CCPS VISION 20/20

SHAKEEL H. KADRI
CCPS EXECUTIVE DIRECTOR

5 October 2015
Keynote Address to the CSChE PSLM Symposium
Calgary, Alberta, Canada
My presentation outline

1. Brief introduction [5 min]
2. Center of Chemical Process Safety [15 min]
3. CCPS Vision 20/20 – Our Call for Action [20 min]
4. Discussion topics and Q&A [15 min]
Shakeel Kadri

• Became CCPS Executive Director on 1 Feb 15 when Scott Berger retired
• At Air Products since 1978; started as a process engineer and held several technical and leadership positions in process engineering, design, technology, operations, HSE and process safety
• Held last position as Director of Global Process Safety and Risk Management since 2002; accountable for leading process safety and risk activities globally.
• Have been involved with CCPS since 2002; Actively involved with CCPS activities, with a special focus on risk-based process safety, developing a process safety culture within companies and Metrics.
• On the process safety committees of the American Chemistry Council, the American Petroleum Institute, the Mary Kay O'Connor Process Safety Center, the Compressed Gas Association, the European Industrial Gases and Association, and the American Fuel and Petrochemical Manufacturers Association.
• Major interest in process safety culture, metrics, risk and performance improvement, industry sharing, global harmonization of standards
• Fellow of both CCPS and AIChE
• BS and MS in Chemical Engineering and MBA in Finance
Air Products’ Total Safety Policy

We believe:

- **Nothing is more important than safety**...not production, not sales, not profits
- All accidents and injuries are preventable...they are not inevitable
- Safety is a Management responsibility...and safety can be managed
- Safety is an Individual responsibility...and a condition of employment
- Safety is a way of life...around the clock
- Every task must be performed with a concern for safety...for ourselves, our fellow employees, our contractors, our visitors, our customers and the communities in which we operate

A commitment to Total Safety is a commitment to doing things right. Ultimately, this results in elimination of injuries and optimization of all activities.
My Contribution at CCPS [2002-2014]
Metrics

Global Process Safety Metrics
September 2014 (YTD)

Multi-year Process Safety KPI Trend

Process Safety Leading Indicator Metrics
A CCPS Survey Project

20 Companies or more Using these 12 Leading Indicators

Atmospheric and Floating Roof Tanks - Overfilling and “Other” Incidents

- Overfilling accounts for majority of the incidents, around 50%, in the recent 2013 incident database
- The “other” incidents, which comprised 27% total group in part of releases related to other equipment (e.g., vessels, piping)
“Process Safety” Defined

- Process Safety is a blend of engineering and management skills focused on preventing catastrophic accidents, particularly explosions, fires, and toxic releases, associated with the use of chemicals and petroleum products.
- It is the application of engineering principles to design, construction, operation, and maintenance of plants and equipment, which minimize process related hazards.
- The focus is to minimize “low frequency - high consequence” incidents.

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Why Process Safety?

- **Corporate Responsibility**
  - Image, reputation, and brand

- **Business Flexibility**
  - License to operate
  - Increased business options

- **Risk Reduction**
  - Process safety prevents human injury
  - Process safety avoids significant losses and environmental damage

- **Sustained Value**
  - Process safety helps boosts productivity
  - It helps produce high quality products, on time, and at lower cost
  - It contributes to shareholder value
Why Process Safety?

- CCPS Member Companies collectively working together to address this Business Imperative
About CCPS

- Not for profit organization that was founded by – and is part of – American Institute of Chemical Engineers [AICHE]
- It is a global organization supported by Corporate Members globally
- It’s mission is the elimination of catastrophic process safety incidents.
- It’s headquarter is in New York City, with offices in Frankfurt, Mumbai, Singapore, Ningbo [China] and Houston

“The Global Community Committed to Process Safety”
How CCPS was Formed?

