Implementing Process Safety Fundamentals
Why and How?

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Agenda

- Which Process Safety Fundamentals?
- Why should every company introduce Process safety Fundamentals?
  - LOPC reduction
  - PS management
- How did we implement Process Safety Fundamentals, 2 examples
  - Implementation of Double Isolation
  - Implementation of Leak Tightness after Maintenance
- How do we maintain awareness and manage near misses
- Q&A
Which Process Safety Fundamentals??

Former Shell PSF

European Process Safety Centre (EPSC)
LOPC reduction

Leaks > 10 kg
PS Management

Catastrophic Event

API T1: PS Events of greater consequence

API T2: PS Events of lesser consequence

API T3: Challenges to Safety Systems

- Overdue inspections
- Safeguarding demand rate
- Overdue preventive maintenance
- Leaks >10 kg
- Potential PS incidents
- Tank high levels
- DOW/IOW exceedances, PRV activations

API T4: Operating Discipline & Management System Performance Indicators

- PSF violations
- Overdue Corrective Maintenance
- Alarm rates

Unsafe Act or Conditions, Near Misses

- PSF observations
- Near misses
How to implement PSF?

- Choose the PSF’s which are applicable for your company and your performance
- Create awareness, knowledge and ownership
- Set behavioral expectations and agree on fair consequence management
- Embed PSF in your PS management system like other KPI’s
- Identify the gaps and challenges in the field
  - Technical
  - Procedural
  - Competencies
- Implement good practices that help to get things right
How did we implement Double Isolation

- Training: Set expectations, example incidents, list existing rules/procedures, FAQ
- Gap identification: locations where double isolation is missing
- FAQ: List of frequently asked questions
- Refresher training: Set expectations, consequence management

- Derogation register: Authorize exceptions and/or agree gap closure plan
- Assurance: quarterly review of derogations and gap closure plan
How did we implement Tightness after Maintenance

- Training: Set expectations, example incidents, list existing procedure, FAQ
- Gap identification: formal process for handover from maintenance to operations
- Gap closure:
  - Multidisciplinary workshops: “How good looks like”, handovers, responsibilities
  - Handover work process with sign-offs by maintenance and operation
  - Training and theme weeks for flange tightness
How do we maintain awareness and manage near misses

- Embedded in daily operational routines like shift handover, handover to maintenance, handover from maintenance, etc
- Open culture with lots of near miss notifications – Learner Mindset
- Near miss notifications are used to have an open discussion on PSF observations, classifying and feedback to employees
Examples from near miss to PSF

1. Always use two barriers for hydrocarbon and chemical drains and vents
2. Do not leave an open drain or critical transfer unattended
3. Take interim mitigating measures in case of failure of Safety Critical Equipment
4. For all defined high risk activities, follow the procedures and sign off after each step
5. Walk the Line – Verify and validate any line up change

6. Do not make a change without a proper Management of Change
7. Verify for complete tightness after maintenance work
8. Always check that equipment is pressure free and drained, and provides safe isolation before starting maintenance work
9. Perform Management of Change and install backflow protection when connecting utilities to process
10. Respond to critical alarms
Near Miss: Wrong studbolts in flange of vessel xyz
Near Miss: Pressure gauge was mounted back without valve
Near Miss:
Heat exchanger was spaded at wrong location

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10. Respond to critical alarms
Near Miss: Unit was tripped upon switching pump xyz
Near Miss: Leak observed at drain of heat exchanger xyz
Near Miss: Found a loose studbolt in flange
Questions and Answers