RISKworld

issue 16 autumn 2009 — *the newsletter of risktec solutions limited*

In This Issue

Welcome to Issue 16 of RISKworld. If you would like additional copies please contact us, and feel free to pass on RISKworld to other people in your organisation. We would also be pleased to hear any suggestions you may have for future editions.

Contact: Steve Lewis (Warrington)
steve.lewis@risktec.co.uk

Contents

New venture
As Risktec launches its new training business, Alan Hoy explains what makes this venture unique.

Mind the gap
Sheryl Hurst introduces us to the 'competency gap' and provides a route map for plugging it.

Practical risk & safety training
Roisin Smyth gives us an insight into Risktec's solution for the competency gap.

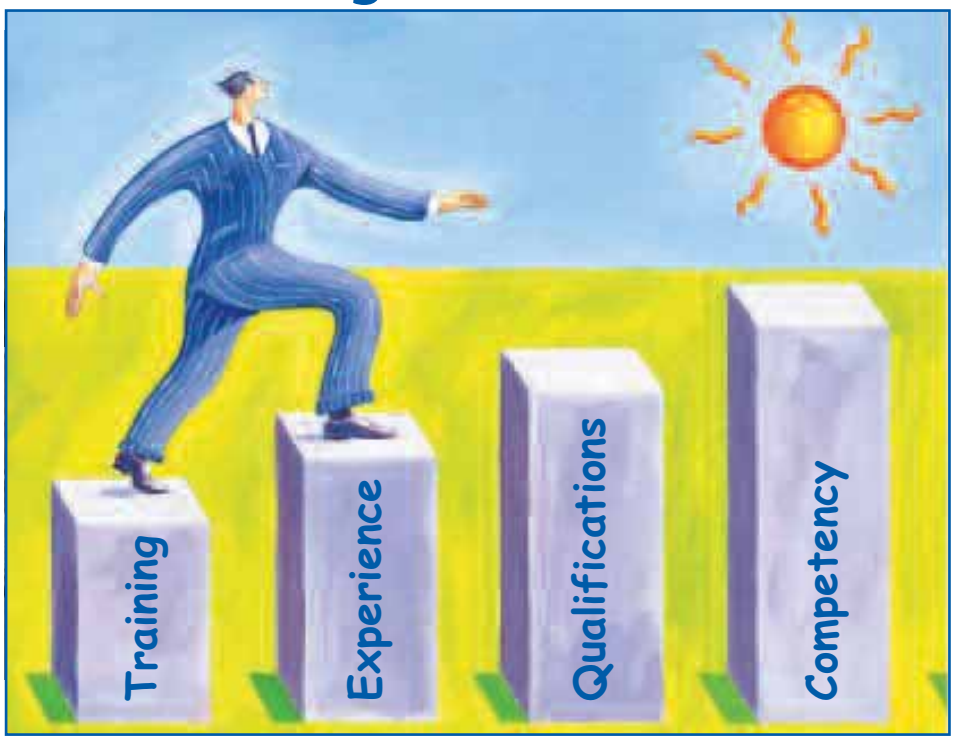
Lessons from Lehman
Are there any lessons to be learned by the safety industry from the demise of the US investment bank Lehman Brothers? Steve Lewis investigates.

Brownfield revolution
As public opinion begins to turn against the development of rural wind farms, could brownfield sites provide an untapped source of land? Callum Douglas looks at the pros and cons.

Periodic opportunity or chore?
Michael Cromarty explains why periodic safety reviews should be viewed as an opportunity for real improvement.

Risktec

New Training Venture for Risktec



In this edition of RISKworld we are pleased to provide an update on our training services, which have been significantly enhanced in recent months. We have been working closely with Liverpool John Moores University in the UK to obtain validation of our modular course in Risk & Safety Management, which can be followed to achieve Post-graduate Certificate, Diploma and Masters qualifications (see page 3).