"The Global Community Committed to Process Safety"
“Bhopal”

The most influential process safety accident in our history

The Bhopal Plant - The Union Carbide Plant, Bhopal, India, site of a December, 1984 chemical gas leak which killed and injured thousands.
Bhopal Result
How well you manage day to day activities in preventing worker injuries can be an indicator of how well you manage your safety systems. Attention to detail is important and a challenged and trained workforce can contribute a lot to prevention or mitigation of process safety incidents.
### CCPS Formed on 23 March 1985

#### Formation of CCPS

- On February 26th 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.

#### Founding Leaders* of CCPS

1. American Cyanamid – now Cytec
2. The Dow Chemical Company
3. Monsanto Company
4. Rohm and Haas Company – now Dow
5. Stone and Webster Engineering Corp. – now Technip
6. Air Products and Chemicals
7. Union Carbide Corporation – now Dow
8. Great Lakes Carbon Corp. – now SGL
9. Shell Oil Company
10. Factory Mutual Research

*Leaders of the AIChE Safety & Health Committee

Copyright © 2015 Center for Chemical Process Safety of the American Institute of Chemical Engineers
The Center for Chemical Process Safety was founded in 1985 shortly after the Bhopal incident in India to develop technology and management practices that mitigate or eliminate chemical process accidents. Since that time, CCPS has published over 100 books and held over 25 international conferences advancing process safety on a global basis. CCPS has over 120 member companies.

The mission of CCPS is to eliminate catastrophic process incidents by:

- ADVANCING state-of-the-art process safety technology and management practices
- SERVING as the premier resource for information on process safety
- FOSTERING knowledge of PS by engineers, students, and the public
- PROMOTING process safety as a key industry value
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The mission of CCPS is to eliminate catastrophic process incidents by:

- Promoting process safety as key societal value & expectation.
- Establishing process safety as foundation for responsible operations.
- Serving as the premier world-wide resource for process safety & development of “state-of-the-art” solutions.
- Fostering knowledge & implementation of process safety.
- Advancing process safety education, technology, culture & management practices.

The Center for Chemical Process Safety was founded in 1985 shortly after the Bhopal incident in India to develop technology and management practices that mitigate or eliminate chemical process accidents. Since that time, CCPS has published over 100 books and held over 25 international conferences advancing process safety on a global basis. CCPS has over 120 member companies.

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- FOSTERING knowledge of PS by engineers, students, and the public
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Why Members have joined CCPS?

✓ They have a strong desire and need to improve process safety in their companies [Believing in the Process Safety Business Case]
✓ They believe in the Vision and Mission of CCPS -- to improve process safety globally.
✓ They have a desire to drive industry standards and best practices
✓ They have a desire to benchmark and have a sounding board process safety networking available
✓ They have a desire to have proven best process safety practices, developed by the industry process safety leaders, available at their fingertips
✓ And of course, they have a desire for a self personal development and a broad industry exposure

“The Global Community Committed to Process Safety”
Leading Process Safety since 1985

Creating Books and Publications

Sharing Best Practices

Creating Industry-wide Tools, Programs and Guidelines

Process Safety Beacon

Conducting Global Conferences and Training

“The Global Community Committed to Process Safety”
CCPS Project Areas

Concept Books: Good introduction to subject, textbook

The Global Community Committed to Process Safety
CCPS Project Areas

Guideline Books: In depth guidance

The Global Community Committed to Process Safety
CCPS also publishes the Process Safety Beacon, a monthly lesson for operations staff. The Beacon is published in 31 languages and read by more than 1 million people. Whenever you visit your facilities, look for the Beacon posted in common areas and control rooms, and if you don’t see it, you should ask why not.

A new series of awareness publication, Process Safety Moments is also being launched. These will be presentations which can be used in safety meetings or as the initial safety discussion that many companies use to launch general business meetings.
2015 Global Summit on Process Safety &
Process Safety Leadership Forum
3-5 November, 2015, Kuala Lumpur, Malaysia

- “Leadership forum on Process Safety” (closed door)
- “Leader’s Panel Discussions on Process Safety”
- “International Regulator’s Panel Discussions on Process Safety”
- “Academia Panel Discussions on Process Safety”
- “Undergraduate Students Poster session competition on Process Safety”
- Papers submitted on CCPS Visio 20/20 progress

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*The Global Community Committed to Process Safety*
185 Corporate Members.....!!

