Holistic Approach to Barrier Integrity: Managing an Effective Safeguarding Strategy

San Burnett
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Managing an Effective Safeguarding Strategy

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Principal - Americas Region
Overview

• Early precursors to an ‘effective’ safeguarding strategy
• Proactive use of Operational Risk Assessments (ORA)
• Improvising traditional management systems
• Training and cross-functional communication
• Continuous improvement
Progression of the Safeguarding Strategy

Hazard → Barrier → Receptor
Progression of the Safeguarding Strategy

Hazard

Barrier

Receptor
Progression of the Safeguarding Strategy

Hazard

Receptor
Progression of the Safeguarding Strategy

Receptor

Heinrich’s Domino Theory

Hazard

Social Environment

Inherited Behaviors

Unsafe Acts

Accident

Injury
Progression of the Safeguarding Strategy

Hazard

Barriers

Substitution

Engineering

Administration

Receptor
Application of Operational Risk Assessments

• Cyclic process for providing assurance
  • Risk Analysis
  • Risk Decision-making
  • Safety and performance assessment

• ‘Critical intelligence’ to feed Risk-Based Management System
• Barrier Reliance Strategy based on key system objectives
• Technical and organizational risk factors presented in **Bow-Tie** diagrams
• Supporting documents: QRA, process hazard analysis (PHA, LOPA, SIL) and other safety studies (FERA, Blast modeling) as appropriate
Holistic Maintenance Systems

- Risk appraisal
- Effectiveness assessment
- Prior engagement/lessons learned
- Updates to BCM Plan

- Advanced reporting and analytics
- Periodic performance review
- Risk dashboard
- Compliance

- Data management
- Condition monitoring
- Barrier incident analysis
- Maintenance indicators
- Feedback and measurement
- Auditing

- Operational awareness
- Hazard prevention & control

- Foot-printing Safe Operations
- Key competencies
- Training and assessment

- Proactive risk evaluation
- Prevention Through Design
- Technical requirements
- Asset Efficiency Optimization (AEO)
- Safety critical tagging
- Long term reliability
- Impact of changes

- Lifecycle requirements
- Measurable initiatives
- Commitment & partnership

- Policy, goals, & objectives
- Directive or regulatory focus
- Industry best-practices
- Lifecycle requirements
- Tracking systems

Vision

Strategy

Planning

Communicate

Implement

Monitoring

Reporting

Results

Risk-Based Maintenance System
Safety and Performance Management

• Barrier Risk Assessments (BRA) used to provide assurance that the controls and safeguards are available and functioning as intended

SUCCESS PATHWAY

• Triggering event/condition
• Functionality/effectiveness
• Reliability/Availability
• Response time
• Robustness
Safety and Performance Objective Management

Organizational Goals
- Critical Process Safety Conditions

Critical Functions
- Containment
- Process Control and Automation
- Separation Distances

Challenges
- Engineering Design
- Loss of Safeguarding System
- Siting Changes

Mechanisms
- Suitability of Materials
- Organizational Failures
- Ineffective Maintenance
- Inadequate Training
- MOC
- Design Reviews

Strategies

Assessment of Mechanism Controls
Benefits of a Holistic Approach to Risk

- Clearer direction
- Facilitates communication
- Improvement in organizational performance
- Investment to maximize benefits
- Safe operating culture
- Reduced risk
Nothing can stop the man with the right mental attitude from achieving his goal; nothing on earth can help the man with the wrong mental attitude.

-Thomas Jefferson