

“Strengthening Process Safety Management System in India” – CCPS Perspective

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Professional Background:

- Chemical Engineer with 25 years of industry experience.
- 15+ years of experience in safety engineering and risk management in offshore, refining, petrochemical, and chemical industries.
- Led technical safety studies like PHA, QRA, SIL verifications, Bow-tie workshops, and Fit-for-Purpose certifications for aging assets and cross country pipelines.

Currently Sphere heading following Joint Industry Projects (JIPs)

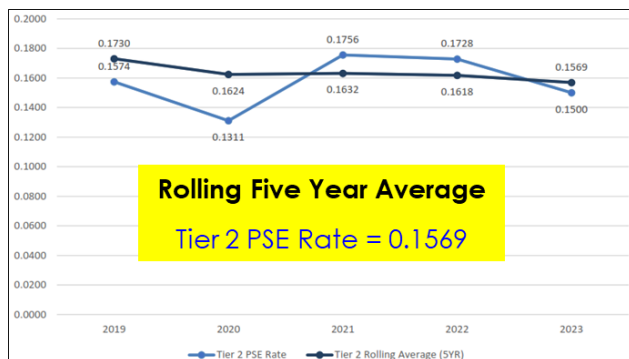
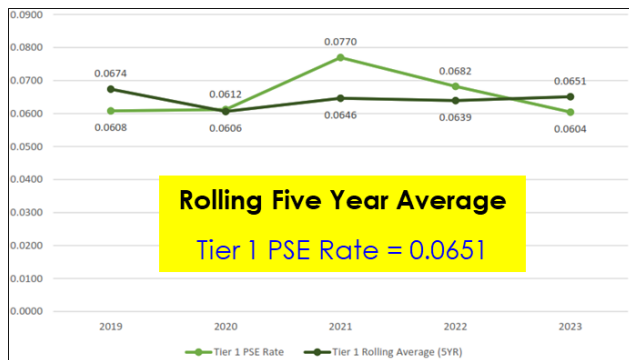
- RBPS Maturity Assessment Program
- RBPS Benchmarking Program
- Process Safety Industry Database (PSID)
- RBPS Field Guide

Umesh was involved in writing CCPS guidelines on Bow-ties in Risk Management.

Where are we in our journey?

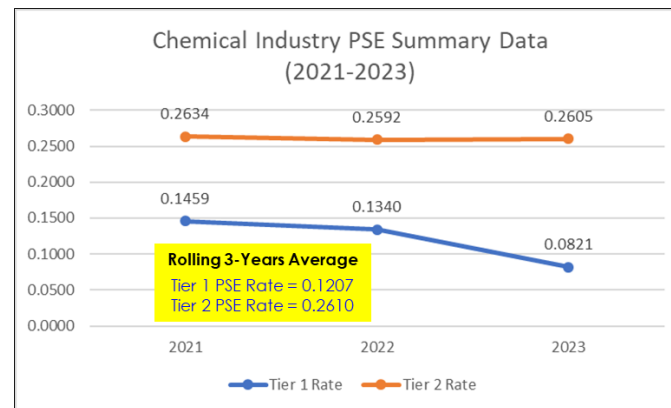
PSE Rates

U.S. Refining PSE Summary Data (Period: 2019-2023)



U.S. Chemical Industry PSE Summary Data (Period: 2021-2023)

Trends -American Chemistry Council (ACC)



Top 3 Challenges in Process Safety

Industry

- Process Safety as a business case
- Leadership & Culture
- Competency and understanding

Academia

- Collaboration with stakeholders
- Practical Experience
- Curriculum

Regulators

- Regulations
- Complexities
- Updating Competency

Society

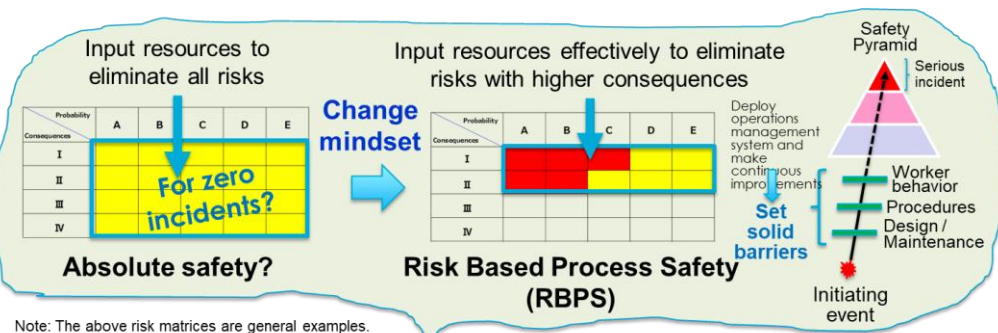
- Risk Literacy
- Trust
- Communication

Back-up Slides

Paradigm shift

Change mindset

The way we manage our Process Safety



Note: The above risk matrices are general examples.

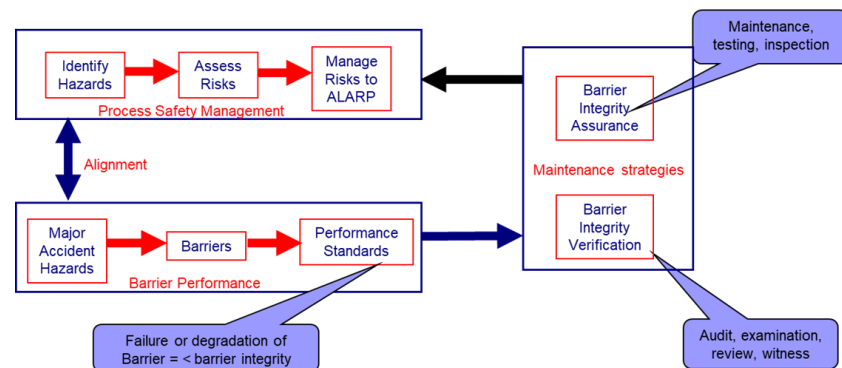


Change mindset on process safety

Item	Present	Hereafter
Risk	Should be avoided	Should be managed
Incident	Definition	Company standards
	Focal point	Frequency rate
Basis for plant safety	Safety regulations	Safety regulations / Company & industry standards / RBPS

Alignment

Process Safety System, Barrier Management & Maint. Strategies



A Way Forward....

- **Process Safety as an key societal Value** – Build a common understanding of risk among all stakeholders to make risk and safety management a core value
- **Process safety regulation** – OSHA PSM, Safety Case Regime
- **Process safety performance measurement across the industries** – API RP 754 (Leading & lagging Indicator)
- **Making process safety as a good business case** – Engage with leadership of organizations and help them understand how they contribute to process safety outcomes.
- Develop a database for **process safety incident data repository**
- Develop a **standard process safety curriculum**.
- Provide **funding streams** for process safety research across academia, government and industry
- Provide opportunities for **practical experience** through internship or work experience in industry
- Reward positive collaboration in process safety rather than competition.
- **Risk Literacy**: Promote process safety through workshops and forums.