The Global Community Committed to Process Safety

"The Global Community Committed to Process Safety"
Corporate Members Worldwide

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<th>Continent</th>
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<td>Europe</td>
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<td>Australia</td>
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<td><strong>Total</strong></td>
<td><strong>185</strong></td>
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“The Global Community Committed to Process Safety”
VISION 20/20
OUR CALL FOR ACTION
Our call to action…

Vision 20/20 looks into the not-too-distant future to describe how great process safety is delivered when it is collectively and fervently supported by industry, regulators, academia, and the community worldwide.
What is Vision 20/20?

- Many best in class companies have achieved great process safety performance.
- The goal is -- how other companies can imitate to achieve such best in class performance?
- CCPS Vision 20/20 describes the characteristics of companies with great process safety performance.
- It also identifies societal themes that are necessary for industry to achieve great process safety performance.
Why Vision 20/20?

- Our common goal - Reduce incidents
  - Make a step change in management of process safety
  - Improve process safety performance globally
  - We want to reach the goal faster
  - Leverage our collective strength
  - Help CCPS and other organizations identify projects/initiatives to help us reach the goal
Vision 20/20 Focus

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

Societal Themes
- Enhanced Stakeholder Knowledge
- Responsible Collaboration
- Harmonization of Standards
- Meticulous Verification
INDUSTRY TENET & SOCIETAL THEME HIGHLIGHTS
Committed Culture

- Felt leadership from senior executives through plant personnel
- Leadership instills disciplined adherence to the policies and procedures
- Strong sense of vulnerability
- What can you do?
  - ☑ Perform all tasks, correctly, every time.
  - ☑ Support your leadership in demonstrating a commitment to process safety.
  - ☑ Recognize that “it could happen here...”
Vibrant Management Systems

- Structure that clearly defines expectations for all systems that impact process safety performance
- Promotes principles of inherently safer design
- Promotes principles of *Guidelines for Risk Based Process Safety* including fit-for-purpose policies and procedures
- What can you do?
  - ☑ Do your part as a member of the team - use the system!
  - ☑ Share your learnings and suggested improvements to the system
Disciplined Adherence to Standards

- Company and/or industry standards rigorously followed
- System to ensure that existing equipment meets company minimum expectations
- Risk decision making is used when applicable standards do not exist
- What can you do?
  - Ensure a system exists to effectively use industry and company standards.
  - Make sure that the system applies to existing equipment.
  - As a leader, assure standards are followed and respond accordingly.
Intentional Competency Development

• Ensures that employees who impact process safety performance are meeting the technical and cultural requirements of their job
• It is given that companies provide sufficient numbers of employees
• What can you do?
  ☑ Develop a plan to fill your competency gaps.
  ☑ When you’re outside your area of competency, contact an expert that can help.
  ☑ As a leader, build and recognize team member competence.
Enhanced Application of Lessons Learned

- Thirst for learning from
  - Incidents
  - Near misses
  - Benchmarking
  - Jobs done well
- Changes are implemented based on the Lessons Learned
- What can you do?
  - Use a significant incident or near miss as an opportunity to encourage and embed learnings.
  - Take a personal action, or make a change, as a result of the learning.
  - Sharing only makes you feel good, learning makes a difference.
Enhanced Stakeholder Knowledge

- Risk literacy
  - Public
  - Government
  - Industry decision makers
- Process safety fundamentals
  - Chemical engineering students
  - Employees
- What can you do?
  - [☑] Support local STEM education, both in high school and university.
  - [☑] Have a conversation about risk with students and other stakeholders within your community.
  - [☑] Continue to build knowledge throughout your career.
Responsible Collaboration

- Technical, government, labor, community, scientific, academic, and industrial organizations work together
- Remove barriers
- What can you do?
  - Recognize the value that others bring to the table and commit to working together toward the common process safety goal.
  - Be open-minded and focus on that common goal.
  - Actively participate in or lead joint industry projects.
Harmonization of Global Standards

- Standards can come from many sources
- Standards can be confusing and conflicting
- In the future, work jointly to streamline practices, eliminate redundancy, and cooperatively address emerging issues.
- What can you do?
  - Recognize the diversity in standards, be open-minded, and work towards harmonization of standards.
  - Promote harmonization through active participation in standard and practice writing groups.

