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Opportunities and Pitfalls in Safety Case Development



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Your Speaker

- **Lachlan Dreher**
- **Director & Principal Risk Consultant with R4Risk**
- Chemical Engineer, RPEQ, CPEng, NER
- Over 25 years' experience in process safety / risk management consulting
- Specialist skills:
 - Process safety analysis
 - Quantitative risk assessment
 - MHF Safety Case development
 - SMS development and auditing
 - Fire safety , business risk, expert witness
 - HAZOP facilitation
 - Hazardous area classification
 - Consequence modelling
 - Bowtie analysis
 - Land use planning risk studies

R4Risk Services Overview

- Safety Case Development
- Major Hazard Facilities Safety Management
- Safety Management System Development
- Safety Case Compliance Auditing
- Safety Case/Report Approved Assessor
- Process Safety Management
- Fire Safety Studies
- Hazard Identification (HAZOP, HAZID)
- Hazardous Areas Assessments
- Consequence Analysis (Fire, Explosion and Toxic)
- Layers of Protection Analysis / Bowtie / SIL Studies
- Risk Assessment (Quantitative and Qualitative)
- Enterprise-wide Risk Management
- Business and Operational Risk Management
- Risk Assessment Workshop Facilitation
- Land Use Planning Risk Studies
- Occupied Buildings Risk Assessments
- Emergency Response Planning
- Dangerous Goods Assessments
- Hydraulic Analysis of Fire Systems
- Loss Prevention
- Safety in Design Assessment
- Accident Investigation
- Process Safety and Risk Management





Overview

1. Introduction
2. Key Success Factors
3. Common Pitfalls
4. Conclusion



Introduction

- Health and Safety at Work (Major Hazard Facilities) Regulations 2016
- Classifies hazardous facilities as “upper tier” or “lower tier” *Major Hazard Facilities*
- Upper tier facilities are required to prepare a “Safety Case”
- Safety Case contents are described in Schedule 7 of the Regulations



Key Success Factors

1. Commitment
2. Set Expectations
3. Planning and Resourcing
4. Safety Management System
5. Safety Assessment Approaches
6. Discipline



Commitment

- Focus on improving safety (not just compliance)
- Commitment by senior management
 - Process Safety Leadership
 - Demonstrated ongoing commitment through the process
- Effective real consultation
 - Develop a consultation plan
- Involvement of stakeholders
- Engage with the regulator



Set Expectations

- Clearly defined expectations for what is to be achieved
- Workforce works TOGETHER to achieve a safer workplace
- Cultural Change



Set Expectations

- Improved *Control Measures*
 - Systematic assessment of *Control Measures*
 - Performance monitoring of *Control Measures*
- Improved Knowledge Management
 - Clearer understanding of hazards and controls across the workforce
 - Increased awareness amongst employees
 - A documented and comprehensive SMS
- Management assurance
 - ALL *Major Incidents* and *Major Incident Hazards* have been identified
 - All hazards are appropriately managed

Planning and Resourcing

- Treat it as a ‘project’ – develop a project plan (Safety Case Outline)
 - Assign a “Project Manager”
 - Assign team members with clear roles & responsibilities
- Manage interactions between EHS and Process Safety
- Don’t underestimate the volume of work required
 - Allocation of resources
 - It should not be an “add on” to normal day-to-day work
 - Appropriate use of consultants
- Consider using a pilot study



Planning and Resourcing

- Involve the right people
 - Suitable qualifications, depth and range of experience
 - Operations staff with experience of the facility
- Develop comprehensive procedures for various process safety tasks
 - Provides consistency and repeatability
 - Ensure that the approaches are a suitable fit for the organisation
 - Ensure methods are comprehensive
 - Document the basis for decisions
 - Cover methodologies, pre-work, criteria etc.
 - Address the requirements (e.g. demonstration of risk reduced SFAIRP)
 - Consider ‘human factors’



Planning and Resourcing

- Ensure current and correct technical information
- Train the workforce in the process



Safety Assessment

- Safety Assessment requirements (r38)
 - Identify all *Major Incidents*
 - Identify all *Major Incident Hazards*
 - Assess the risks to health and safety for the *Major Incidents*
 - Develop and implement effective *Control Measures*
 - Establish and implement a comprehensive *Safety Management System*



Safety Management System

- The SMS should be the system that manages the safety at an MHF
 - It should be integrated and comprehensive
 - It should manage the *Control Measures*
- Lack of an sound SMS will cause major issues
 - It will take time to implement
- Conduct a gap assessment of the SMS



Safety Management System

- Cover all systems and procedures to select control measures
 - Cross reference between the Safety Case and the SMS
- Support all control measures, e.g.
 - Maintenance systems
 - Training
 - Operations
 - Document control
 - Audits
- Make the activities part of normal working (not purely compliance)



Simplicity

- Keep things as simple as practical
 - *Safety Assessment* methodology
 - Management of controls
- Keep things targeted and relevant
 - Reduces the amount of work required
 - Avoid analysis of events that are not significant
 - Focus on fewer but effective *Control Measures*
 - Avoid generation of actions that are not directly relevant



Simplicity

- Need to be able to sustain:
 - Systems and processes introduced
 - New controls
 - Ongoing resource requirements for new systems



Simplicity

- Aids the understanding of personnel across the organisation of
 - The *Major Incident Hazards*
 - The risk from these hazards
 - *Control Measures*
 - Management of *Control Measures*
 - The relationships between these factors



Discipline

- Maintain discipline to the process
- Key factors:
 - Attention to detail
 - Systematic approach
 - Consistency of methodologies and assumptions



Common Pitfalls

- Delays in establishing core systems
 - SMS too early in its implementation phase
 - Systems that cannot be maintained / sustained
 - Using standalone systems
- Selection of inappropriate *Safety Assessment* methodologies
 - Not ‘fit for purpose’
 - Conflicts with the legislative requirements
 - Inconsistency across the assessment
 - Not addressing the “Demonstration of Adequacy” for *Control Measures*



Common Pitfalls

- Inadequate resourcing
 - Inadequate technical resources
 - Over-reliance on consultant input
- Emergency Plan
 - Plans too generic
 - Failing to specifically address Major Incidents
 - Excessive numbers of scenario plans (consolidate where practical)
 - Link via the SMS for training and performance improvement



Common Pitfalls

- Safety Management System
 - Lack of clarity on the role and function of system components
 - Failure to define performance indicators
 - Lack of effective process safety auditing
 - Not having the maintenance system as an integral part of the SMS
 - Not making the SMS accessible
 - Failure to provide employees with access to relevant information for use in their daily work



Conclusions

- Key success factors:
 - Management Commitment
 - Thorough planning
 - Adequate resources
 - Appropriate methodologies

Thank you!



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