
Enhancing Process Safety through Leadership

Melbourne/Sydney

September 2009

Who I am



Chemical Engineer – Imperial College London

- 1975 – 1990 Esso/Exxon Chemicals
- 1990 – 1996 Elementis - Operations Director
- 1996 – 1998 Elementis - Group Risk Manager
- 1998 – 2006 Chemical Industries Association
(Director General)
- 2006 – 2007 CEFIC Brussels
- 2007 Chair, Health & Safety Executive
Elected to Council of IChemE

HSE – Who we are and what we do



- Health and Safety Executive – regulator for workplace health and safety throughout Great Britain (England, Scotland and Wales not N Ireland)
- Our mission/purpose is the prevention of death, injury and ill health to all those at work and those affected by workplace activities
- We provide advice and guidance to all businesses in GB on what they need to do to comply with the law
 - Guidance is also used by other regulators and dutyholders around the world
- We inspect workplaces to audit their health and safety systems
- We take enforcement action against those who breach or ignore the law
- We alert dutyholders (employers) to new and emerging risks as they are identified

HSE – Who we are and what we do



- We cover all workplace activities in GB – offshore oil and gas, nuclear, chemicals, construction, agriculture, engineering, service industries, public and private sector.....
- 3500 people located throughout GB
- Hazards which cause injury (slips, trips and falls), ill health (disease & mental health) and major hazard activities (potential to give rise to significant harm including to the public)
- The regulator's job is to influence companies to ensure they effectively manage and properly control the risks they create



The GB regulatory framework

- Overarching framework set by the Health and Safety at Work Act 1974
 - Goal setting, not prescriptive legislation
 - Places a clear duty on “ those who create the risk to manage the risk”
- Remarkably resilient piece of legislation
 - readily adapted and applied to today’s range of risks and activities
- In GB HSE is also the competent authority and lead enforcer for REACH (Registration, Evaluation and Authorisation of Chemicals) and the SEVESO directive (COMAH – Control of Major Accident Hazards)

Reflections on history



- Major disasters of the 1970s and 1980s
 - Flixborough (UK)
 - Bhopal (India)
- Process safety recognised as critical – “ must never happen again”
- 1980s/90s - Emphasis on personal safety
- Late 1990s – Focus on product safety
- Early 2000s – Warning signs that likelihood of major process incident is increasing

Then what happens?



Texas City



Buncefield



Esso Longford

Why? What went wrong?

- Focus on what can be easily measured?
- Loss of corporate memory?
- Lack of understanding of process safety, especially at senior level?
- Devaluation of engineering?
- Failure to recognise the importance of asset integrity and maintenance?
- Fragmentation of functions?
- Increased divestment/contractorisation?

Process Safety and Leadership



- Process safety is never fixed – it requires constant attention
- Safety in design requires follow-up with safety in operation
- Process automation and management systems have brought huge benefits but also create a false sense of security
- Lack of practice and experience in dealing with unusual situations
- The impact of changes to a process may take some time to manifest themselves
- Asset integrity, maintenance and inspection become increasingly important as plant ages
- Corporate memory being lost - failure to learn important lessons from the past

Process safety – for the Board but not from the Board room



- Measurement and reporting of the right things
 - Absence of incidents is not a good indicator that process safety is being managed
 - Minor/trivial injuries even less so
- Listen to the concerns of those who are closest to the process
 - Ask the right questions
 - Welcome expressions of concern
 - Don't suppress "bad news"
 - Dare to ask "what is the worst that could possibly happen?"

Process safety – for the Board but not from the Board room



- Understand and Respect the process
 - Harsh and hazardous processes
 - Chemical reactions can and do go wrong
 - Often the most basic things that fail
- Physical condition of plant and equipment is important
 - Visual inspection is essential
 - Safety critical equipment needs well maintained ancillaries
- Understand the what and why of design considerations and safety critical features
 - Put in for a good reason
 - How is process change managed?
 - Is there a safety critical impact?

