

# CCPS Risk Based Process Safety Management System [RBPS]

Lecture at the Israel EHS Managers Summit

Shakeel H. Kadri, Executive Director & CEO, CCPS



### My presentation outline



- Brief introduction & Safety values I picked up
- Why Process Safety?
- Bhopal Gas Tragedy
- About CCPS
- CCPS Vision 20/20 Project
- "What good PSM looks like"
- Roadmap to Process Safety Excellence
- Q&As



#### Shakeel Kadri Executive Director & CEO, CCPS





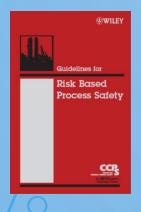




AP- Global Process Safety Director

AP- Industrial & Specialty Gas & Chemicals







Executive Director & CEO, CCPS

APCI AICHE - CCPS

> Risk, HSE & Technology Leader AP / CCPS



AIChE & CCPS Fellow





APCI: Air Products & Chemicals, Inc.

AICHE: American Institute of Chemical Engineers

CCPS: Center for Chemical Process Safety

## Safety



The condition of being safe from suffering or causing injury, injury or OSS



## Personal Safety





- Actions of an Individual that normally affect the safety of only one person
- Personal Safety Programs addresses risk of personal injuries like slips, falls, struck-by incidents, electrocution, auto incidents, etc.



## **Process Safety**

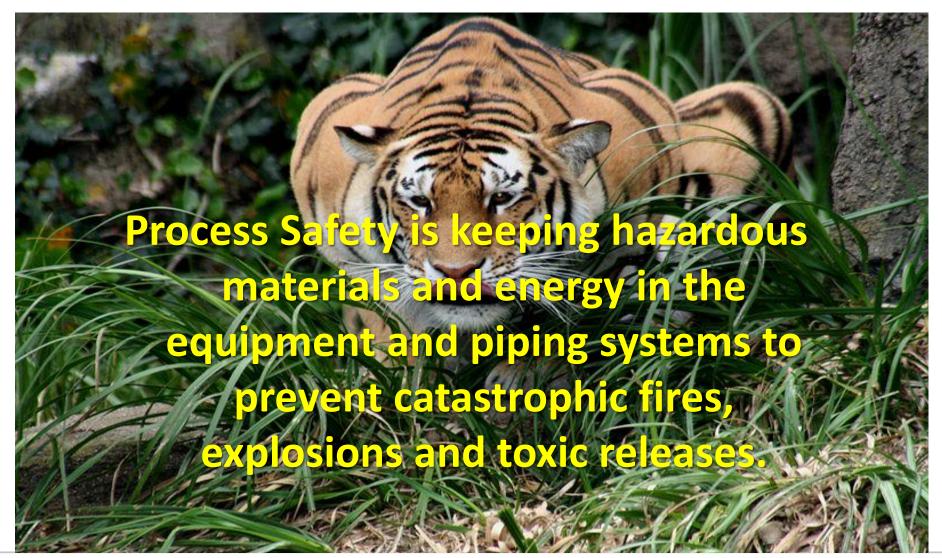
- Actions of an Individual and/or equipment/process that affect any personnel in the area of the incident or beyond
- Incidents can have catastrophic effects, multiple injuries, fatalities, and substantial economic, property, and environmental damage.





## **Process Safety Defined**

















## Failure to Learn













#### About CCPS



- Not for profit organization supported by Corporate Members globally
- It is part of the American Institute of Chemical Engineers [AIChE]
- It was started on 23 March 1985, in response to the Bhopal Union Carbide tragedy, which lead to a collaborative effort to eliminate catastrophic process safety incidents.
- Our headquarters are in New York City, with regional offices in Houston,



### CCPS Vision



"A world without Process Safety incidents"

#### CCPS Mission



#### CCPS is committed to achieve a world without Process Safety incidents by:

**Serving** as a premier worldwide resource for <u>Process Safety knowledge</u> and understanding

**Advancing** Process Safety <u>culture</u>, <u>technical concepts</u> and <u>management</u> <u>practices</u>

**Enhancing** individual & organizational Process Safety <u>competency</u> **Fostering** <u>collaboration</u> within and across organizations, at all levels **Promoting** Process Safety as a key <u>societal value</u> and foundation for <u>responsible</u>, <u>sustainable</u> <u>operation</u>

### 236 Member Companies (June 2022)

**TPC** Group





## Representing 46 Countries (April 2022)



























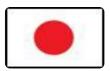


































































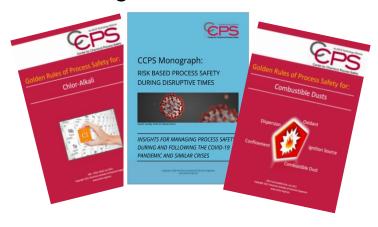


#### Leading Process Safety since 1985



CCPS Certified(CCPSC) and CCPS Fundamentals (CCPSf)

