83 Employee participation	Process Safety Management
	■ Stakeholder Outreach		.150 Submission	Process Safety Management
UNDERSTAND HAZARDS & RISK	■ Process Knowledge Management	(d) Process safety information	.48 Safety information	Process Safety Management
	■ Hazard Identification and Risk Analysis	(e) Process hazard analysis	.67 Process hazard analysis	Hazard Analysis, Risk Analysis and Reliability; Consequence Modeling; Chemical Reactivity Hazards
MANAGE RISK	■ Operating Procedures	(f) Operating procedures	.52 Operating procedures .69 Operating procedures	Process Safety in Operations
	■ Safe Work Practices	(k) Hot work permit	.85 Hot work permit	Process Safety in Operations; Safe Design; Venting and Emergency Relief
	■ Asset Integrity and Reliability	(j) Mechanical integrity	.73 Mechanical integrity	Process Safety in Operations
	■ Contractor Management	(h) Contractors	.87 Contractors	Process Safety in Operations; Process Safety Management
	■ Training and Performance Assurance	(g) Training (o) Compliance audits	.54 Training .58 Compliance audits	Process Safety in Operations
	■ Management of Change	(l) Management of change	.75 Management of change	Process Safety in Operations
	■ Operational Readiness			Process Safety in Operations
	■ Conduct of Operations			Process Safety in Operations
	■ Emergency Management	(n) Emergency planning and response	Subpart E: Emergency response .180 Emergency response program	Process Safety in Operations; Consequence Modeling
LEARN FROM EXPERIENCE	■ Incident Investigation	(m) Incident investigation	.60 Incident investigation .81 Incident investigation	Process Safety Management
	■ Measurement and Metrics		.42 Five year accident history	Process Safety Management
	■ Auditing	(o) Compliance audits	.58 Compliance audits .79 Compliance audits .220 Audits	Process Safety Management
	■ Management Review and Continuous Improvement		.42 Five year accident history	Process Safety Management



CCPS RESOURCES

TECHNICAL AREAS

HAZARD ANALYSIS, RISK ANALYSIS, AND RELIABILITY	CONSEQUENCE MODELING	CHEMICAL REACTIVITY HAZARDS	VENTING AND EMERGENCY RELIEF
<p>Evaluating Process Safety in the Chemical Industry: A User's Guide to Quantitative Risk Assessment G/L for Analyzing and Managing the Security Vulnerabilities of Fixed Chemical Sites G/L for Chemical Process Quantitative Risk Analysis, 2nd Ed. G/L for Chemical Transportation Risk Analysis (2008) G/L for Hazard Evaluation Procedures, 3rd Ed. (2008) G/L for Improving Plant Reliability Through Data Collection and Analysis G/L for Process Equipment Reliability Data, with Data Tables Layers of Protection Analysis: Simplified Process Risk Assessment Revalidating Process Hazard Analysis Tools for Making Acute Risk Decisions G/L for Performing Effective Pre-Startup Safety Reviews</p>	<p>Concentration Fluctuations and Averaging Time in Vapor Clouds Estimating the Flammable Mass of a Vapor Cloud G/L for Consequence Analysis of Chemical Releases Understanding Explosions Wind Flow and Vapor Cloud Dispersion at Industrial and Urban Sites</p>	<p>Essential Practices for Managing Chemical Reactivity Hazards G/L for Chemical Reactivity Evaluation and Application to Process Design G/L for Safe Storage and Handling of Reactive Materials</p>	<p>Deflagration and Detonation Flame Arrestors G/L for Pressure Relief and Effluent Handling Systems RELEASE: A Model with Data to Predict Aerosol Rainout in Accidental Releases</p>
 	<p>SAFE DESIGN</p> <p>Avoiding Static Ignition Hazards in Chemical Operations Electrostatic Ignitions of Fires and Explosions G/L for Engineering Design for Process Safety G/L for Evaluating Process Plant Buildings for External Explosions and Fires G/L for Design Solutions to Process Equipment Failures G/L for Preventing Human Error in Process Safety Loss Prevention on CD, 3rd Ed. Making EHS an Integral Part of Process Design Piper Alpha – Spiral to Disaster G/L for Safe Design and Operation of Process Vent Headers G/L for Safe and Reliable Instrumented Protective Systems Inherently Safer Design</p>	<p>PROCESS SAFETY MANAGEMENT</p> <p>Contractor and Client Relations to Assure Process Safety G/L for Auditing Process Safety Management Systems G/L for Implementing Process Safety Management Systems G/L for Integrating Process Safety Management, Environment, Safety, Health, and Quality G/L for Investigating Chemical Process Incidents, 2nd Ed. G/L for Process Safety in Batch Reaction Systems G/L for Process Safety Documentation G/L for Process Safety in Outsourced Manufacturing Operations G/L for Risk-Based Process Safety Practical Compliance with the EPA Risk Management Program G/L for Management of Change for Process Safety</p>	<p>PROCESS SAFETY IN OPERATIONS</p> <p>G/L for Mechanical Integrity Systems G/L for Post-Release Mitigation in the Chemical Process Industry G/L for Process Safety Fundamentals in General Plant Operations G/L for Safe Handling of Powders and Bulk Solids G/L for Safe Process Operations and Maintenance G/L for Safe Warehousing of Chemicals G/L for Technical Planning for On-Site Emergencies G/L for Writing Effective Operating and Maintenance Procedures Human Factors: Methods for Improving Performance in the Process Industries LEPC Guidebook: Understanding the EPA Risk Management Program Rule Incidents that Define Process Safety</p>