Center for Chemical Process Safety (CPS)
Meticulous Verification

- Third parties including
  - Public
  - Non-Governmental Organizations
- Evaluate implementation of process safety programs
- What can you do?
  - Identify opportunities where third-party verification could add value.
  - Personally support external verification in your area when it occurs.
VISION 20/20
DEVELOPMENT/TOOLS
Vision 20/20 Sub-committee [2011]

- Cheryl Grounds, BP (Chair)
- Jack McCavit (CCPS Consultant)
- Dave Jones, Chevron
- Jeff Fox, Dow Corning
- Joe Allaben, Flint Hill Resources
- Karen Tancredi, Chevron
- Louisa Nara, CCPS
- Mike Broadribb, BakerRisk
- Pete Lodal, Eastman Chemical Co
- Samantha Scruggs, BP
- Scott Berger, AcuTech
- Steve Arendt, ABS Consulting
- Todd Aukerman, LanXess
- Walt Frank, CCPS Emeritus

Nearly 500 years of experience!
Vision 20/20 Evolution

Committee work initiated in 2011

Presentations
- Paper at Hazards 24 (UK)
- Paper at GCPS (New Orleans)
- Paper at Regional Mfg (Netherlands)
- Paper at OTC (Houston)
- Paper at Hazards25 Workshop

Products
- Publication of Brochure, including Day in the Life of...
- Publication of One Pagers
- Update and re-publication of Brochure
- Publication of Booklet (inc. Spanish)
- Issuance of Assessment Tool & Implementation Plan
- Keynote at MEPSC (Abu Dhabi)

Keynote at CCEC, PSM, Calgary, CA
A call to action…

It’s time to leverage our resources, knowledge and skills to all strive for a common goal of great process safety performance. CCPS’s Vision 20/20 describes that vision.

- Understand and communicate the tenets and themes
- Evaluate your contribution
  - within your company, across your discipline industry colleagues, and with your regulatory, academic, and local communities.
- **Evaluate performance**, seek collaboration and take action
VISION 20/20
RESOURCES
Available Resources

- Brochure, with Business Case and “A day in the life of…”
- One-Pager Documents/Posters
- Booklets (in English and Spanish)
- Implementation Plan
- Industry Tenet Assessment Tool
- Presentations & Papers
  - 2014 IChemE Hazards 24 Conference, Edinburgh, UK
  - 2014 Global Summit on Process Safety, Mumbai, India
  - 2015 Global Congress on Process Safety, Austin, TX, US
  - 2015 Offshore Technology Conference, Houston, TX, US
  - 2015 IChemE Hazards 25 Conference, Edinburgh, UK

All resources are available at: http://www.aiche.org/ccps/resources/vision-2020
Planned Resources

- CCPS-led projects and texts
- World-wide industry resources listing
  - Used to address identified gaps
Introductory Brochure

VISION 2020
Process Safety: The Journey Continues

- The CCPS Vision
- Achieving Vision 2020
- A Day in the Life in the Not-too-Distant Future
- What Industry Leaders Are Saying
- How to Get Involved

A Guiding Vision

New Teams for Industry

New Metrics for Progress

The 2020 Difference

See What Industry Leaders Are Saying

Join Us!
Tenet & Theme One-Pagers

Introducing the Five Industry Tenets and Four Societal Themes

This paper is the first in a series, each highlighting one of the following:

Industry Tenets
- Connected Culture
- Vision/Management Systems
- Disciplined Adherence to Standards
- Intentional Complexity Management
- Enhanced Application & Sharing of Lessons Learned

Societal Themes
- Enhanced Utilization of Knowledge
- Improved Collaboration
- Improved Use of Standards
- Improved Verification

What is the value?

