

# PROCESS SAFETY AT A GLANCE 2022

## CCPS MANAGEMENT RESOURCE TOOLS

### COMMIT TO PROCESS SAFETY

- PS Leadership from the Boardroom to the Frontline
- Essential Practices for Creating, Strengthening, and Sustaining Process Safety
- The Business Case for Process Safety (2018)
- Culture G/L for Implementing Process Safety Management Systems, 2nd ed.
- G/L for Process Safety in Outsourced Manufacturing Operations
- Local Emergency Planning Committee Guidebook: Understanding the EPA Risk Management Program Rule
- Inspiring Process Safety Leadership: The Executive Role (online and DVD)
- Process Safety Boot Camp/Foundations of Process Safety for Offshore Operations
- Process Safety Culture Toolkit

### UNDERSTAND HAZARDS AND RISKS

- G/L for Process Safety During the Transient Operating Mode
- G/L for Facility Siting and Layout\*\*
- Recognizing and Responding to Normalization of Deviance
- G/L for Defining Process Safety Competency Requirements\*
- Process Safety for Engineers: An Introduction, 2nd Ed.
- A Practical Approach to Hazard Identification for Operations and Maintenance Workers\*\*
- HAZOP eLearning/LOPA eLearning/Hazard Identification eLearning
- Hazard Identification for Operations and Maintenance Workers eLearning
- G/L for Chemical Process Quantitative Risk Analysis, 2nd ed.
- G/L for Chemical Transportation Safety, Security, and Risk Management, 2nd ed.
- Guide for Making Acute Risk Decisions
- G/L for Hazard Evaluation Procedures, 3rd ed.
- Layer of Protection Analysis\*\*
- G/L for Enabling Conditions and Conditional Modifiers in Layer of Protection Analysis
- Guidelines for Initiating Events and Independent Protection Layers in Layer of Protection Analysis
- Recognizing Catastrophic Incident Warning Signs in the Process Industries

### MANAGE RISK

- G/L for Managing Abnormal Situations
- Bow Ties in Risk Management: A Concept Book for Process Safety
- Dealing with Aging Process Facilities and Infrastructure
- G/L for Integrating Management Systems and Metrics to Improve Process Performance
- Conduct of Operations and Operational Discipline\*
- G/L for Management of Change for Process Safety\*\*
- G/L for Managing Process Safety Risks during Organizational Change
- G/L for Improving Plant Reliability through Data Collection and Analysis
- G/L for Asset Integrity Management
- G/L for Performing Effective Pre-Startup Safety Reviews\*\*
- G/L for Process Safety Documentation
- G/L for Technical Planning for On-Site Emergencies
- G/L for Revalidating Process Hazard Analysis, 2nd Ed.
- G/L for Analyzing and Managing the Security Vulnerabilities of Fixed Chemical Sites
- Process Safety for Front-Line Supervisors eLearning
- G/L for Writing Effective Operating and Maintenance Procedures\*
- Golden Rules\*\*
- Safe Work Practices (SWPs)

### LEARN FROM EXPERIENCE

- Book of Beacons, Online, Available to Members-only
- Driving Continuous Process Safety Improvements from Investigated Incidents
- Wisdom of Chemical Process Safety: Beacon Lessons and Accident Prevention (\*Currently available in Japanese.)
- G/L for Process Safety Metrics
- CCPS PS Metrics Guide for Leading and Lagging Indicators\*\*
- Process Safety Leading and Lagging Metrics: "You Don't Improve What You Don't Measure"\*\*\*
- Process Safety Leading Indicators Industry Survey
- G/L for Acquisition Evaluation and Post Merger Integration
- G/L for Auditing Process Safety Management Systems, 2nd
- G/L for Investigating Process Safety Incidents, 3rd
- Incidents that Define Process Safety
- More Incidents that Define Process Safety
- Process Safety Incident Database (New Platform in 2022)
- Tools for Making Acute Risk Decisions with Chemical Process Safety Applications
- Vision 20/20 Process Safety: The Journey Continues