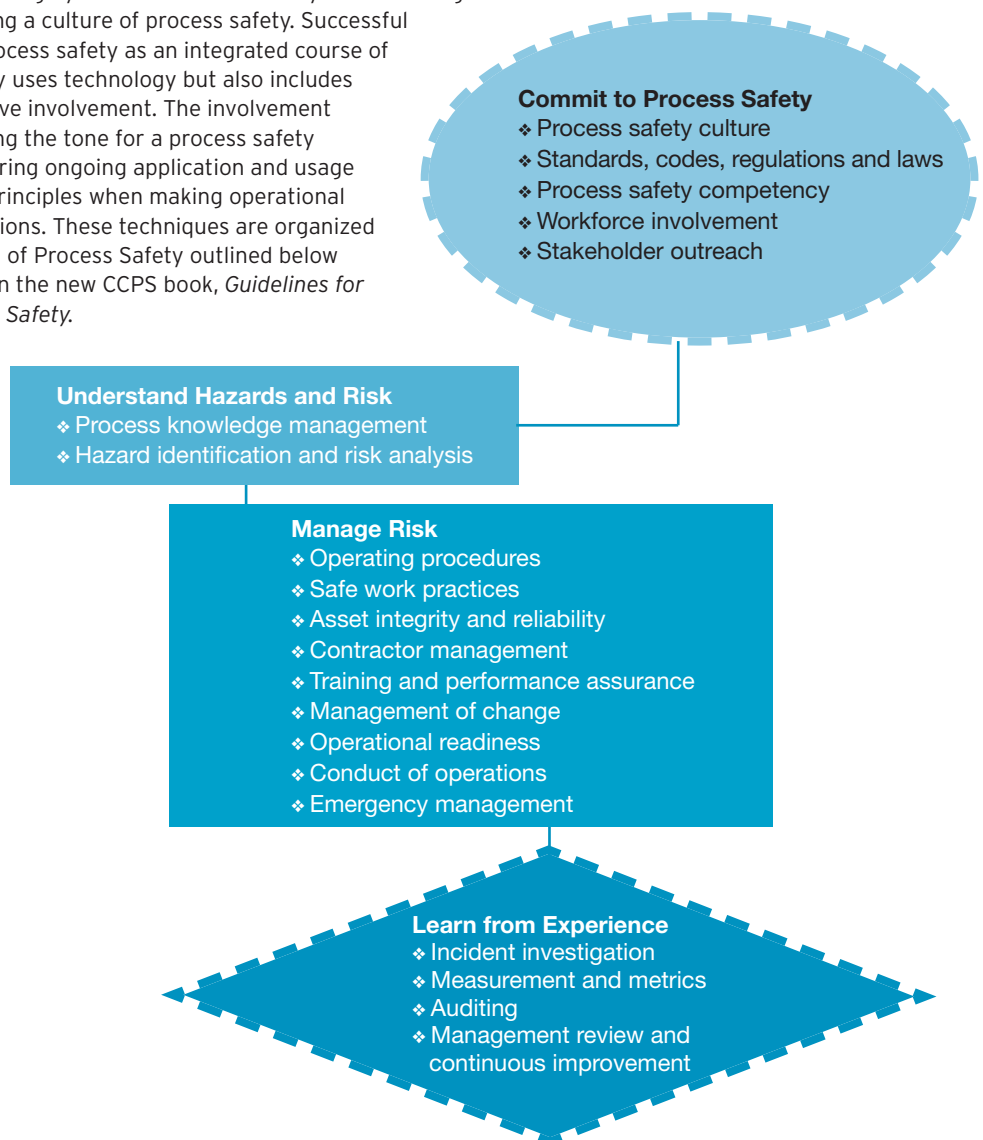
CCPS Global Members: An Even More Powerful Alliance

OVER THE PAST YEAR, CCPS has become a truly global organization with member companies headquartered in over 15 countries. With operations growing abroad and with industry expanding and maturing in places and cultures new to process safety, it's becoming more important for CCPS to provide a true process safety community that captures input and learnings from all our different stakeholders.

