

RISKworld

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the newsletter of risktec solutions limited

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Welcome to Issue 9 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 on what you would like to see in future issues.

Contact Steve Lewis

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The Risktec logo features a stylized globe icon to the left of the company name "Risktec" in a bold, blue, sans-serif font. A horizontal blue line is positioned below the text.

Global Reach, Local Touch



Risktec's new Middle East office is located in the heart of Dubai

This edition of RISKworld marks the opening of our offices in London and Dubai. This important step forward for Risktec is in response to increased demand for our services in these locations and reflects our ongoing commitment to be close to our clients.

The principal focus for the Dubai office will be our oil and gas clients in the Middle East. Personnel from the UK have relocated to Dubai and the team will be supplemented by local recruitment. In London, our current activities are centred on rail and oil & gas industries, and we are recruiting additional local staff to enhance our responsiveness.

Risktec's continuing expansion is built on a strong foundation of proven high quality services. Our very high level of repeat and referral business is especially satisfying. As the company grows and develops, we are remaining focused on the needs of our clients and maintaining our practical outlook.

Greg Davidson, who leads Risktec's operational activities, sums up the company's progress:

"All our markets are very busy. The new offices in London and Dubai are a natural extension of our desire to develop long-term and sustainable relationships with our clients. We are keen to make our knowledge available and we are doing a lot more training this year, especially in the Middle East.

"We are actively seeking new people and have recently recruited a number of very experienced and high-calibre personnel. People seem to be attracted by our professional and team-based approach and the very open way our consultants go about their business."

We hope you enjoy this latest edition of RISKworld and would welcome any feedback.

For further information, contact Alan Hoy

Excessive Risk Aversion

Has risk management gone too far?

For the villagers of Bromham, this year's St George's Day should have been greeted with a hearty English breakfast to raise funds for a local primary school. Instead, according to the Daily Mail on 24 April [Ref. 1], the event was cancelled at the last minute because of health and safety concerns about untrained volunteers preparing fried eggs. More specifically, it would seem that local county council guidelines regarding the storage and preparation of food were being rather zealously enforced.

The news article provoked colourful reaction from the volunteers themselves, the general public and Tory MP, Philip Davies, who said, "It is barmy that parents who want to celebrate St George's Day and raise a bit of money for their local school are prevented from doing so by ridiculous rules and regulations." The next day the Chief Executive of the UK's Health & Safety Executive (HSE), Geoffrey Podger, wrote to the Daily Mail to make it clear that the HSE were not involved, and "have no interest in making people extensively risk averse" [Ref. 2]. What this and other similar stories portray (see Table 1) is a society where risk is not necessarily balanced by reward in the decision making process.

Cause for Concern?

Although the underlying reasons for excessive risk aversion are clearly case-specific, the root causes seem to fall into one or more of four general categories:

- Fear of litigation or other adverse personal consequences.

- Dogmatic reluctance to depart from policy or question its relevance or derivation.
- Belief that risks should be eliminated entirely.
- Convenient excuse, masking a potentially unpopular reason.

Indeed, the HSE are so concerned that they are promoting a debate on where the sensible balance lies in health and safety, with the aim of ensuring that resources are deployed on risks that could cause serious harm [Ref. 3]. As part of this initiative, a web forum was held from July to October 2005. Its principal findings were:

- The public's perception of risk is sometimes skewed: there appears to be great fear of certain hazards with tiny associated risk, while other more serious risks are tolerated.
- Although excessive risk aversion does occur (as supported by Table 1), disproportionate decisions are the exception rather than the rule.
- The evidence for a growing 'compensation' culture is far from clear, especially given that studies consistently show a fall in the level of claims. However, the perception of such a culture could amplify risk aversion.
- Although there was a general consensus that risks often could not be eliminated, there appeared to be disagreement in where the balance should be drawn between risk and cost.

