Driving Process Safety Management Performance

Presented By:
Kevin Budd, Huntsman Global PSM Manager
Kathy Shell, P.E., RMT Inc. Senior Client Executive

Mary Kay O’Connor Process Safety Symposium
October 2009
Agenda

- Huntsman - History
- Business case for PSM Improvement & Vision
- Organization
- Procedure Development
- Implementation Process
- Key Performance Indicators
- The Governance Process
- Summary
Huntsman Growth Story
Different Heritages and Philosophies

Huntsman has been a leader in the consolidation of the global chemical industry
Five Divisions – 12000 employees – 80 locations & 27 countries

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Enriching lives through innovation
Starting Point of the Journey

- Huntsman high commitment to EHS excellence – main emphasis on regulatory compliance & loss prevention.
- Global performance-based EHS Management System
- Global EHS Standards set minimum requirements
  - The “How To” meet those requirements was left up to divisions.
  - Resulted in large number of different procedures & practices.
  - Not only differed in content but also in the rigor applied.

This journey started with a commitment to EHS excellence.
Process Safety

**Discipline** that focuses on **prevention of** physical situations with the potential for human injury, damage to property or to the environment through the release of chemical energy in the form of **fire**, **explosion**, **toxicity** or **corrosivity**.
Baker Panel Recommendation Categories

- Process Safety Leadership
- Integrated and Comprehensive PSM System
- PSM Knowledge and Expertise
- PSM Culture
- Defined Expectations and Accountability
- Support for Line Management
- Key Performance Indicators
- PSM Auditing
- Board Monitoring
- Industry Leader

Journey to PS excellence was accelerated by internalizing lessons learned from Texas City tragedy
Port Arthur, Texas, April 29th 2006

Event
Guillotine failure of 8 inch gas line
24 feet above ground
‘Blow Torch ‘ like fire
Ruptured 20 other lines
No fatalities or serious injuries

Cause
Under insulation corrosion
Two feet section of 200 feet line

Concerns
Mechanical Integrity programme
Operator training
Alarm management
Operating procedures
Need for consistent PS procedures!
Business Case for PSM Improvement

- EHS VP championed vision for active risk management and stepwise improvement in Process Safety effectiveness and culture across Huntsman.
- Compelling story for Board of Directors on need to drive process safety improvements harder.
- Business case for change based on:
  - Gap analysis between current health of the EHS Management System and the Baker Panel Recommendations.
  - Global process safety–related audit findings.
  - Risk of loss of process safety experience and knowledge through basic attrition and downsizing.
  - Concentration of high-risk sites and potential business continuity impact.
  - Internal process safety incident history over last 10 years.

_There was a clear business case for investment in process safety._
Process Safety Management Process – Achieving a Vision

- Establish formal organization to drive and monitor process with divisional ownership
- Develop prescriptive “how-to” PS Procedures
- Appoint Qualified Persons to fill key process safety roles
- Plan and execute rigorous implementation of PS requirements
- Develop and provide standardized PS tools and solutions globally
- Establish PS key performance indicators (KPIs) to monitor PS performance
- Establish a PS Corporate Scorecard to drive accountability
- Verify compliance by conducting Global PS focused audits
- Governance Process to sustain the PS improvement process corporately

Tactical approach followed sound management system guidelines.
Establishment of Formal Organisation

Key Work Deliverables:
• Global Work Procedures
• Key Performance Indicators
• Execution Plan
• Assessment/Audit Tool
• Implementation Guidelines

Key Issues:
• Who owns the deliverables?
• How will this work be maintained?
• How will we verify conformance?
New Process Safety Procedures

Huntsman Advisory Group proposed several new procedures.

Steering Committee approved development of 23 Global Procedures to support Global Standards

AND stressed that:

- Procedures must be equally applicable to five Huntsman divisions, operating in 27 Countries, with 80 manufacturing sites.
- Procedures must be equally relevant to large continuous operations and small batch plants.
Process Safety Procedures

Set 1
- PS-001: Appointment of Qualified Persons
- PS-002: Process Hazard Analysis
- PS-004: Process Hazard Analysis (PHA) Revalidation
- PS-005: EHS Criticality Assessment
- PS-006: Risk Management Procedure and Matrix
- PS-007: SIL Target Assessment Methodology
- PS-008: Facility Siting
- PS-029: Management of Actions

Set 2
- PS-003: Operating Procedures
- PS-010: Design Verification
- PS-011: Pressure Relief System Design
- PS-013: Organizational Change Management
- PS-014: Management of Change
- PS-017: Mechanical Integrity
- PS-018: Pre-Start-Up Safety Review
- PS-023: Process Safety Information