This significant development complements our consulting services extremely well – it underlines our commitment to provide solutions to industry and also our willingness to share knowledge with our clients. Furthermore, it comes at a time when the challenges faced by industry are mounting and often conflicting.

The use of new technology (for tackling carbon emissions or extracting natural resources in harsh environments for example) in tandem with the application of stringent regulation (particularly relating to health, safety, environment and security) are placing an ever-growing burden on risk and safety professionals – to provide appropriate advice to help decision makers see the big picture and arrive at well considered risk-informed decisions.

While skill shortages in engineering continue to deepen, the economic climate doesn't favour long-term investment in new projects or in attracting new people to industry. In developing our training services we have created a flexible, modular approach which can be tailored to meet each client's specific requirements, thus enabling a quick return on investment, whilst supporting the long-term development of personnel.

It is very clear that competency requirements for risk and safety professionals across industry are rising sharply. However, structured development programmes can help equip personnel with the skills they need to face the challenges of our modern world.

Contact: Alan Hoy (Warrington)
alan.hoy@risktec.co.uk

Mind the Gap – Bridging the Competence Gap

In her recent speech [Ref 1] to the International Institute of Risk and Safety Management in London, the Chair of the UK Health and Safety Executive, Judith Hackitt CBE, acknowledged the role of Health, Safety and Environment (HSE) professionals and talked about the need to ensure that everyone is competent to play their part in assessing and managing risk.

The sentiment was echoed at a recent meeting of the UK's Institute of Risk Management [Ref 2], which concluded that *"whilst there is plenty of guidance and well developed tools and techniques for implementing good practice risk management systems, ultimately decisions are made by people. Consequently there is increasing interest in how we determine whether or not those individuals are competent to make those decisions. In particular we need to distinguish between being 'competent' and being 'qualified'. Demonstrating competence should be more than just pointing to a certificate on the wall"*.

What is the Competence Gap?

A fully competent individual has gained knowledge and skills through a combination of training, qualification and experience. In the field of risk management, the knowledge and skills need to cover the specific industry sector as well as risk management theory and application of technical risk management techniques [Fig 1].

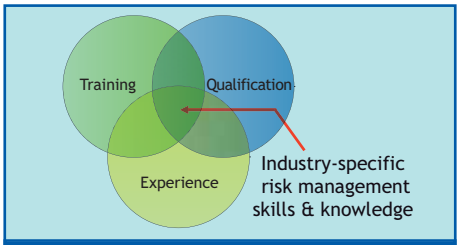


Figure 1 - Components of risk management competence

So a risk management professional may be proficient at applying risk management tools, but, through a lack of training or experience, may not have a good understanding of the industry within which he or she works.

Alternatively, an individual may have many years experience of working in the offshore oil and gas production industry for example, but, through a lack of training, may not understand fully a particular risk management concept.

Another example may be where an individual has a background in engineering design but has now moved into an operations role; they may be proficient at managing HSE risk through introducing hardware design changes but may not be confident or competent at reducing risk at a live operating facility involving procedures and people.

In all these cases, the competence gap arises when there is a mismatch between an individual's knowledge and skills and the judgements they are required to make as part of their role.

Furthermore, increasing pressure is being placed on individuals to make the right decision at the right time. Increasingly complex legal requirements, coupled with higher company standards and new technology, means that demands on decision makers and risk managers have never been so stringent [Fig 2].

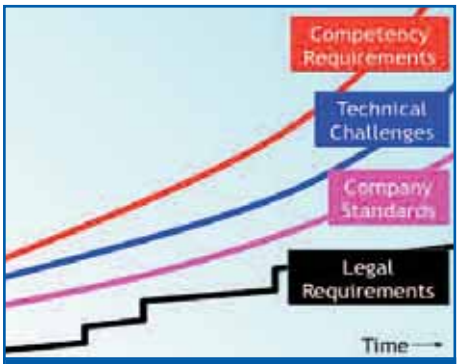


Figure 2 - Increasing requirement for competent decisions

Set all of this against the backdrop of a global skills shortage across the whole HSE profession in all hazardous industries, and it is clear there is a need to bridge the competence gap.