Vision 2020 leverages our collective energy on one objective: fewer incidents. It focuses on the core tenets and themes required to meet society’s expectations of industry.

What can I do?

1. Learn more about these Five Industry Tenets and Four Societal Themes at the web address below.
2. Think about how you can apply the tenets and themes in your daily work.

More information is available at http://www.acme.org/cps/about/vision-2020

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Implementation Plan

VISION 20/20
Implementing Vision 20/20...an Overview

Prepare
- Present V20/20 to PSM Colleagues and Management
- Make V20/20 a Regular Topic at PSM-Related Meetings
- "Sprinkle" V20/20 into PSM Conversations
- Use V20/20 Logo on Internal Communications

Assess
- Complete the V20/20 Assessment Tool
- Identify Weak and Strong Sub-Elements (~2 or ~3.5 Respectively)
- Report Results; Management Commits to Improve
- Communicate Results Within Organization

Plan
- Reinforce and Use Strong Elements as Building Blocks
- Identify the Specific Improvements Needed
- Develop Specific Action Plans to Address Weak Areas
- Follow-up and Communicate Learnings

Perform
- Implement Action Plans
- Monitor Status of Action Plan Implementation
- Research Options to Improve (Reference Industry Documents)
- Capture & Communicate Learnings

Achieve
- Complete Action Plans
- Re-Assess V20/20 Implementation Status with the Assessment Tool
- Evaluate Effectiveness of Actions
- Identify New Weak Sub-Elements and Weak Individual Items (~2)

Sustain
- Verify Management System Improvements
- Develop Action Plans for Weak Sub-Elements and Individual Items
- Report & Celebrate Improvements
- Implement Action Plans and Monitor Performance
- Continual Improvement...Continue the Journey!

Today 2020
Assessment Tool

- Self assessment by representative team
- Addresses each industry tenet
- Intended to be easy to use and differentiating
Assessment Tool Example Text

Scoring via:
   Always – Most of the time – Some of the time – Infrequent or never

Committed Culture
   Attribute: Executives personally and visibly lead process safety.
   Evidence: Process Safety topics are regular agenda items at board/executive meetings.

Disciplined Adherence to Standards
   Attribute: Companies identify, document, and diligently follow standards for new equipment.
   Evidence: Standards (internal or common industry standards) for new equipment are clearly specified and readily available documents.
## Assessment Tool Interface

### Vibrant Management Systems

<table>
<thead>
<tr>
<th>All employees must clearly understand their role in managing process safety.</th>
<th>Always</th>
<th>Most of Time</th>
<th>Some of Time</th>
<th>Infrequent or Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>All employees can describe the site barriers (what they are, what they are for, how they work) that control major accident hazards and risks.</td>
<td>x</td>
<td></td>
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<tr>
<td>All employees can describe their roles and responsibilities in maintaining barriers to prevent major accidents.</td>
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<td>The management system is documented, readily accessible by all employees, and easily used to access process safety content.</td>
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<tr>
<td>Management system includes all 20 elements of CCPS’s Guidelines for Risk Based Process Safety.</td>
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<tr>
<td>Management system includes all process safety elements required by local regulations.</td>
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<td>Management system is not solely at the company level; rather, it cascades from a corporate system to regional requirements to site activities.</td>
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</tbody>
</table>

**Average score**: 3.67

<table>
<thead>
<tr>
<th>The management system defines how operations are conducted at the workplace and promotes safety in design, operations, and maintenance.</th>
<th>Always</th>
<th>Most of Time</th>
<th>Some of Time</th>
<th>Infrequent or Never</th>
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<tbody>
<tr>
<td>The management system defines the process safety-related activities that are conducted (e.g., hazard identification, MOCs, incident investigation, and action item tracking).</td>
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<td>The management system refers to specific tools used to perform process safety related activities (e.g., hazard identification, MOCs, incident investigation, and action item tracking).</td>
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<td>Managers have a structured management review process (see CCPS’s Guidelines for Risk Based Process Safety) for process safety elements and generate actions to address identified issues.</td>
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<td>The management system ensures employees are assigned to roles based on their competency to perform the tasks expected of that role.</td>
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</tbody>
</table>