Working together, CCPS corporate members pool the resources, expertise, and knowledge needed to develop superior process safety management and technology. Members guide research initiatives and enjoy access to the latest findings by participating in the development of CCPS Guidelines, Concept books, and Safety Alert publications. Members also contribute to and benefit from CCPS' extensive databases of process safety information in areas such as incident analysis and equipment reliability.

Member representatives may serve on project subcommittees to develop content and attend Technical Steering Committee meetings in which they can participate in project selection, define areas of study, and provide overall technical guidance to CCPS activities. CCPS participants join a network of peers with whom they can confidentially discuss issues relevant to their business.

Over our past two decades, CCPS has examined many different facets of process safety and has developed what we believe is a highly successful and industry tested management approach to creating a culture of process safety. Successful companies view process safety as an integrated course of action that not only uses technology but also includes management's active involvement. The involvement includes both setting the tone for a process safety culture and monitoring ongoing application and usage of process safety principles when making operational and technical decisions. These techniques are organized as the 20 Elements of Process Safety outlined below and are explained in the new CCPS book, *Guidelines for Risk-Based Process Safety*.





CCPS MEMBERSHIP MAKES GOOD BUSINESS SENSE

Corporate members of the CCPS community substantially leverage their investments. The annual value of the CCPS program that members receive averages \$1.6 million. In joining this international alliance of industry leaders, CCPS members enjoy a return of 90:1 on the resources they commit.

Members of CCPS include major petroleum, chemical, and pharmaceutical companies, as well as other manufacturers and users of chemicals, engineering contractors, safety consultants, insurance firms, and government agencies. In recent years, CCPS membership has grown to include manufacturers based outside North America, as well as small specialty manufacturers.

See the back cover for a complete list of members. Membership dues depend on the world value of the member's applicable chemical or petroleum sales. Because AIChE is a tax-exempt, educational/scientific organization under IRS code 501 (c) (3), some companies choose to fund CCPS participation through their charitable giving foundations.

To become a CCPS member or receive more information; contact CCPS at (+1) 212-591-7319 or ccps@aiche.org.

BENEFITS OF CCPS MEMBERSHIP INCLUDE:

- Company employees receive the member registration rate to the CCPS International Conference, and upon registration may also attend sessions at the AIChE Spring meeting, which is co-located.
- Company employees receive the CCPS member book discount of 20%, plus additional discounts on bulk purchases.
- Your company can receive a discount on subscription to CCPS books online at www.knovel.com.
- All employees receive free access to the CCPS member-only Web Community and Knowledge Base containing meeting minutes, project documents, process safety blog and online forum and topic-driven process safety content and Guidelines.
- By participating in CCPS projects, your employees can learn from colleagues in other companies and industries – equivalent to free training.

IMPORTANT DATES FOR 2008

EVENT	DATE
Technical Steering Committee Web Conference	January 29
CCPS Advisory Board Meeting	March 5
Global Congress on Process Safety / CCPS Conference	April 6-9
Technical Steering Committee Meeting	April 10
2008 CCPS Latin America Process Safety Conference & Expo	May 27-29
Technical Steering Committee Web Conference	June 24
CCPS Managing Board Meeting	November 3
Technical Steering Committee Meeting	November 12-13
Joint CCPS/Indian Chemical Council Symposium	December 3-4



CCPS Organizational Structure

CCPS ACTIVITIES are monitored and directed by a Managing Board, an Advisory Board, 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 includes members of the Executive Committee and Board of Directors of AIChE, as well as the CCPS Director. It is chaired by the Executive Director of AIChE and oversees CCPS fiscal and management operations.

The Advisory Board brings together senior executive representatives of member companies to review CCPS' mission and strategies, support its initiatives, and provide guidance on CCPS projects.

The Technical Steering Committee (TSC), CCPS' primary operating group, provides technical direction to CCPS activities and selects its 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.

The Planning Committee is responsible for monitoring process safety needs and trends of industry, affiliates of the CCPS Global Community, and other stakeholders in order to supply the TSC with a portfolio of projects and other activities to consider. The Planning Committee also coordinates with the affiliates of the CCPS Global Community to leverage projects, training, and other efforts.