Bridging the Competence Gap

An approach to risk management learning which delivers a competent professional combines the positive aspects of:

- Training, with practical experience of applying risk management techniques in the real-world
- Formal assessment of competence and qualification
- Understanding industry-specific technical issues

So how can these three pillars be integrated into a structured training programme that meets the business needs of an organisation? One approach is illustrated in Figure 3 and comprises three building blocks.

1. A modular training programme providing a solid grounding in HSE risk management principles and techniques, with a good mix of lectures and practical hands-on exercises using real-world case studies relevant to the organisation's industry and the individual's role, combined with a formal assessment of competence and a Masters level qualification.

2. Structured training courses to provide a foundation in the principles, technical issues, legal requirements and regulatory aspects of the industry.

3. Targeted work experience at operational sites to provide an opportunity to put the training into practice, shadow experienced professionals in similar roles and interact with a range of industry personnel.

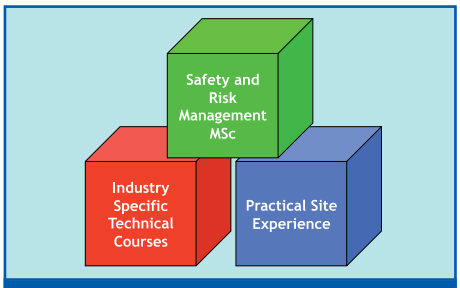


Figure 3 - Building blocks of a bespoke training programme

Conclusions

HSE risk management is relatively new compared to other professions and there is no 'fast track' way of bringing new professionals into the industry, unlike other mature professions. Those organisations that develop programmes delivering competent HSE risk management professionals are more likely to benefit from better risk-informed decisions than those organisations that simply recruit new personnel and hope they provide good advice.

An appropriate approach to bridging the competence gap is likely to comprise practical hands-on experience of risk management techniques; case studies which are based in the real-word; assessing competence and not just testing information recall; and understanding industry- and technology-specific issues.

Contact: Sheryl Hurst (Warrington)
sheryl.hurst@risktec.co.uk

References

1. www.hse.gov.uk/aboutus/speeches/transcripts/hackitt300609.htm
2. IRM North West, Risk Management Competence, 11-Oct-07, NWDA

Accredited Training in Risk and Safety Management

Risktec offers a structured programme of accredited risk management modules leading to formal post-graduate qualifications in Risk and Safety Management. Courses are delivered in partnership with Liverpool John Moores University (LJMU) in the UK. The programme aims to help bridge the competence gap in hazardous industries.

Alternatively, single modules can be delivered on a stand-alone basis to gain Continuous Professional Development (CPD) points. Modules can also be delivered without assessment. All modules and programmes can be delivered at client premises.

The Programme

The post-graduate programme is designed to meet the growing need for industry-related courses and qualifications in risk management, delivered by teachers with industrial experience. The courses are practical and aim to develop the skills and knowledge of students.

To meet client requirements, we customise the modules to create business-specific courses. In this way, the training tackles the important issues cost-effectively for each client, by ensuring that all learning relates to the client's operations and facilities, while still being at an accredited post-graduate level.

The approach ensures participants attend courses which are attractive to them as individuals and also completely relevant to their job role and their employer.

Risktec has a proven track record of quality delivery and uses experienced consultants to deliver the modules. All our teachers have been through a comprehensive development process in order to teach at post-graduate level. As a result, we provide a unique mixture of theory and practical experience.

