

# Process Safety Boot Camp

## Course overview:

An intensive 4 day course, taught at your company location, which is designed to quickly bring young chemical engineers up to speed on the fundamentals of Process Safety. The course will include numerous case studies and workshop problems to reinforce the topics presented.

## What your engineers will learn:

- A. The four pillars and 20 elements of Risk Based Process Safety.
- B. The different types of Process Hazard Analysis, including an introduction to HAZOP.
- C. An overview of OSHA's PSM regulations and EPA's RMP regulations.
- D. How to incorporate Process Safety Management into Process Design and Plant Operations
- E. The concept of Layers of Protection to prevent and/or mitigate loss of containment events
- F. The principles of Risk Analysis and Risk Management
- G. How to consider Inherently Safer Processes during plant design.

## Who should attend:

- Process Engineers, project engineers, operations engineers, and safety engineers that need to move beyond an understanding of personnel safety and learn the basics of Process Safety and Process Safety Management.
- Chemical engineers who interface with design teams, plant engineers, or plant operations personnel.

## After taking the course, students will be able to:

- Detail the differences between personnel safety and process safety.
- Participate on PHA teams.
- Understand and appreciate all the layers of protection necessary to prevent loss of containment incidents.
- Utilize PSM principles in design and daily operations to help prevent toxic releases, fires, explosions and other incidents that could cause an off-site impact.

## Special features:

- Taught at the company location, making it possible to cost-effectively and conveniently train many engineers
- Process safety boot camp is taught by highly experienced engineers who are trained presenters and can illustrate key concepts with personal experience.
- Attendees will receive a starter library of CCPS books, including Guidelines for Risk Based Process Safety (2007); Guidelines for Hazard Evaluation Procedures (2008); Inherently Safer Chemical Processes (2009), and Incidents That Define Process Safety (2008)

## Instructors:

Two experienced CCPS instructors from the following list of CCPS staff and staff consultants will teach each session of Process Safety Boot Camp:

- A. Brian Kelly, PE has 35 years of experience in engineering, project development, plant operations and process safety in the oil refining sector. He was employed by Imperial Oil (Exxon) and later Syncrude Canada Ltd., a leader in the Canadian Oil Sands project. Upon retirement in 2003, he formed BriRisk Consulting and has since been actively involved in process safety in both the US and Canada. He has conducted several formal incident investigations, process safety audits, risk assessments, engineering design reviews and process safety workshops. Brian holds BAsC and MASc degrees in Chemical Engineering from the University of Ottawa (Canada). He is a director of the AIChE Health and Safety Division and is also a part-time staff consultant with the AIChE Center for Chemical Process Safety. Brian was also chair of the PSM Division of the Chemical Institute of Canada in 2002.
- B. John Murphy, PE has 40 years of experience in chemical manufacturing and process safety with jobs in the chemical industry, consulting and government. He has retired from the U. S. Chemical Safety and Hazard Investigation Board where he served as lead investigator on the Reactive Hazard Investigation and other chemical processing incidents. He also retired from the Dow Chemical Company where he was a leader in process safety. He is a Fellow of the American Institute of Chemical Engineers where he is a leader in the Safety and Health Division and an Emeritus member and Staff Consultant of the Technical Steering Committee of the Center for Chemical Process Safety.
- C. Robert Ormsby, PE has over 25 years of process safety experience with Air Products & Chemicals, Inc. During that time he managed a corporate process safety group and conducted major incident investigations, developed corporate process safety standards and guidelines, developed and taught process safety courses, and conducted major hazard studies worldwide. In addition during that time he served as Manager of the Chemicals Group Safety organization for six years and developed both operating group safety policies and standards and conducted audits. Ormsby is a Fellow of AIChE and a Fellow of CCPS
- D. Adrian L. Sepeda, PE has over 40 years of experience in the chemical industry, process safety, and risk management with positions including manufacturing, construction, engineering, Responsible Care®, corporate risk director and consulting. He retired from Occidental Chemical Corporation in 2002 as Director, Risk Management—Health, Environment and Safety, where he had responsibilities company-wide for process safety, risk management and accident investigations. After retiring from OxyChem, he started a consulting firm specializing in PSM systems and risk management. He is a CCPS Emeritus member and was elected “Fellow” in 2008.

**Course overview:**

*Note that regulations will be covered as needed in the applicable sections.*

- Introduction
  - i. Occupational safety vs. process safety
  - ii. Business case for process safety
  - iii. Key principles of process safety
- Anatomy of an Incident
- Loss of Containment
  - i. Containment and control
  - ii. Prevention
  - iii. Mitigation
- Introduction to Management Systems and Risk Based Process Safety
- Culture

- Compliance with Standards
  - i. Process Design
- Process Safety Competency
- Workforce Involvement
  - i. Human Factors
- Stakeholder Outreach
- Process Knowledge Management
  - i. Chemical hazards
  - ii. Reactivity
  - iii. Toxicity
  - iv. Corrosivity
  - v. Inherent Safety
- Hazard Identification and Risk Analysis
  - i. Hazard evaluation techniques
  - ii. Consequence and Impact
  - iii. Frequency
  - iv. Risk Analysis
  - v. Risk criteria
  - vi. Risk acceptance
- Operating Procedures
- Safe Work Practices
  - Hot Work Permits, etc.
- Asset Integrity and Reliability
- Contractor Management
- Training and Performance Assurance
- Management of Change (MOC)
- Operational Readiness & PSSR
- Conduct of Operations
- Emergency Management
- Incident Investigation
- Measures and Metrics
- Auditing Compliance
- Management Review and Continuous Improvement
- Additional EPA RMP regulations
- Course Wrap up

**For a quote, or for more information:**

If you are interested in having a Process Safety Boot Camp conducted at your facility please contact CCPS at +1.646.495.1371 or [ccps@aiiche.org](mailto:ccps@aiiche.org).