**Average score**: 2.50
<table>
<thead>
<tr>
<th>Summary Page</th>
<th>Industry Tenet</th>
<th>Total Avg Score</th>
<th>Evidence</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Committed Culture</strong></td>
<td>1.67</td>
<td>Executives, personally and visibly lead process safety.</td>
<td>1.00</td>
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<td></td>
<td></td>
<td>Operators and mechanics diligently follow procedures and speak up when they suspect a problem or see an opportunity for improvement.</td>
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<td></td>
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<td>Supervisors and managers verify work is done properly, intervene to correct situations, and openly communicate negative news to management.</td>
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<td></td>
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<td>All employees and contractors commit to “do it right” and have a plan for when it goes wrong.</td>
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<tr>
<td><strong>Vibrant Management Systems</strong></td>
<td>2.79</td>
<td>All employees must clearly understand their role in managing process safety.</td>
<td>3.07</td>
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<td></td>
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<td>The management system defines how operations are conducted at the workplace and promotes safety in design, operations, and maintenance.</td>
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<td></td>
<td></td>
<td>The management system is agile and continually improved.</td>
<td>2.75</td>
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<td><strong>Disciplined Adherence to Standards</strong></td>
<td>2.54</td>
<td>Companies identify, document, and diligently follow standards for new equipment.</td>
<td>4.00</td>
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<td>Companies also identify, document, and diligently follow a set of standards applicable to existing equipment.</td>
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<td>Companies identify and manage process safety risks arising from gaps against these standards.</td>
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<td>As industry standards evolve, companies codify significant new learnings in their identified standards for existing (and new?) equipment.</td>
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<td><strong>Intentional Competency Development</strong></td>
<td>3.15</td>
<td>Intentional competency development includes understanding competency expectations, providing educational resources, and allowing time for people to build competency.</td>
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<td>Intentional competency development applies to all levels in the organization.</td>
<td>3.20</td>
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<td>Competency includes engineers implementing technical designs.</td>
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<td>Competency includes operators knowing their process and safe operating limits.</td>
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<td>Competency includes leaders visibly leading process safety.</td>
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<tr>
<td><strong>Enhanced Application and Sharing of Lessons Learned</strong></td>
<td>2.79</td>
<td>We learn from accidents, near misses, industry benchmarking, and success stories.</td>
<td>3.07</td>
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<td>First, identify the learnings and recognize the value in sharing it with others.</td>
<td>2.57</td>
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<td>Second, use a system to efficiently share learnings, without overwhelming the organization.</td>
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<td>Third, embed the learning in standards, practices, and check if existing equipment or processes require modification.</td>
<td>1.60</td>
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11\textsuperscript{th} GCPS BENCHMARKING RESULTS
Benchmarking Results

**Vision 20/20 CPS**

**Assessment Tool**

The included excerpt of the Vision 20/20 Assessment Tool will be helpful in capturing the performance and position of an organization. The full tool is available for download on the Vision 20/20 website.

**Committed Culture**

<table>
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<td>Weak</td>
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<tr>
<td>Cost</td>
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<td>Strong</td>
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**Future Focus**

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<td>2</td>
<td>Poor</td>
</tr>
</tbody>
</table>

**Vision 20/20 CPS**

**Center for Chemical Process Safety**
Metadata
Number of Surveys Completed: 68

Responses: Company Type
- Energy: 7%
- Pharma: 9%
- Midstream: 13%
- Downstream: 14%
- Other: 11%
- Chemicals: 36%
- Upstream: 10%

Responses: Company Size
- 10001-500000: 30%
- 1001-10000: 49%
- 101-1000: 13%
- 10000+: 8%

Responses: Company Location
- International: 71%
- National (US): 19%
- National (non-US): 10%
Executives personally and visibly lead process safety.