Key Benefits

The key benefits to the student include:

- Receipt of a formal qualification from a recognised institution
- Demonstration of competence rather than just attending a training course
- Specific learning, where case studies are directly related to the place of work, which also reduces the self-study burden
- Pathways through modules that are tailored to individual needs

The key benefits for the client company include:

- More skilled resource with formal qualification, and greater staff retention
- Relevant learning, by embedding the company message in material and tailoring case studies and methods
- Up-to-date learning delivered by active risk practitioners
- A modular approach that maximises flexibility, with no restrictions on timing
- Effective use of training budget through targeted training that meets business needs

For a copy of our training catalogue contact: Roisin Smyth (Warrington) roisin.smyth@risktec.co.uk

Post-Graduate Certificate

Core Modules

- Introduction to Practical Risk Mgmt
- Hazard Identification
- Hazard Assessment
- Risk Reduction & ALARP
- Health, Safety & Environment (HSE) Mgmt Systems

Optional Modules Choose one

- Bowtie Analysis
- Risk Control Systems & Performance
- Safety/HSE Cases
- Competency Mgmt, Culture & Behaviour

Key features of programme:

- Modules and assessments can be tailored to client's facilities and operations
- Programme can be delivered at client's premises
- Qualification can be supplemented with industry technology courses and practical site experience
- Modules can be delivered as PgCert / PgDip, stand-alone for CPD points or without assessment

Post-Graduate Diploma

Choose six

Identification and Assessment

- HAZOP Study
- Bowtie Analysis
- Safety Integrity Levels (SIL)
- Availability, Reliability and Maintainability (ARM)
- Fault Tree & Event Tree Analysis
- Physical Effects Modelling
- Human Factors in Design & Operations
- Oil and Gas Lifecycle Hazards & Risks
- Nuclear Lifecycle Hazards & Risks
- Rail Industry Hazards & Risks

Risk-Based Decision Making

- Risk Control Systems & Performance
- QRA for Oil & Gas & Process Industries
- Oil & Gas & Process Industry Risk Studies
- PSA in Nuclear Industries
- Rail Safety Analysis
- Business Continuity Management

Management Systems and Implementation

- Safety/HSE Cases
- Accident Investigation & Analysis
- Emergency Response Planning
- Workplace Safety

Assurance and Improvement

- Performance Monitoring, Auditing & Mgmt Review
- Competency Mgmt, Culture & Behaviour

Master of Science

- Dissertation Project

Risktec JMU

Training in Risk & Safety Management

Other Training Courses

Unaccredited

- Process Hazard Analysis
- BowTieXP Software
- Investigator 3 Software
- Radiological Protection
- Radioactive Waste Management
- Design Substantiation
- Knowledge Management
- Security Risk Management
- Project Risk Management
- Financial Risk Management
- Winning Hearts & Minds

Accredited Marine Safety & Security Courses

- Company Security Officer
- Ship Security Officer
- Port Facility Security Officer
- Maritime Security Officer

Lessons Learned from Lehman Brothers

Lehman Brothers' former head of compliance recently spoke out for the first time and gave an insider's perspective on failures at the US investment bank which led to its spectacular collapse in September last year [Ref 1]. David DeMuro cited four reasons for what went wrong at Lehman. There are many parallels between these issues and managing potential major accidents in high hazard industries.

1. Mortgages available for all

DeMuro explained that there had been a great deal of political pressure to increase the availability of mortgages. In the midst of a bubble there is a great deal of money to be made and plain old fashioned greed means high-earning employees are invariably reluctant to voice their concerns over excessive risk taking.

Major hazard industries are also in business to make profits. There are many examples where a culture of production before safety has contributed to major accidents. Sometimes this culture is blatant, but more often mixed messages are given in the form of incompatible goals, such as "maximise production" and "safety is our number one priority", which if not carefully communicated can leave the workforce unsure as to what takes precedence.

For example, an explosion on 25th September 1998 at the Longford gas plant in Australia killed 2 workers, and injured 8 [Ref 2]. An operator told the inquiry: "I faced a dilemma on the day, standing 20 metres from the explosion and fire, as to whether or not I should activate ESD 1 [shutdown the plant], because I was, for some strange reason, worried about the possible impact on production". The operator's dilemma was understandable – the inquiry concluded that the company's safety culture was more oriented towards preventing lost time rather than protecting workers.