Table 1 - Newsworthy Examples of Excessive Risk Aversion

A 73 year old pensioner from Cardiff was ordered off a bus for carrying a tin of water-based emulsion paint.
Children at a London primary school have been banned from making daisy chains in case they pick up germs from the flowers.
Barmaids across Europe may be forced to cover up because of an EU directive on sun exposure.
A district council felled a line of conker trees to prevent youngsters from injuring themselves while gathering conkers.
A girl was banned from bringing sun cream into class during a heatwave in case it caused allergies in other pupils.
Two Christmases ago, a secondary school in Chipping Sodbury banned the wearing of tinsel to prevent any danger of strangulation.
Cakes baked by Radwinter Women's Institute were banned from a hospital over fears they could present a health risk to elderly patients.
A publican from Taunton Deane was prevented from displaying hanging baskets on the front of the Ring of Bells pub by council officials concerned that some of the flowers might spill onto the pavement, forcing pedestrians into the road.

Source: Ref. 1

As a result, the HSE has undertaken to:

- Commission research to establish the extent and causes of excessively risk averse decisions.
- Draft a set of sensible risk management principles.
- Revise some of its key risk management documents, such as "5 steps to risk assessment" to reflect that sensible risk management means assessment and control of risks, rather than eliminating all risks.

Did you know...

...that excessive risk aversion can lead to loony laws?

- Alabama state law prohibits a driver to be blindfolded while operating a vehicle.
- In New Britain, Connecticut, it is illegal for fire trucks to exceed 25mph, even when going to a fire.
- It is illegal in Singapore to drive within 50 metres of a pedestrian crossing the street.
- In Evanston, Illinois, it is unlawful to change clothes in an automobile with the curtains drawn, except in case of fire.
- In Luxembourg you must have window wipers but you are not required to have a windscreen.
- Danish law stipulates no one may start a car while someone is underneath the vehicle.
- A driver in Belgium who needs to turn through oncoming traffic has the right of way unless he slows down or stops.
- In Thailand, the law requires you to wear a shirt while driving a car.

And finally, although the underlying reasons are unclear, spare a thought for the Swiss, who are not permitted to wash their car on a Sunday.

Ref. 1 - www.landroverclub.net/Club/HTML/humour_silly_laws.htm

Ref. 2 - www.dumblaws.com



Media Excess

The media clearly thrives on extremes, whether from too little or too much risk management. The truth, as usual, is probably somewhere in the middle – occasionally, there are hazards that merit less control and some that merit more. Judging from Table 1 and the outcome of the HSE’s risk debate, perhaps this situation is more common where the general public or public services are concerned. In business, though, especially major hazard industries, risk assessment coupled with decision making that balances risk with reward remains the key to sensible risk management.

While the nuclear and offshore industries have led the way, risk-based approaches can now be found in the fire & rescue services, the rail industry, marine safety, and occupational health & safety, for example.

Professional Risk Management

Wherever there is regulation or other drivers from industry to achieve cost-effective risk control, you will find risk professionals. Their role should be to bring discipline, structure and above all, pragmatism to the management of risks so that important risks are controlled well, trivial risks are discounted and resources are expended in a manner that is proportional to risk.

Traditionally, in the major hazards industries, risk assessment has involved extensive scientific and engineering research and analyses to gain an understanding of the nature of the hazard and its effect on plant, people and the environment. While this still remains the bedrock upon which informed decisions are made, analysis alone will not result in risk reduction (see Fig. 1). This requires tangible improvements to hardware and procedures, backed up by competency

Tool	Purpose
SkillsXP 	Promotes a structured approach to managing organisational change and staff competency requirements [see RISKworld Autumn 2005]
BowTieXP 	Applies the complete bow-tie methodology to remove the mystique of risk management and obtain insights into risk controls that are easy to understand and easy to communicate [see RISKworld Autumn 2004]
Tripod Beta 	Facilitates the investigation and analysis of incidents, identifying the hidden failures within the organisation, to enable lasting and sustainable improvements [see RISKworld Spring 2004]
Tripod Delta 	Surveys all employees to build an impartial picture of strengths and weaknesses of the organisation within the framework of 11 basic risk factors [see RISKworld Autumn 2003]
Hearts & Minds 	Light and self-contained, with background science built-in, these tools help an organisation to improve their HSE culture, manage rule breaking, improve supervisory skills and manage change [see RISKworld Autumn 2003]
Self-Assessment Toolkit 	Comprehensive but easy to use tools to help an organisation judge the level of implementation of the management system and identify priority actions for improvement

Table 2 – The New Risk Management Tools

assurance initiatives, such as improved training.

