Fred Henselwood
Process Safety Leader
Nova Chemicals

For
Louisa Nara
CCPS Global Technical Director

Planning for 2020

2020
Planning Committee Members

- Fred Henselwood, NOVA (Chair)
- Chris Aiken, Cargill (Vice Chair)
- Jerry Forest, Celanese (2nd Vice)
- Abdul Aldeeb, Siemens
- Steve Arendt, ABS
- Todd Aukerman, LanXess Corporation
- Vivek Bischave, Reliance
- Gustavo Correa, YPF
- Tony Downes, Honeywell
- Eric Freiburger, Praxair / Linde
- Cheryl Grounds - Emeritus
- Greg Horton, SABIC
- Shakeel Kadri – CCPS
- Gregg Kiihne, BASF
- Pete Lodal – Emeritus
- Jack McCavit, Emeritus
- Louisa Nara, CCPS
- Cathy Pincus, Exxon Mobil
- Jatin Shah, BakerRisk
- Karen Tancredi, Chevron
- Scott Wallace, Olin
- John Wincek, Dekra Insight

Blue new Leadership; Red new Committee Member

CCPS Balloting Protocol

- Prior to the closure of the balloting process at the November TSC meeting, each CCPS member company will be asked to vote for and prioritize their company project choices noting the order of preference. The ballot should indicate first (mark “1”), second (“2”), third (“3”), etc. choices. You may rank proposals or withhold a vote for a proposal by leaving the proposal unranked.
- For the proposals listed under the Yes/No section of the ballot, each project should be given a yes or no to guide funding of these proposals. Voting for any of the yes / no proposals will not impact the prioritization of the projects on the ranked section of the ballot, or detract from other committee resources / activities. These projects are on this section of the ballot because they will not be working with members currently contributing to ongoing projects, but will be managed with CCPS Staff resources and funding only.
- If you have questions, please contact Louisa Nara at louna@aiche.org

2020 Yes/No Project Proposals

Project No.	Proposed Project Title	Champion	Sponsor
2020-1	A Book of Beacons (& Beacon archive)	Jing Chen (CCPS)	Chris Aiken (Cargill)
1802	Process Safety for Undergraduates – 2nd Ed. (w/ problem set)	Jerry Forest (Celanese) & Scott Wallace (Olin)	Jerry Forest (Celanese)
1903	Gamification Pilot	Gustavo Correa (YPF)	Jatin Shah (Baker Risk)

2020 Project Proposals

Project No.	Proposed Project Title	Champion	Sponsor
2020-2	Analyzing Loss-of-Containment Scenarios in PHAs	Robert Johnson (Unwin Company)	Fred Henselwood (NOVA)
2020-3	Vision 20/20 - the Next Frontier	Karen Tancredi (Chevron) & Gregg Kiihne (BASF)	Chris Aiken (Cargill)
1807	Update "Guidelines for Chemical Reactivity Evaluation and Applications to Process Design"	John Wincek (DEKRA)	Amy Theis (DEKRA)
1902	Predictive Meteorological and Geological Data for HIRA and Resilience Planning and Design	Pete Lodal	Eric Frieburger (Praxair)

Yes/No Project Ballots

The Following 3 projects are Yes/No projects:

Voting for any of the yes / no proposals will not impact the prioritization of the projects on the ranked section of the ballot, or detract from other committee resources / activities. These projects are on this section of the ballot because they will not be working with members currently contributing to ongoing projects, but will be managed with CCPS Staff resources and funding only.

2020-1 – Beacon Archive/Beacon Book

Proposal: Create a book of beacons or archive all beacons on AIChE website to increase beacon usage and improve user experience.

Background: A book of Beacon has been done for the Japanese beacons (ISBN# 978-4-621-08915-6) and it is selling well.

Benefits:

- The Beacon archive to the web is already on the radar for AIChE IT team. The finished web archive will include keyword search ability, search by month and year, and filter by language
- Minimal capital cost for web
- The Beacon book will allow users to purchase physical copy of beacons in English, Portuguese
- User friendly and increase share ability
- Share knowledge and lessons learned widely

Team Composition: Jing Chen, CCPS Senior Engineering Specialist to lead the project; Louisa Nara, CCPS Global Technical Director to Sponsor; AIChE Web team; Beacon team members for feedback

Product(s) (Check all that may apply): Web Product ; Book (2nd stage)

Sponsor: Jing Chen - CCPS

Champion: Chris Aiken - Cargill

1802 - Process Safety for Undergraduates and Engineers, 2nd Edition (with lectures and problem sets)

Proposal: The project will add problem sets to the end of each chapter so faculty can assign homework to test students understanding of material. An electronic solutions manual made available to faculty only. Example exam problems will be a plus. A 50 minute lecture outline would be provided for each chapter so that faculty can adapt to their university needs.