2. Over-reliance on risk models

DeMuro confirmed that there was a huge amount of faith in the financial risk models. Yet most models incorrectly assumed that risks were uncorrelated – when others have argued that rare, unexpected but highly significant events are much more common than we think [Ref 3].

In the high hazard industries, the use of numerical risk models is widespread. Quantitative risk assessment (QRA) can be, and has been, misused, typically in efforts to 'prove' that calculated risk levels meet acceptance criteria.

In contrast, the sensible use of QRA is in helping to make better risk-informed decisions rather than blindly believing in a calculated value of risk. In particular, the probabilistic approach of QRA can be extremely useful for considering a broad range of scenarios, especially extreme events.

Swans were assumed to be always white, until the discovery of black swans in Australia. Rare, unexpected but highly significant events are much more common than we think.

QRA involves lots of numbers and can appear to be objective when in fact there are many judgements throughout the analysis. It is the role of experienced QRA practitioners to interpret results in the context of the uncertainties inherent within the analysis and to communicate these clearly to decision makers. It is management's duty to view risk model results as one input to the overall decision-making process. Models are not a substitute for good judgement.

3. It's not the regulator's fault

DeMuro explained that as far as regulatory compliance was concerned Lehman had been performing well. He was reluctant to blame the regulators for failing to spot problems before they hit, as many commentators have done.

In the major hazard industries it is the operator's responsibility, as the 'duty holder', to ensure compliance with health, safety and environmental legislation. Furthermore, compliance with prescriptive legislation is the minimum standard required. Indeed, many regulators worldwide have moved to a 'goal-setting' regime rather than a prescriptive 'tick-box' regime, and require operators to demonstrate control of major hazards via effective management systems and documented safety cases.

The underlying principle is that risks must be reduced to a level that is as low as reasonably practicable (ALARP). Demonstrating compliance is far from easy – it needs to take into account the views and concerns of those stakeholders affected by the decision, and requires the documented consideration of improvement options, both implemented and discounted.

4. Managing risk in silos

DeMuro explained that risk managers tend to operate in silos and report their findings individually rather than collectively. As a result, they may miss the truly dramatic problems lurking just around the corner.

Much has been done in the major hazard industries to better integrate the risk management of health, safety, security, environment and social responsibility. No doubt there is room for improvement – for example at times there can be a disconnection between safety and availability (production) decisions.

Conclusion

The collapse of Lehman Brothers was considered unthinkable, but it happened. Interestingly, the lessons learned are relevant to high hazard industries, where preventing major accidents requires an equivalent approach to understanding and managing risk in engineering design, management controls and organisational culture.

Contact: Steve Lewis (Warrington)
steve.lewis@risktec.co.uk

References

1. http://www.complinet.com/connected/news-and-events/webcasts/
2. Lessons From Longford, Hopkins, 2000
3. The Black Swan, Nassim Nicholas Taleb

The Brownfield Revolution

The Challenge of Securing Sites for Future Wind Power


Image courtesy of Infinergy Ltd

Greenfield grief

In 2007 the UK Government agreed to an overall European Union target of generating 20% of EU's energy supply from renewable sources by 2020. As industry tries to turn this promise into power, it's finding that one of the most substantial obstacles to the proliferation of wind power in the UK is obtaining land for which planning consent is likely to be granted to erect wind turbines.

To date, the majority of developments have been in remote rural locations designated as 'greenfield' sites, chosen for their wind characteristics and potential generating capacity. Future developments will find this approach increasingly difficult due to land unavailability, planning constraints, environmental concerns, and a growing public dislike of rural wind farms, coupled with a requirement for expensive supporting infrastructure and relatively high transmission losses incurred transporting electricity over long distances.

One solution to the problem of sourcing land is the regeneration of 'brownfield' sites.

The brownfield advantage

Brownfield sites can meet the same basic requirements for wind farm development, but bring a number of advantages over traditional greenfield locations. The availability of brownfield land in the UK is estimated at over 70,000 hectares spread throughout both rural and urban locations [Refs 1 to 3].