Further improvement comes from a grass roots embedding of an active risk management culture into day-to-day activities. While this is easy to say, its implementation requires a concerted effort over an extended period of time. In identifying improvements, whatever their nature, the obligation of the sensible risk professional is always to seek maximum benefit from a finite budget.

Although many of the supporting tools and techniques for sensible risk management are still developing, some of those used by Risktec are included in Table 2. Most notably, these have been designed with an emphasis on knowledge transfer and real risk reduction.

Success, Not Excess

The media might have you believe in a society where excessive risk aversion is commonplace. While the truth is probably less sensational, there is some evidence of this type of behaviour. Businesses, especially those in the major hazard industries, cannot afford excessively risk-averse behaviour; neither can they afford to ignore significant risks. The answer is sensible risk management.

Contact Steve Pearson for more information.

- Ref. 1 – www.dailymail.co.uk
- Ref. 2 – www.hse.gov.uk
- Ref. 3 – www.hse.gov.uk/riskdebate

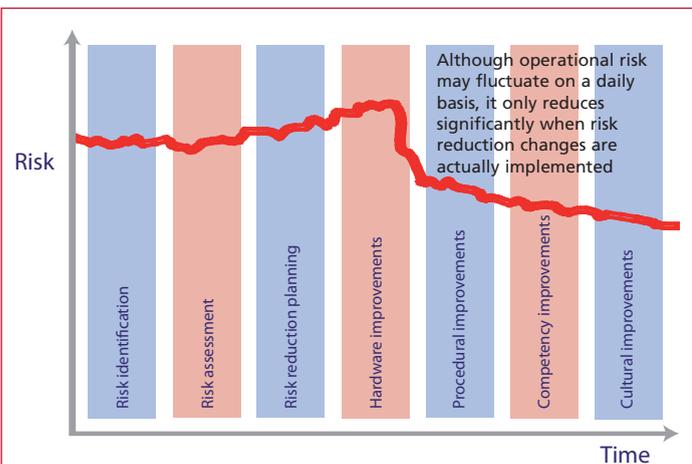


Figure 1 – The Path to Sustainable Risk Reduction



Risk-Based Audits in the Construction Industry

Audits are an essential part of risk management. They provide the feedback loop to help identify improvements. But too many audits can be counter-productive or wasteful. Large and complex construction projects are often subjected to numerous external audits or surveys, each focusing on a specific topic to meet a specific requirement of a particular project stakeholder, whether regulator, partner, insurer or third-party inspector.

The sheer volume of audits places a significant resource burden on the main contractor. This may be acceptable where recommendations arising from the audits truly add value, but all too often they make little or no contribution to reducing risk. This happens frequently when a prescriptive, checklist-based approach is taken to the auditing. The “one-size-fits-all” approach rarely fits anyone.

A Risk-Based Approach

An approach that Risktec has found to be more effective is to focus on the management system. Typically Risktec would undertake periodic audits over the life of the project that aim to seek evidence that the management system is implemented effectively at the construction site as well as throughout the sub-contractor supply chain.

At the core of this approach is the desire to focus on the root causes of possible incidents rather than the last line of defence. This concept is illustrated in Fig. 1, the well known “Swiss cheese” model of accident causation. The prescriptive “tyre kicking” audit tends to look at the quality of the last line of defence, e.g. the fire extinguisher, whereas the management system audit would look at the quality of the arrangements for ensuring that all practical means of fire prevention and protection are maintained.

The overriding objective is to provide comfort to stakeholders that risks are being properly managed, at all times, and not just when the auditor is on site. Furthermore, the approach means that any recommendations equate to tangible benefits to the project.