Benefits: UNIVERSITY PROFESORS ARE ASKING FOR THIS! These additions should greatly enhance usability for the students and professors.

Audience: The 2nd edition audience is the same as the first: undergraduates, ChE professors, and early career engineers. Note, the last target is an as of yet, untapped market for the book

Potential Reference Materials:

In addition to 1st edition reference, existing CCPS resource books on: HAZOP & LOPA, and ISD. Also, the chemical reactivity worksheet.

Sponsor: Jerry Forest

1802 Envisioned Product Detail (Book of course)

Existing Chapters	2nd Edition Proposal	Comment
Introduction	Introduction	Same
Process Safety Basics	Process Safety Basics	Same
The Need for Process Safety	The Need for Process Safety	Same
Process Safety in Design	What Can Go Wrong? Process Safety Information LOPC Process Safety in Design Intro to Flammability Intro to Chemical Reactivity	Expand to 4 chapters PSI - a few main topics like how to read P&IDs, Block flow, how to make a max intended inv. and use of chemical reactivity spreadsheet. LOPC is how to classify an incident using CCPS PSE tools. Intro to flamm. & reactivity. Mainly definitions
Course Material	What Can Go Wrong? Hazards & risks Checklists and HAZOP Intro to source & dispersion Models How frequently can it occur?	Consider dropping course material chapter and replace with focus on HAZOP methodology, risk matrices, etc.. Idea is to give student industry tools. Models section not meant to replace Crowl & Louvar, just an introduction
	Mitigating Risk	High level overview of how we mitigate risks. A more in depth discussion of hierarchy of controls and ISD.
Process Safety in the Workplace		Same
Appendix		Same

1903 – CCPS Gamification: Bow Tie: The Online Game!

Proposal: Develop a game for process safety learning that can be applied to different organizations and a diverse public all around the globe. The objective is to engage the participants into an immersive game that contains information and exercise behaviors related to Bowtie analysis. This project proposes to experiment with an innovative tool to improve process safety skills and to be able to evaluate their results.

Benefits: Improved Learning!! Games have been proven to a useful tool for aiding in adult learning and behavior changes. By creating content utilizing this form of media, we are able to broaden our outreach and provide training tools that are highly impactful and useful for our member companies (and non-member companies).

Team Composition: CCPS Industry volunteers would collaborate with i.9.Games to create the online Bow Tie game.

Product: An on-line interactive game – for phone/tablets/web browser based.

Recommended Development Approach: A Game Designer would be tasked with designing, developing and creating the game. A test group should be created to test the game and see if it has the engagement and learning impact we were trying to achieve. TSC reps should nominate one or two novices from their organization to participate in the testing

Audience: Engineers, front line operators, management, faculty and students, etc.

Sponsor: Gustavo Correa (YPF) ; **Champion:** Jatin Shah (Baker Risk)

The following 4 project proposals are for 2020 Project Ballot.

The ballot should indicate first (mark “1”), second (“2”), third (“3”), etc. choices. You may rank proposals or withhold a vote for a proposal by leaving the proposal unranked.

2020-2 – Analyzing Loss-of-Containment Scenarios in PHAs

Proposal: Develop a Concept Book or white-paper on Analyzing Loss-of-Containment Scenarios in PHAs.

Background: In the process industries, preventing and mitigating loss of primary containment (LOPC) events is the primary focus of process safety, since such events can result in dangerous releases of hazardous materials and/or energies with ensuing loss and harm impacts.

Four major categories of loss-of-containment causes are:

- Via "open-end" routes to atmosphere (relief, drain, etc.)
- Under design operating conditions due to imperfections in, or deterioration of, the equipment integrity
- Under design operating conditions due to external causes exceeding vessel/piping ultimate strength
- Due to deviations in plant conditions beyond design limits

Benefits: Companies use various contrived approaches such as using "containment" as a process parameter when identifying and analyzing such scenarios. Better methods are needed that will supplement existing hazard evaluation procedures and allow more systematic scenario identification and for contain & control measures to be more effectively taken into account when evaluating scenario risk.