In addition to wide availability, brownfield sites incur preferential planning status – within Wales, for example, developments up to 25MW on a brownfield site are actively encouraged [Ref 4]. In other areas of the UK the advice to local planning authorities is to consider brownfield sites prior to any greenfield locations. By considering brownfield sites the reduced restrictions on site location afforded to developers is a substantial boon given the national trend towards limiting development to pre-defined strategic areas.

Brownfield sites can also deliver a multitude of other advantages over remote greenfield sites, most notably a saving on development costs relating to supporting infrastructure. Brownfield sites typically already offer good road access facilitating site preparation, delivery of materials and components during construction, and subsequent operation and maintenance during the life of the installation.

Connectivity to the National Grid may also be good, especially if the brownfield site was formerly used for heavy industry or is situated near to other large facilities. Moreover, transmission losses can be almost eliminated if the generated capacity can be utilised by incumbent land owners or adjacent site occupants.

Finally, for sites with existing industrial skylines, objections on the grounds of visual impact are considerably weaker than for rural greenfield sites.

The hidden challenge

One challenge facing the development of brownfield sites over greenfield locations is the potential risk a wind farm could pose to existing adjacent facilities. Where a wind farm is situated close to hazardous industries, care must be taken to design the installation so that the risks posed are as low as is reasonably practicable. While the risk management process should clearly identify and assess relevant hazards, including their mitigation and the resulting risk to adjacent assets, people and the environment, one of the complications is that the approach taken needs to produce results in a form that is easily comparable to any existing site safety cases.

Typically, the major operational hazard to adjacent sites is that of turbine tower collapse and blade throw. Whilst the frequency of these hazards is very low, involvement of interested stakeholders in the design of the site layout and the analysis and mitigation of potential risk to adjacent facilities is paramount to obtaining the support of adjacent site operators, local planning authorities and the local community.

Brown is the new green

The availability of brownfield land and its preferred planning status make it an attractive alternative to greenfield sites for the wind power industry. The advantages are manifest, but there are pitfalls for the inexperienced developer. Clear understanding of the site conditions, adjacent industry hazards and management of the attendant risk are key to successful development.

Given the growing disadvantages of greenfield development, not least the rising public dissent concerning rural wind farms, the Brownfield Revolution might be just what the wind power industry is looking for. And who knows, the UK might just meet its 2020 renewables target after all.

Contact: Callum Douglas (Glasgow)
callum.douglas@risktec.co.uk

References

1. Results from the National Land Use Database of Previously-Developed Land August 2008.
2. Scottish Vacant and Derelict Land Survey 2007, PLG/2008/1 Published January 2008.
3. A Statistical Focus on Wales, Chapter seven: Land, agriculture, and environment, 1999.
4. Planning Policy Wales Technical Advice Note 8: Planning for Renewable Energy Section 2.11 July 2005.

Periodic Review: Opportunity or Chore?

Good practice calls for a periodic review of major hazard safety cases to ensure that the 'case for safety' remains valid. Indeed, many regulatory regimes and corporate standards have a requirement for 'periodic' or 'thorough' review, and provide guidance on the frequency and content of the review. At first sight, the potentially wide ranging nature of periodic reviews can appear daunting and onerous, with the potential to place a heavy burden on resources. But a well-managed periodic review provides a great opportunity to strengthen the connection between the safety case and the real world.

Review scope

In undertaking a periodic review, it is important to go beyond a desktop study of the safety case documentation and recognise that the case for safety is based on real plant, processes and, arguably most importantly, people.

Typically, the review will need to focus on changes to standards, plant, operations and organisation, as illustrated in Figure 1.