For large construction projects the risks will change as the project progresses through its various phases. Therefore audits are timed to coincide with major changes on the project, for example, prior to enclosing structures which would change the fire risk, or prior to heavy lifts which introduce an additional risk.

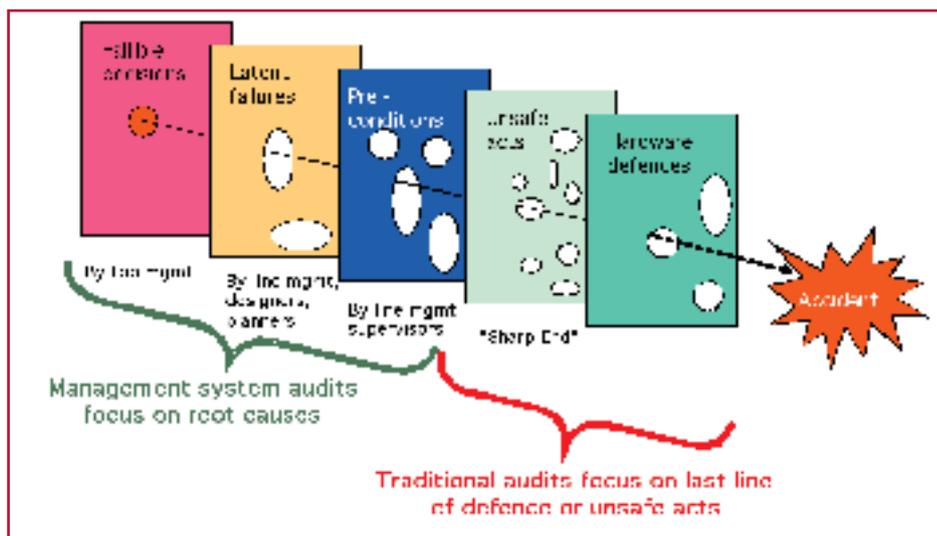


Figure 1 – Auditing the Swiss cheese model

Vertical Slices

The typical steps of the “vertical slice” method that Risktec takes are shown in Fig. 2.



Figure 2 – Approach to risk-based auditing

Firstly, the project programme is reviewed with the project senior management who explain how risks are identified, what the key risks are and how they are managed for each phase.

Documentation is then reviewed, starting with the risk register and moving on to the health, safety, environment and quality system manuals and procedures, fire control procedures, method statements, etc.

A specific high risk activity is selected and interviews are held with key personnel to understand how the risks are being managed, especially where more than one sub-contractor is involved. Follow-on audits are targeted on other high risk activities or on specific sub-contractors.

This is followed by a site walk-down to find evidence that what is being preached is actually being practised on the ground.

Any shortfalls are highlighted during the

walk-down and reported shortly after, together with proposed recommendations for improvement.

Benefits

The benefits of these audits are that they:

- Focus on root causes rather than last ditch defences.
- Provide evidence that a professional approach to managing all risks is in place throughout the project lifecycle.
- Deliver fewer but more value-adding recommendations, which reduces cost, time and effort that may otherwise be wasted.
- Provide lasting benefits throughout the project organisation, from the principal contractor to all sub-contractors.

Summary

Checklist-based audits of major construction projects can be an ineffective way of confirming that risks are being properly managed. Risk-based audits focus on what really matters – the risks and how effectively they are being controlled.

“Assessing the effectiveness of contractors’ management arrangements against international best practice (including e.g. ISO 9001:2000) gives us, as specialist insurance underwriters, the assurance that project risks are being well managed and potential losses controlled.” Engineering & Construction Team, Beazley Group plc

For further information, contact Andy Harding

SHEPHERD's Delight: A New Resource for Explosion Exceedance

There are about 2 major explosions around the world every year in the refinery and petrochemical industry. The effects can be devastating, causing fatalities and significant economic losses. Often the fatalities and many of the serious injuries occur inside buildings on the site.