#### **Sharing Best Practices**





Creating Books and Publications/Translation into Global Languages





Conducting Global and Regional Conferences and Training

Creating Industry-wide Tools, Programs and Guidelines

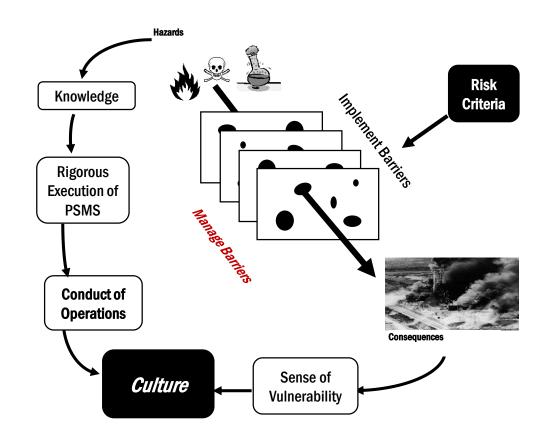


Educating Students/Educators





#### **Process Safety Leadership at a Glance**

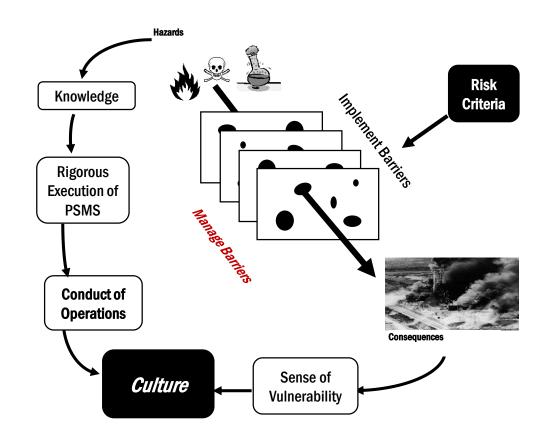


- Hazards always exist
- Barriers prevent hazards from leading to consequences
- You need enough of the right kind of barriers to meet your risk criteria
- Senior leaders set risk criteria

#### Leaders drive proactive culture & continuous improvement



#### **Process Safety Leadership at a Glance**



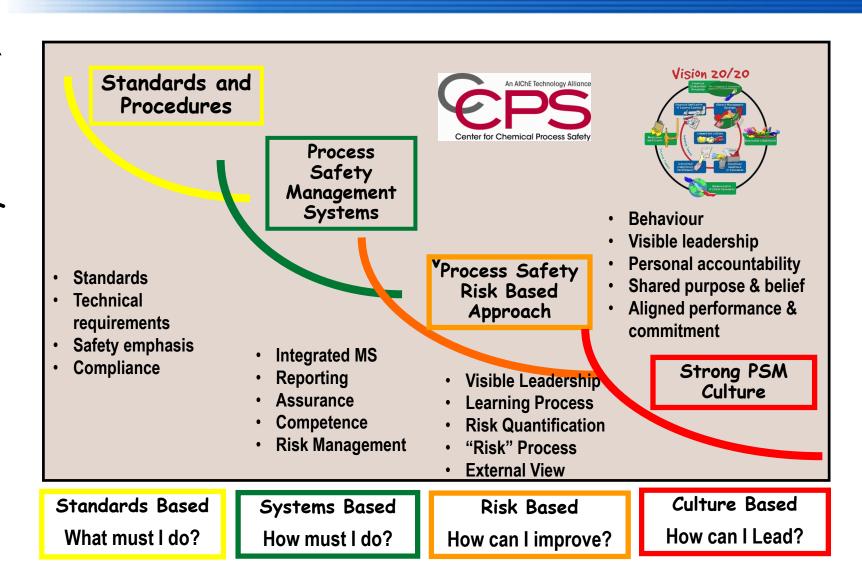
- Leaders must:
  - Ensure barriers are always effective
  - Ensure corporate competency and knowledge
  - Establish a management system (PSMS)
  - Lead conduct of operations to provide operational discipline
  - Instill a sense of vulnerability
  - Drive the culture

#### Leaders drive proactive culture & continuous improvement



#### **Process Safety Journey.....**

Rate Severity PSM Incident



#### Process Safety Management System[s]

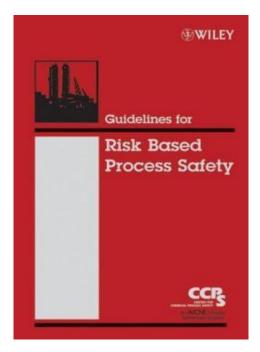


- Management systems are necessary to ensure that process safety concepts are implemented in an organization.
- Process Safety A management system that is focused on the prevention of, preparation for, mitigation of, response to, and restoration from catastrophic releases of chemicals or energy from a process associated with a facility.
- OSHA's PSM standards (1992) and EPA's RMP rules in US (1993), Seveso II
   Directive (1996) in EU COMAH (1999) in UK, MSIHC rules in India (1989)
- CCPS RBPS (2007)