MANAGING BOARD

John A. Sofranko
AIChE Executive Director
CCPS Managing Board Chair

Scott Berger
AIChE
CCPS Director

Dale Keairns
Department of Energy
AIChE President

Scott Fogler
University of Michigan
AIChE President Elect

Scott Love
ConocoPhillips
AIChE Secretary

Fred Krambeck
Reactech
AIChE Treasurer

Lawrence Evans
Aspen Technologies
AIChE Past President

Amos Avidan
Bechtel
AIChE Director

Liese Dallbauman
Pepsico-Qtg
AIChE Director

Gavin Towler
UOP
AIChE Director





■ ADVISORY BOARD

Larry Allen

Air Products and Chemicals, Inc
Vice President EH&S and Corporate
Engineering

Keld Andersen

Nalco
Director of Engineering Services

Thomas Archibald

Rohm and Haas Company
Vice President Engineering

Scott Berger

AIChE
Director, CCPS

Joseph Castrale

SABIC Innovative Plastics
General Manager, EH&S

Deborah Dietrich

U.S. EPA
Director, Office of Emergency
Preparedness Prevention and
Response

John Erickson

CIBA Specialty Chemicals
VP EH&S - NAFTA

David Graham

The Dow Chemical Company
Vice President, Environment, Health,
and Safety

Deborah Grubbe

BP
Vice President, Process Safety and
Industrial Hygiene

Linda Hicks

Vertellus Specialties, Inc.
VP Corporate Technology and
Manufacturing

Craig Huffman

International Specialty Products, Inc.
Vice President Engineering

Kou Jianchao

SINOPEC
Deputy Director, Safety &
Environment Bureau

Robert Kelley

Formosa Plastics Corporation
Vice President of Environment, Safety
& Communication

Steve Kemp

Occidental Chemical Corporation
Vice President, Health, Environment
and Safety

Kevin Kuck

3M Company
General Manager

John Licata

Syngenta Crop Protection
Head, Health Safety, Environment &
Quality

Emer Obroin

Monsanto Company
Vice President, EH&S

Anne O'Neal

Chevron Corporation
Global Manager, Operational
Excellence and HES

Hermann Ortega

Honeywell, Inc.
VP Integrated Supply Chain

Thomas Polton

Pfizer, Inc.
Senior Director, EHS-Health and
Safety

Bea Ponnudurai

Petronas
Director of Safety and Health

James Porter

DuPont Company
Vice President, Engineering and
Operations and Chief Engineer

Ed Quick

Celanese Company
Global EHS Director

Bob Ridge

ConocoPhillips
Vice President, Health, Environment
and Safety

Edward Ryczek

Merck & Company, Inc
Director of Safety

John Sofranko

AIChE
Executive Director

Prasad Tipnis

Reliance Industries, Ltd.
Senior Vice President, Chief Centre
for HSE Excellence

Mike White

Sunoco
VP Chemical Manufacturing

John Wnek

Degussa Corporation
Vice President, Environment, Safety
and Health

■ PLANNING COMMITTEE

The planning committee is responsible for developing CCPS' technical path and creating project proposals that meet CCPS goals. To submit a proposal, contact Karen Person at karep@aiche.org.

Peter Lodal (Chair)

Eastman Chemical Company

Kathy Anderson

Vertellus Specialties, Inc

Scott Berger

CCPS

Les Cunningham

Merck & Company, Inc.

Zhao Dongfeng

CCPS China Section

Eric Freiburger

NOVA Chemicals, Ltd.

Cheryl Grounds

BP

Greg Hounsell

Pfizer, Inc.

Shakeel Kadri

Air Products and Chemicals, Inc.

Neil Maxson

Bayer Material Science

Jack McCavit

CCPS Emeritus

Tim Overton

The Dow Chemical Company

Karen Person

CCPS

Cathy Pincus

ExxonMobil

Jatin Shah

Baker Risk

Karen Tancredi

DuPont Company

Gavin Towler

UOP/Honeywell

Scott Wallace

Olin Corporation



Project Committees

■ PROCESS EQUIPMENT RELIABILITY DATABASE (PERD)

This committee oversees the development and operation of a fundamentally and technically sound database for use in quantitative risk analysis (QRA), availability analysis, and predictive maintenance. The PERD project is open to both CCPS members and non-members. For more information, contact Dave Belonger at dave@djbassoc.com.

Hal Thomas (Chair)
Air Products & Chemicals, Inc.