At any particular refinery unit, the likelihood of a major explosion is about 1 in 2,000 years [Ref. 1]. The explosion risk to people inside plant buildings will depend upon the type of building construction, the location, the plant processes and materials. A quantitative analysis can establish where risk is intolerably high and risk reduction options are appropriate (see Table 1).

Table 1 - Risk Reduction Options

- Modify the process to eliminate or reduce the hazards
- Relocate buildings to locations where damage will not occur
- Strengthen and seal buildings to withstand possible events
- Reduce occupancy in buildings
- Eliminate or protect windows
- Enhance the effectiveness of safety management systems

These options may involve major cost or feasibility constraints and would require analysis to determine the most effective approach. This type of analysis is called an "explosion exceedance study" and calculates the frequency and distribution of all foreseeable explosion overpressures and impulses over the area of the plant.

Fit-for-Purpose Explosion Analysis

A full study can be an expensive exercise. It involves starting with a single scenario - a flammable release - and working through its consequences and frequency. A hierarchy of analytical tools, ranging from simple screening tools to full state-of-the-art computation, could be applied at each step. Then, the analyst returns to the start and works through the next scenario, finally summing all foreseeable risk contributions to personnel in occupied buildings.

A simpler, but more pragmatic, version of this exceedance methodology has been developed by Shell Global Solutions and implemented in a suite of software risk tools known as "SHEPHERD". The result is a fully probabilistic tool that has been extensively validated by experiment and by comparison with historical data. Significant effort has been applied to minimise loss of accuracy while increasing speed.

Generic Curves

At the heart of SHEPHERD lie generic data curves. They reduce the amount of explosion modelling that would otherwise need to be done and also eliminate the need for structural response analysis for buildings [Ref. 2]. The curves include:

1. A distribution of source overpressures based on Shell's detailed studies and research. This allows source overpressure, for various volumes of flammable gas in a particular area, to be derived from a simple correlation rather than by explicit case-by-case

explosion modelling.

2. Three models for the vulnerability of occupants to building damage, including the API RP752 model and two models based on research of generic building types.

This approach greatly simplifies the analysis, enabling studies of large facilities to be done much faster (see Table 2).

Table 2 - Benefits of SHEPHERD

- Faster, easier and more cost-effective analysis
- Easy to understand graphical output of explosion exceedance curves and on-site risk contours
- Handles large sites and large numbers of buildings with ease
- Enables rapid re-assessment of building upgrades or new locations
- Helps to decide the most effective risk reduction options

Conclusion

The accidental release and ignition of flammable vapours or runaway reactions in refineries and petrochemical plants present major potential explosion hazards to plant personnel and plant assets. Quantitatively analysing the risk of fatality enables sensible decisions regarding risk reduction measures, but traditionally this can be time consuming and expensive.

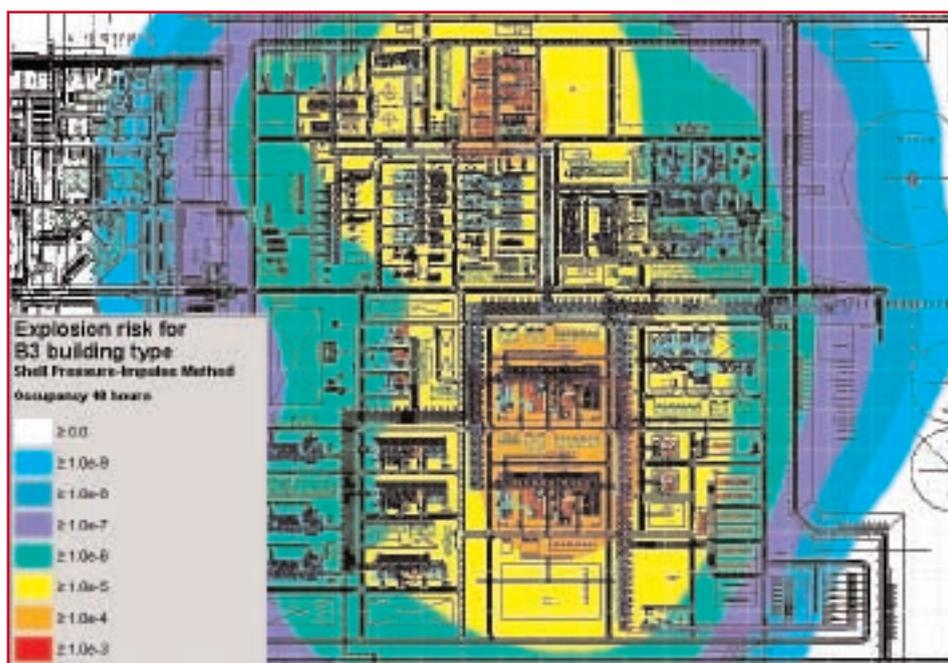
The new SHEPHERD methodology and software provides a quick, cost-effective and validated approach which is especially suited to supporting early assessment of large sites with high numbers of buildings. Note finally that a full assessment can still be warranted when making critical decisions, such as ones that involve extreme consequences with borderline risks.