#### CCPS Risk Based Process Safety Framework



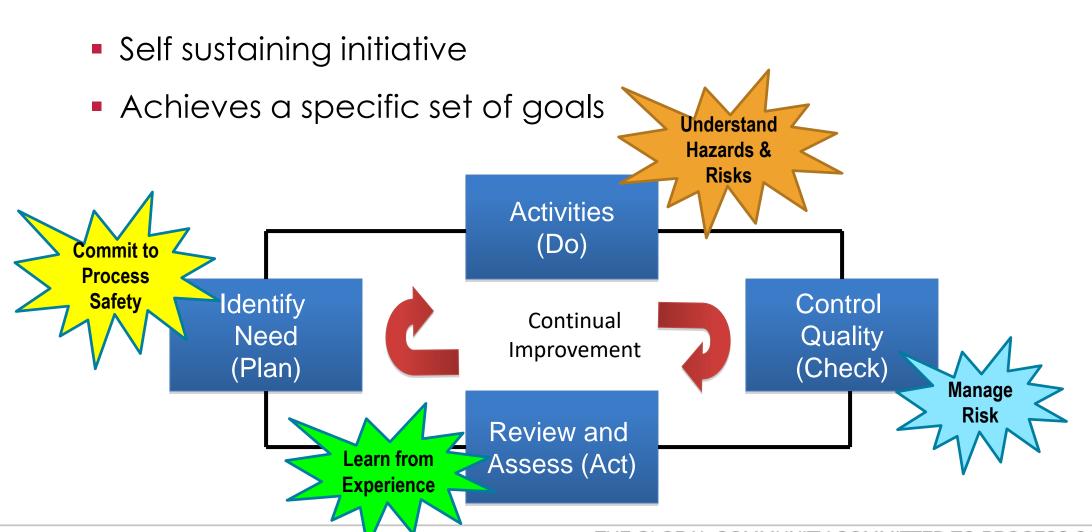
In a risk-based process safety management approach, organizations use lessons learned from experience with lagging indicators & use risk information with leading indicators to guide process safety program.



- Why Risk Based Process Safety?
  - All hazards and risks in a facility are not equal
  - Using same practices to manage every hazard is inefficient use of resources
  - Risk-based approach reduces potential for assigning an undue amount of resources to manage lower-risk activities, thereby freeing up resources for tasks for higher-risk activities

## CCPS Risk Based Process Safety [RBPS] Management System





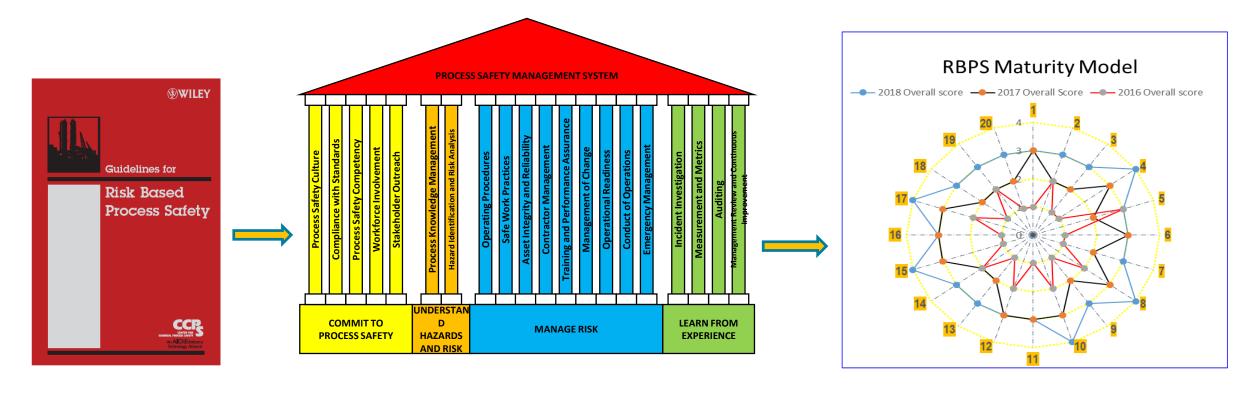


#### **Risk Based Process Safety**

Ce	nter for C	Chemical	Process	Safety			PR	OCE	SS	SAF	ETY	MAN	IAGE	EMEN	NT S	YSTE	EM								
	Process Safety Culture	Compliance with Standards	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		
	COMMIT TO PROCESS SAFETY							UNDERSTAND HAZARDS AND RISK			MANAGE RISK										LEARN FROM EXPERIENCE				

#### Where are you on the Continuum?





**RBPS Guidelines** 

**Assessing Maturity** 

Improving performance

Risk Based Maturity Model

### Thanks!





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