Kevin Bauman
The Dow Chemical Company

Kumar Bhimavarapu
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■ SAFETY AND CHEMICAL ENGINEERING EDUCATION (SACHE)

The SACHE program develops curriculum materials that are used by over 140 universities to introduce process safety into chemical engineering courses. For more information or to make an industry contribution to the workshop or the program, contact Dr. Joseph Louvar at jlouvar@ameritech.net. For membership and product information, contact Karen Person at karep@aiche.org.

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■ GUIDELINES FOR EVALUATING THE CHARACTERISTICS OF VAPOR CLOUD EXPLOSIONS, FLASH FIRES, AND BLEVES, 2nd EDITION

This book is an update to the classic 1994 CCPS book. The new edition will include many new technologies and approaches proven over the past 12 years. For more information on this project, contact John Davenport at john.davenport@worldnet.att.net.

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■ CCPS WEB COMMUNITY

This subcommittee is developing CCPS content and resources in a fully searchable, topic driven online format. This project also includes a process safety blog and online forum/bulletin board through which CCPS members can interact and have technical discussions. For more information on this project, contact Robert Coulter at Robert@rbcoulter.com.

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■ DOSE-RESPONSE RELATIONSHIPS/PROBITS

This collaborative project with the American Industrial Hygiene Association will establish a publicly available database of probit constants and other approaches to dose-response modeling. For more information on this project, contact Dennis Hendershot at d.c.hendershot@worldnet.att.net.

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■ PROCESS SAFETY BEACON

This committee is responsible for the Beacon, a monthly one-page process safety newsletter for plant operators. For more information on this project, contact Dennis Hendershot at ccps_beacon@aiiche.org.

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Project Committees

■ GUIDELINES FOR PROCESS SAFETY METRICS

The objective of this project is to work with a broad range of domestic and international organizations to develop a small, common set of process safety metrics to improve monitoring and communication of the success and progress of process safety initiatives. For more information on this project, contact Dan Sliva at sliva@capital.net.

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■ CCPS PROCESS SAFETY BOOT CAMP

This committee is developing a two-week process safety training program for engineers new to process safety that will include onsite tours and training as well as classroom instruction. For more information on this project, contact Bob Ormsby at ormsby@tampabay.rr.com.

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■ TOOLS TO ENHANCE HAZARD IDENTIFICATION

This project will provide guidance to enhance awareness and identification of process safety hazards by front line personnel. The tools will address the general concept of process safety hazard identification as well as provide for ongoing activity to target awareness in more focused areas of process safety. For more information on this project, contact Brian Kelly at kellybd@telus.net.

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■ NON-SIS INDEPENDENT PROTECTION LAYERS

This publication will be a companion to both the *CCPS Layers of Protection Analysis (LOPA)* concept book and *Guidelines for Safe and Reliable Instrumented Protective Systems*. It will address issues such as how to ensure effectiveness and maintain reliability for administrative controls or “inherently safer, passive” concepts. For more information on this project, contact John Murphy at hamjfm@embargmail.net.

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■ GUIDELINES FOR AUDITING PROCESS SAFETY MANAGEMENT SYSTEMS, 2nd EDITION

This update of the 1992 CCPS book will update the fundamental skills, techniques, and tools of auditing, including integration into risk-based process safety. For more information on this project, contact Bob Ormsby at rormsby@tampabay.rr.com.

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INTERNATIONAL REGULATIONS AND STANDARDS

This project will create a database that shows for each element of process safety: 1.) How different countries / regulating authorities treat the element in their regulatory framework, and 2.) Standards and guidelines that are either referenced in these regulatory frameworks and/or address the element on stand-alone basis. For more information on this project, contact Jack McCavit at jlmcconsulting@sbcglobal.net.

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GUIDELINES FOR MERGERS & ACQUISITIONS

The project will culminate in a Guideline book for evaluating process safety risk of potential acquisitions and integrating new facilities after a merger. For more information on this project, contact Bob Perry at BobGPerry@comcast.net.

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GUIDELINES FOR ENGINEERING DESIGN FOR BIOPROCESS SAFETY

This Guideline book is addressing safe design considerations for biotechnology processes, including biopharmaceuticals and biological processes to produce chemicals. For more information on this project, contact Dan Sliva at sliva@capital.net.

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THE CCPS EXTERNAL AFFAIRS COMMITTEE

This special committee of CCPS evaluates opportunities for CCPS to participate in other organizations' events and projects. It is also responsible for preparing and approving CCPS messages to technical requests from regulatory agencies, media requests, etc. For more information on this project, contact Scott Berger at scotb@aiche.org.

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