Set 3
- PS-012: Process Fire Safety Management
- PS-016: Area Classification and Management
- PS-021: Design & Maintenance of SIFs (Plant Trips)
- PS-022: Alarm Management
- PS-026: Incident Investigation
- PS-030: Process Safety Variance Procedure
- PS-031: Control System Security
Procedure Development – Key Points

Existing procedures & best practices from all divisions passed to authors

In key areas Subject Matter Experts (SMEs), identified from all divisions, worked with authors

Divisional representatives responsible for consultation process

At least two drafts, before a document ready for steering group approval

All comments from divisions were considered - feedback provided – whether comment adopted or not.

Final comments / approval by Steering Group members.
Implementation Process

Objectives:

- Raise the overall expectations and performance in process safety at each site.
- Consistently communicate the content of each of the process safety procedures and expectations.
- Identify gaps in the Facility’s practices & develop gap closure plans.
## Risk Based Implementation Plan

### High & Medium Risk Sites; Implementation Team to provide:
- Training in local language
- Assistance with gap analysis & dev. of action plan
- Follow-up support
- Tracking of progress

### Pilot Sites:
- HAM: Panyu, China
- HPP: Port Neches, TX -US
- Pigments: Scarlino, Italy
- PU: Rozenburg, NL
- Deggendorf, DE
- TE: Basel, CH

### Remaining Sites:
- Priority based on Hazard Ranking Model

### During 2nd half of 2008
- Lessons learned used to refine the process

### During 2009/2010
- For Low-Risk Sites:
  - Train-the-Trainer Approach
  - During late 2011 onwards on Risk priority basis
Levels of Training

- **Introduction**
  - General overview

- **Awareness Training**
  - Providing broad overview, primarily designed for site leadership teams.

- **Implementation Training**
  - A detailed presentation of each procedure; individuals participating in PS related decisions.

- **Practitioner Training**
  - Designed to provide “hands-on” technical competency.
Key Lessons Learned During Pilots

- Pilot process was effective for “calibrating” practicality of PS Procedure content
- Rolling out procedures in multiple sets is supportive of acceptance and learning process.
- Active participation and visibility of site managers and their leadership teams during rollouts conveyed commitment to PS performance.
- Use of site SMEs as trainers during the rollouts or to lead gap assessments was an effective way of getting early buy-in and active participation by others on site.
- Translation of technical documents into local languages, although challenging, was very important
Key Lessons Learned During Pilots – Cont.

- Gap analysis sessions provided an opportunity to extend training.
- Site pre-reading of procedures and self-assessment significantly improved level of discussion/feedback.
- Mechanism for timely feedback to sites on questions or interpretations is important.
- Constructive feedback from sites resulted in improved work products.
Other Measures Taken

- PS Metrics and Scorecard Reporting/Monitoring
- Appointment of Qualified Persons
- Global PS-Focused Audit Program
- Governance Process
June YTD 2009
Process Safety Scorecard

June KPI Summary

June PS Scorecard

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2009 Process Safety Roll-out Progress

Pilot Site PS Gap Closure - June 09

Process Safety Incidents

Site A: Pump seal failure resulted in release of Chemical X. No personnel exposures resulted.

Site B: Bleeder valve on line left open during unit start-up resulting in spill of Chemical Y. One first-aid due to over-exposure. Spill reported to agency.
PS Governance Process

- PS Metrics
- Significant Incident Investigations
- New Technology
- New Regulations
- Industry Trends/Events
- Best Practice
- Audit Trends

Global PS Group

Plant Process Safety Structure

Variance/Interpretations

Procedure Changes

Process Safety Review Committee

Recommendation to Modify PS System/Procedure

- System Health
- Annual Report
- Recommendations

System Cost/Budget Input

Interpretation

Process Safety Governance Committee

Procedure Changes

System Changes

Strategy

Budget

Annual Report

SME Networks
Overall Time Scale

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In Summary

- A journey that had to be undertaken.
- It took a committed champion to effectively communicate a forward-looking Vision to the CEO, Board and Manufacturing Leadership.
- Including the VPs of Manufacturing on the Steering Committee to approve PS Procedures and own implementation may have been the single most important success factor.
- Committing strong key members to AG has provided a platform for sustainable change.
- Setting challenging deadlines created momentum
- The organization is responding to investment of highly committed individuals to rollouts
Questions?