To license the SHEPHERD exceedance model, email shepherd@shell.com

For further information, contact Steve Lewis

Ref 1 - API RP752, Management of Hazards Associated with Locations of Process Plant Buildings, May 1995.

Ref 2 - Explosion Exceedance According to API RP752 and SHEPHERD, G.A. Chamberlain, Shell Global Solutions, IChemE Hazards XIX, Manchester, March 2006.



All Change: The Implications of Train Operator Transfers

Like so many of the former public services, today's rail industry has seen years of change, and it seems unlikely that the pace of change will slow down. One notable aspect is the ongoing ownership transfers of the franchises that operate the trains. These bring many challenges to the new franchisees and to the regulators including:

- Management of organisational change
- Management of all key interfaces with the other interfacing organisations
- Improving performance (typically each new franchise brings with it new performance objectives)

While, of course:

- Maintaining quality of service from day one of the new franchise
- Assuring the safe operation of the railway

There are a number of associated risks which need careful consideration and planning, particularly during franchise bidding. Given the scope of business risks, one way of tackling this issue is to develop an enterprise risk management system as typified by the best practice COSO¹ framework.

Some of the typical risk categories that

are likely to be relevant include organisational change, safety case acceptance, performance improvements, transfer of assets and transfer of staff.

Organisational Change

Inherited staffing levels and the desire for performance improvement are likely to require significant organisational change. It is vital that this process ensures that all relevant competencies are maintained for business-critical roles.

Safety Case Acceptance

While initial operations may be carried out under the original safety case, any restructuring of the organisation or services is likely to require amendment of the safety case. This will require significant planning ahead of time to allow timely acceptance.

Performance Improvements

There are multiple risks affecting planned improvements, not least being the dependency on third parties. Failure to achieve planned improvements may directly affect financial performance, or risk impugning reputation or knocking customer confidence and loyalty.

Transfer of Assets

There is always a huge array of assets to be transferred, including IT systems.



Many will need to be operational on day one. If, for example, payroll systems fail to operate, this could cause an enormous loss of confidence from staff in the new owner.

Transfer of Staff

All the relevant staff would transfer under the TUPE arrangement – or would they? Many franchises are owned by umbrella organisations who have shared many of the functions up to now.

Staying On Track

As the examples above demonstrate, new ownership inevitably brings new risks as well as new opportunities. While this is no reason to be daunted, history teaches us that big changes can mean big problems, and the potential for risks to occur should not be underestimated. Fortunately, many of the risks associated with ownership transfer are not unique to the railway industry and experience from other business sectors is readily available. Moreover, there are well established tools and techniques to aid in the systematic and structured identification and control of risks.

With the timely adoption of best practice processes, there is no reason why risks cannot be successfully managed. So here's to each new successful franchise, a satisfied regulator and a rail service to be proud of!

For further information, contact Gary White.

Note 1 - The Committee of Sponsoring Organizations of the Treadway Commission is an independent private US organisation that promotes business ethics, effective internal control and corporate governance.



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