## 20 CCPS ELEMENTS OF PROCESS SAFETY

### Process Safety Culture

### Standards, Codes, Regulations, and Laws

### Process Safety Competency

### Workforce Involvement

### Stakeholder Outreach

### Process Knowledge Management

### Hazard Identification and Risk Analysis

### 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

### Incident Investigation

### Measurement and Metrics

### Auditing

### Management Review and Continuous Improvement

## CCPS TECHNICAL RESOURCE TOOLS

### ELECTRONIC APPLICATIONS

- Risk Analysis Screening Tool (RAST) and Chemical Hazard Engineering Fundamentals (CHEF)
- CCPS Glossary – [aiche.org/ccps/resources/glossary](https://www.aiche.org/ccps/resources/glossary)
- CCPS Process Safety Incident Evaluation (PSIE) Tool
- CCPS Chemical Reactivity Worksheet Tool (CRW 4.0.3)
- New tools and videos will be added to [aiche.org/ccps/resources/tools](https://www.aiche.org/ccps/resources/tools)

### VENTING AND EMERGENCY RELIEF

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

### CHEMICAL REACTIVITY HAZARDS

- Chemical Reactivity Hazard Training CD-ROM
- Essential Practices for Managing Chemical Reactivity Hazards
- G/L for Process Safety in Batch Reaction Systems, 2nd ed.
- G/L for Chemical Reactivity Evaluation and Application to Process Design, 2nd ed.
- G/L for Safe Storage and Handling of Reactive Materials

### SAFE DESIGN

- G/L for Process Safety in Chemical Laboratories and Pilot Plants
- Continuous Monitoring for Hazardous Material Releases
- G/L for Engineering Design for Process Safety, 2nd ed.
- G/L for Integrating PS into Engineering Projects
- G/L for Fire Protection in Chemical, Petrochemical, and Hydrocarbon Processing Facilities
- G/L for Safe Warehousing of Chemicals
- G/L for Inherently Safer Chemical Processes, A Life Cycle Approach\*\*

### CONSEQUENCE MODELING

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

### BIOPROCESS SAFETY

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

### DUST EXPLOSION HAZARDS

- G/L for Safe Handling of Powders and Bulk Solids
- G/L for Combustible Dust Hazard Analysis

### HUMAN FACTORS

- Human Factors Handbook for Process Safety Plant Operations: Improving Process Safety and System Performance
- Human Factors: Methods for Improving Performance in the Process Industries
- G/L for Preventing Human Error in Process Safety

### INSTRUMENTATION AND CONTROL

- Managing Cybersecurity in the Process Industries: A Risk-Based Approach
- G/L for Safe and Reliable Instrumented Protective Systems
- G/L for Safe Automation of Chemical Processes, 2nd ed.

### UPSTREAM

- Process Safety in Upstream Oil and Gas
- Most CCPS titles apply equally to upstream processes. (Please see appropriate RBPS element or technical topic.)

## ADDITIONAL RESOURCES

View the CCPS Video "Leading the Way to a Safer World" at [aiche.org/ccps/safety](https://www.aiche.org/ccps/safety).



Find CCPS resources to meet your needs from the chart on this page. Additional information can be found at [aiche.org/ccps](https://www.aiche.org/ccps).



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

### Find CCPS Management Resource Tools

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

### CCPS Technical Resource Tools

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

Most CCPS books are available at [wiley.com/go/ccps](https://www.wiley.com/go/ccps).

Deep Search CCPS by searching for "CCPS" and keywords on [Knovel.com](https://www.knovel.com).

### CCPS Education

Tools and courses are available at [aiche.org/ccps/resources/education](https://www.aiche.org/ccps/resources/education).

### Translated Materials

Mandarin, Japanese, Portuguese, Spanish and Italian versions available at [aiche.org/ccps/QuickLinks](https://www.aiche.org/ccps/QuickLinks).

\* Available in Spanish, Japanese, and/or Portuguese

\*\* Available in Chinese