Box 1 - Practical tips

- Approach periodic review with an open mind – as an opportunity not a chore
- Plan the review well in advance of the due date, and build in enough flexibility to deal with emergent issues
- Secure senior management support for the review and seek assurance that adequate resources will be available
- Engage with other internal and external stakeholders at the start of the review process
- Ensure the scope of the review encompasses all aspects of the safety case
- Structure the review under major headings which cover all significant safety-related aspects
- Specify the extent of the review required for each topic according to the extent of change and its affect on safety
- Direct resources at areas where changes have occurred that may have a significant impact on safety
- Consider experience in wider industry (could it happen here?)
- Monitor progress and findings and address emergent issues as they arise

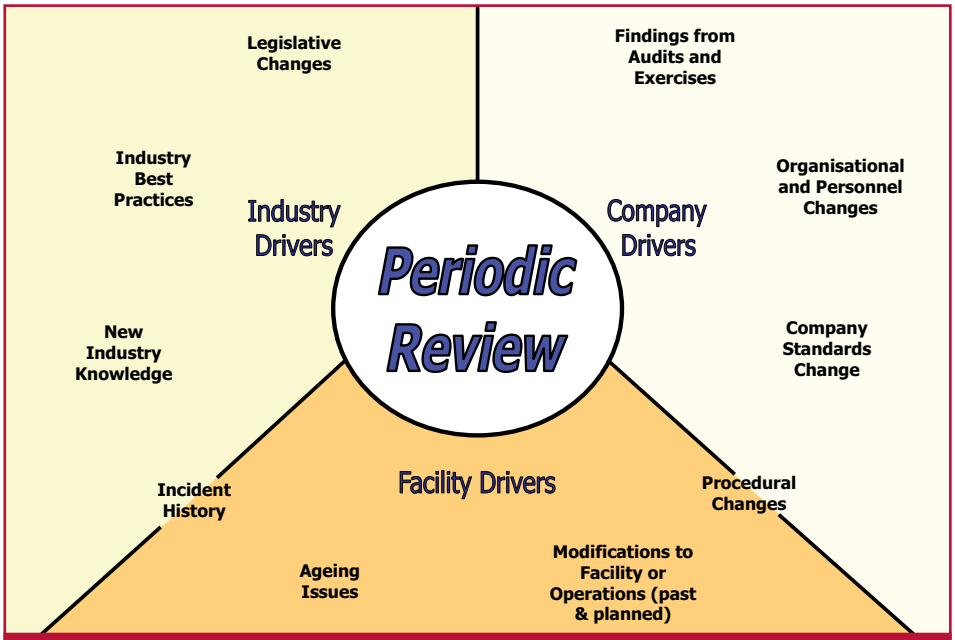


Figure 1 – Periodic Review Topics

It is important to recognise that periodic review is not intended to be a rewrite of the safety case or a comprehensive update of the safety management system, although its conclusions may affect both.

Practical implementation

The key to success is to plan the review well in advance to ensure that adequate time is available for a systematic approach and to limit a more probing assessment to the major issues which may arise.

There are a number of practical tips that come from experience [see Box 1]. Of these, perhaps the most important is the early engagement of stakeholders to obtain buy-in and establish the full scope of the review before starting, together with the targeted use of resources for addressing significant changes.

Stakeholder involvement

It may be tempting to conduct periodic reviews using a specialist safety team alone. However, to do so would be to pass up an excellent opportunity to engage with personnel across the organisation.

This is particularly true of operational personnel, whose detailed knowledge of the safety case may be limited, but who will have an excellent first-hand perspective of its practical implementation and direct experience of incidents.

Involvement of operators and maintainers can help confirm that the controls claimed in the written safety documentation are indeed operated and maintained accordingly. Moreover, this process can improve understanding on both sides, resulting in a safety case that better reflects operations and vice versa.

Involvement of regulatory personnel early in the process can often help to optimise the review. Insights and expectations can be identified and discussed and the review plan adjusted accordingly.

Conclusion

Periodic reviews are an important part of safely operating a major hazard facility. Approached positively they can present an excellent opportunity to take a fresh look at key aspects of the safety case using real experience and demonstrate to all stakeholders that the facility remains safe to operate for the foreseeable future.

Contact: Michael Cromarty (London)
michael.cromarty@risktec.co.uk