Operators and mechanics diligently follow procedures and speak up when they suspect a problem or see an opportunity for improvement.

Supervisors and managers verify work is done properly, intervene to correct situations, and openly communicate negative news to management.

All employees and contractors commit to "do it right" and have a plan for when it goes wrong.
All employees must clearly understand their role in managing process safety. The management system defines how operations are conducted at the workplace and promotes safety in design, operations, and maintenance. The management system is agile and continually improved.
Companies identify, document, and diligently follow standards for new equipment.

Companies also identify, document, and diligently follow a set of standards applicable to existing equipment.

Companies identify and manage process safety risks arising from gaps against these standards.

As industry standards evolve, companies codify significant new learnings in their identified standards for existing (and new?) equipment.
Vision 20/20
Intentional Competency Development

Intentional competency development includes understanding competency expectations, providing educational resources, and allowing time for people to build competency.

Intentional competency development applies to all levels in the organization.

Competency includes engineers implementing technical designs.

Competency includes operators knowing their process and safe operating limits.

Competency includes leaders visibly leading process safety.
**Enhanced Application & Sharing of Lessons Learned**

- 2.70: We learn from accidents, near misses, industry benchmarking, and success stories.
- 2.49: First, identify the learnings and recognize the value in sharing it with others.
- 2.36: Second, use a system to efficiently share learnings, without overwhelming the organization.
- 2.56: Third, embed the learning in standards or practices, and check if existing equipment or processes require modification.
DISCUSSION TOPICS
Discussion topics and Q&A

- Risk literacy in high school students
- Process Safety Education in undergraduate ChE program
- Walking the Talk --- Felt Leadership
- Process Safety Awareness in Engineering and Operating personnel
- Process Safety Incident Database
Questions?

Vision 20/20

http://www.aiche.org/ccps/resources/vision-2020
QUOTES FROM EXECUTIVES
On Committed Culture…

“My advice and guidance to any CEO [is] if you don’t demonstrate the leadership in driving process safety and personnel safety in other aspects of your business, it is not going to happen — or it is not going to be sustainable.”

- James Alder, Celanese
On Vibrant Management Systems…

“Committed leadership is not enough, clear policies are not enough, you need a management system to ensure that those policies and that leadership commitment are translated into specific activities, specific measurements, and that the system is robust and ongoing.”

- Stephen Pryor, ExxonMobil Chemical
On Disciplined Adherence to Standards...

“The one thing that has to be constant is our adherence to PSM, our discipline around that, because that is really what gives us the confidence to operate these kinds of facilities, day in day out, in our communities around the world.... There’s not a choice in my mind. If you’re going to operate safely, if you’re going to operate with the consent of the communities in which we operate, you need to do it with the highest regard to process safety management.”

- Ellen Kullman, DuPont
On Intentional Competency Development...

“Process safety is not something for the leader...and the safety experts to know; everybody in the workforce has to become more and more knowledgeable about understanding what the risks are, helping us to identify risks, and making sure that they understand and execute all of our procedures properly and consistently to avoid those risks.”

- Stephen Pryor, ExxonMobil Chemical

“To be an effective champion for process safety you need two things: you need some appreciation for the technical details and the complexity of the function, and then you need a sustainable, emotional commitment to prevent people from getting hurt.”

- James Alder, Celanese
On Enhanced Applications of Lessons Learned...

“A critical element of process safety excellence is...a learning organization. That means we learn at the site from every individual incident, and the front-line people have to understand, really understand, the higher potential consequence.... For those higher potential consequences, we share those learnings worldwide. It’s not just sharing internally; it’s also sharing those learnings with the industry.”

- Stephen Pryor, ExxonMobil Chemical

“I think one of the biggest issues that we face is that people become immune to the risks that are around them. There are very serious risks when you go in from the outside, you can see them—they’re there; they are pretty obvious, but people tolerate them, because they become used to them.”

- John Mogford, The Weir Group