Process safety – for the Board but not from the Board room



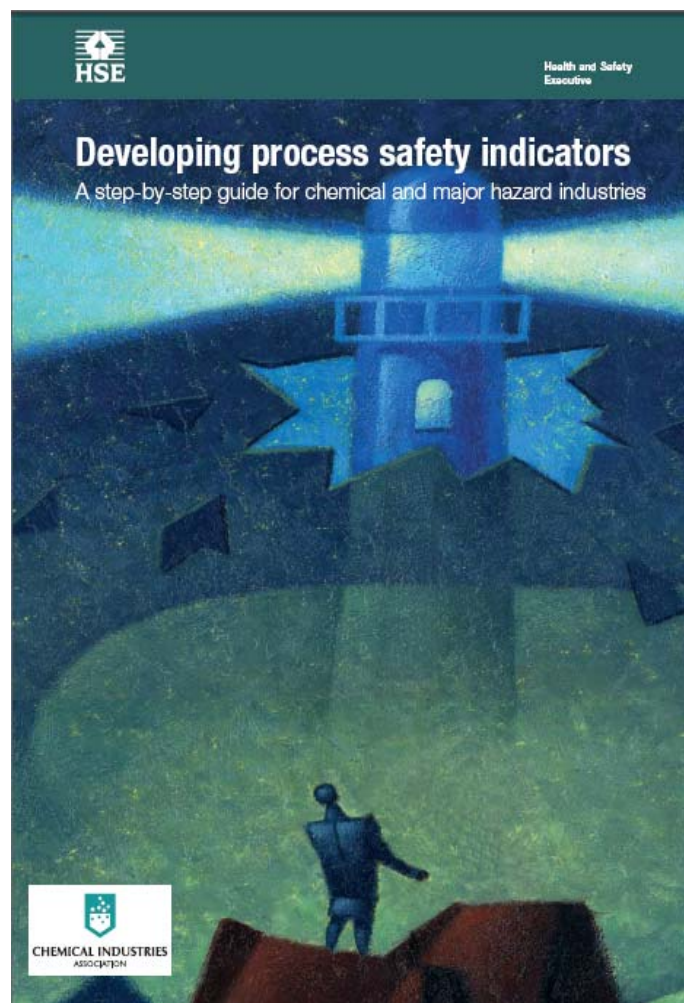
- Develop a meaningful assurance system
 - What needs to be measured
 - Look for early warning signs
 - Ask whether maintenance programmes are up to date
 - What was found?
- Lead by example and action
 - Respect and remember lessons from the past
 - Pay attention to process safety in design and plant change
 - Take decisions that do not compromise longer term integrity for the sake of the short term
 - Don't delegate or assume others will take care of it

Process safety leadership



- Visible leadership is essential in managing process safety risks
- Our aim as the regulator has been to:
 - Raise the profile of process safety leadership
 - Establish clear attributes and behaviours needed to deliver process safety leadership
 - Work with and encourage industry to take ownership and lead for themselves

Developing Process Safety Indicators



Guidance produced jointly by HSE and CIA in 2006 (HSG254)
Aimed primarily at major hazard organisations but equally applicable to any chemical business of any size
Recognised over-reliance on failure data to monitor performance
Switch of emphasis to leading indicators and measuring process safety
Early warning essential to avoid major incidents