Format Envisioned: Concept Book or white-paper document, with linked tools and resources

Sponsor: Robert W. Johnson, UNWIN

2020-3 – Moving from Good to Great: GLs for Implementing Vision 20/20 Tenets and Themes

Proposal: Following the structured approach laid out in the Vision 20/20 and subsequent CEP articles, detail tactics to make the adjectives described in the V20/20 tenets and themes. Provide examples of leadership behaviors to engage employees to drive sustainable practices for each tenet and theme.

- How do we make a good process safety culture into a COMMITTED culture?
- How do we change competency development into INTENTIONAL competency development?
- How do we take a mature management system and make it a VIBRANT management system?

Benefits: We have not captured the potential benefit of V20/20 as a step change in performance. (Achieve vibrancy, intent, commitment, discipline, "enhancement")

Team Composition: CCPS Member companies.

Product: Develop a series of short videos (in the spirit of TED Talks) to describe the behaviors necessary to achieve the adjectives – Perhaps we can get Simon Sinek to narrate. This may be followed by a Short book (<100pp.) or pamphlet (KEEP IT SHORT AND STRAIGHTFORWARD; SOFT COVER)

Audience: Senior Operations Leadership, Process Safety Leadership

Champion: Chris Aiken, Gregg Kiihne and Karen Tancredi

1807 - Guidelines for Chemical Reactivity Evaluation and Application to Process Design, 2nd Ed.

Proposal: This book **(1995)** is now 20+ years old. In that time, much has happened in the way we manage the safety of intended chemical reactions. This project would update and modernize an existing CCPS reference to include current technology and practice. It would provide up to date guidance on safely managing chemical reactions, from literature and desktop screenings through laboratory testing and scaleup.

Benefits: There are many new products and tools that can be used and discussed; New tools for predicting hazards using thermodynamic calculations; Updated Chemical Reactivity Worksheet reference from AIChE; Improved capabilities in programs such as CHETAH, while similar software tools no longer exist; New calorimetry screening methods have been developed,
Devices such as the Vent Sizing Package, Advanced Pressure Tracking Adiabatic Calorimeter, and MicroCal are not described in the book.
New topics that should be included: Evaluating chemical reactivity to define safe operating limits and storage conditions; For reactive chemicals, discussing the concepts of emergency relief system ; design to address overpressure scenarios. A more controversial topic: not regulated does equal safe. How to evaluate material energetics.

The CSB report on Improving Reactive Hazard Management has been issued, Lees' Loss Prevention 4th Edition issued in 2012 summarizes causes of many chemical reactive incidents, the Handbook of Loss Prevention Engineering (2013) includes a chapter on Chemical Reaction Safety and many incidents have occurred that provide valuable lessons (the 1st edition did not address incidents); Concept Sciences; Morton International; T2 Laboratories
Team Composition: The team should ideally consist of R&D, process development and reaction safety expert personnel, along with process engineers and designers.

Recommended Development Approach: It is anticipated this project will be a traditional CCPS project, with a volunteer committee of subject matter experts from member companies, and a contractor or technical writer to prepare the material from the committee.

Audience: R&D and Process Development personnel, chemists, chemistry / chemical engineering curriculum, process safety professionals, students, professors, as well as new and experienced process
Sponsor: John Wincek, DEKRA Process Safety; Amy Theis, DEKRA Process Safety

1902 - Predictive Meteorological and Geological Data for HIRA and Resilience Planning and Design

Proposal: Update and clearly define how data related to extreme weather events and natural disasters should be used in risk assessment activities, including HIRA, facility siting and conduct of operations (COO). The project should assess the best sources for probabilistic and predictive data, how to use this data and what methodologies to use, what criteria/constraints should be applied for use, and other recommendations for resilient design. Technical information should be validated with actual loss history wherever possible.

Benefits: First of a kind offering. There has been increased awareness and desire for better data and guidance on how to address the recent history of extreme weather/geologic events and its negative impact on the processing industry.

Team Composition: CCPS member companies - pharma companies, refiners, Asia-Pacific, government agency, etc., Potential to have representatives from NOAA, USGS, ASCE, academia, etc.

Envisioned product: book, pamphlet, software/database, web product – depending on what information can be gleaned, project could take many shapes

Audience: process safety and design professionals

Cost recovery potential

Potential reference materials—FM Global Data Sheets

Sponsor: Eric Freiburger - Linde

Ideas for 2021

Got a great idea on how we can change the process safety world and make a positive impact? Let us know!

Contact Louisa Nara at louna@aiche.org