HSG 254



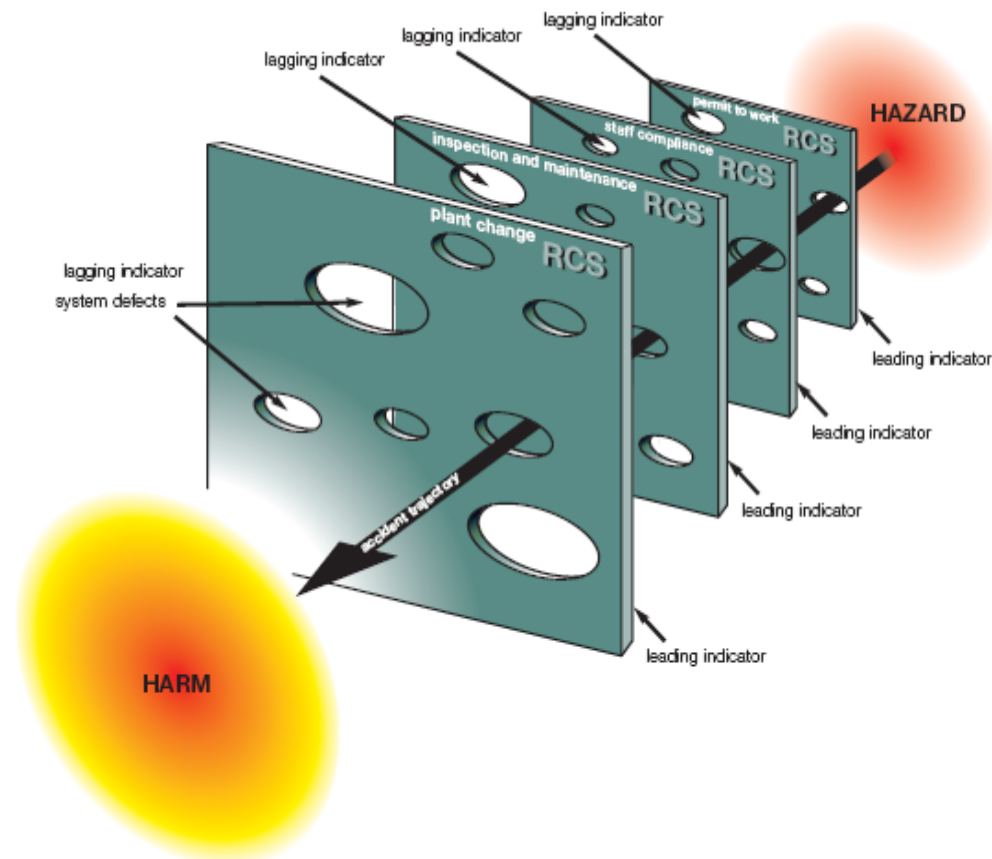
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- What can go wrong?
 - Where within the facility will these challenges to integrity be most critical?
 - What systems are in place to manage those challenges?
 - What does success look like?
 - What are the critical activities which must function properly to deliver the intended outcome?

HSG 254



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- Six step approach to a “Process Safety Management System”
 - an organisation’s management system intended to prevent major incidents arising out of the production, storage and handling of dangerous substances
 - Dual assurance – leading and lagging indicators

“Major accidents occur when a series of failings within several risk control systems materialise concurrently”



Step 1: Leading the way



— Organisational arrangements:

- Appoint a steward or champion to take the initiative forward
- Involve those closest to the processbut also...
- Active and visible involvement of senior management

Step 2: Determine the scope

Multiple sites or single installation

Identify main risks and areas where most attention is needed

Step 3: Risk Control Systems and Outcomes



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- What risk control systems are in place
 - What is it there to do?
 - What would happen if it wasn't there or failed?

Step 4 : Identify what is critical and how to measure

- Leading indicators and tolerances for deviation
- Effective follow-up system for deviations from the norm

Step 5: Data Collection and Reporting

Step 6: Review

- performance of the system
- suitability of the indicators and effectiveness of the system

2008 Leading from the Top



- Major conference to bring together CEOs from UK major hazard industries
- Promotion of sustained leadership in Process Safety in Design & Operation
- Boardroom understanding of process safety
- Promotion of cross- sectoral learning and experience

Key lessons from Leading from the Top



- Walk the talk
- Listen to front line staff
- Ensure everyone understands what process safety is and why it is important
- More commonality across sectors than first thought
- Creation of CEOs forum to share good practice and knowledge
- Desirability of robust and practical peer review process
- Meaningful performance indicators are essential

2009 GB Update



- Offshore oil and gas industry
 - KP3 report Nov 2007
 - Review in July 2009
 - Major shift in response from industry
 - Still much to do but now showing leadership
- Onshore major hazard industries
 - Process Safety Leadership group established
 - Principles of process safety developed by industry
- Nuclear industry
 - Regulatory Nuclear Interface protocol developed
 - Preparing for significant programme of new build as well as continued management of legacy

Summary (1)



Process Safety in Design & Operation:

- Must be comprehensive and consistent – not selective
- Must continue to lead and challenge the industry in all areas
- Must not be sacrificed/compromised by other priorities

Summary (2)



Process safety in design and operation:

- Must be managed on a continuous basis
- Must be led from the top and cascaded throughout the organisation
- Must include lessons from the past (and from others) which are learned and sustainably embedded
- Can never be subject to complacency



Thank you for listening and for the invitation

Questions??

Judith Hackitt
August 2009