Hazards forum

# The Hazards Forum Newsletter

## Issue No. 84
## Autumn 2014

Web version

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***Edited by Dr. Neil Carhart***

***Views expressed are those of the authors, not necessarily of the Hazards Forum***


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*September 2014*

# Executive Committee Membership - Update

**New Co-opted member**
**The Hazards Forum is pleased to announce that Andrew Buchan has accepted an invitation to the Forum's Executive Committee as a new Co-opted member.**

**Andrew B Buchan,** BSc (Hons) CChem MRSC FSarS MIFirE

Andrew studied physical sciences at the Robert Gordon Institute in Aberdeen before commencing a career in the nuclear industry at UKAEA Harwell, initially in the chemistry of nuclear waste disposal. In the late 1980s he moved to West Cumbria to carry out technical and safety assessments for a number of consultancies supporting decommissioning projects at the Sellafield and Windscale sites. Over the last two decades he has been extensively involved in the development of safety assessment and safety case approaches for BNFL and Sellafield Ltd. This role required a detailed technical understanding of a large range of nuclear facilities and the safety management arrangements which underpin them

He has been involved in liaison with nuclear regulators over a number of years, and is familiar with the constraints of operating within a strict regulatory framework. He has been a founder member and chairman of several cross nuclear industry fora related to safety cases and peer review. He has regularly presented to other international licencees and regulators at OECD/Nuclear Energy Agency workshops.

He is currently leading a programme of Severe Accident Analysis for the Sellafield site and has been heavily involved in the company's response to the Fukushima event. He is a member of the Royal Society of Chemistry and a Chartered Chemist, a Member of the Institution of Fire Engineers and a Fellow of the Safety and Reliability Society, of which he is President.

# The Triennial Review of the Health and Safety Executive

Jane Willis
Director of Cross-Cutting Interventions, Health and Safety Executive

In April 2013 Martin Temple, Chair of the EEF (the trade body for UK manufacturing companies) was asked to lead the Triennial Review of the Health and Safety Executive (HSE) on behalf of the Department for Work and Pensions (DWP). It is Government policy that all Non-Departmental Public Bodies (NDPBs) should undergo a substantive review at least once every three years. This was the first Triennial Review of HSE.

These Triennial Reviews examine:

> Stage 1 - whether the functions of the NDPB remain necessary and whether delivery by an arms-length body is the most efficient and effective way to deliver these functions.

Stage 2 - if it is concluded that the functions of the NDPB should continue to be delivered by an arms-length body, whether adequate control and governance arrangements are in place to ensure that the body complies with the principles of good governance.

Following a call for evidence and interviews with a wide range of stakeholders, Martin Temple concluded that there is a continuing need for the functions that HSE delivers, and a very strong case for those functions to continue to be delivered by an arms-length body. He also reported that there was near universal praise for the work of HSE from the many stakeholders he spoke to. The outcome of the Triennial Review of HSE was published on 9 January 2014.

In addition to its conclusions and findings, the Review made a number of wide ranging recommendations regarding the delivery of HSE's functions, set out under the following headings:

- Funding and income
- Pace, efficiency and effectiveness of delivery
- Commercial options
- Relationships with other regulators.

The Review considered HSE's governance and made recommendations in relation to the composition of the Board so that it had the right mix of skills and experience to support and challenge HSE as it moved into the areas of activity directed by the Review's other recommendations.

Mike Penning, the then Minister for Disabled People welcomed the Review's findings saying

> "*I want to ensure HSE delivers value for money to the taxpayer, whilst ensuring safety for the nation. At my request, HSE has already made good progress on increasing the opportunities for commercial income, building on work it had already begun. Selling our expertise abroad will not only help businesses and governments to save lives, but, as part of our long-term economic plan, will show the world we're leading the way in exporting expertise overseas."*

He announced two areas to be taken forward as immediate priorities:

- Developing HSE's potential for generating commercial income
- Reviewing the HSE Board to ensure it had the skills it needed to oversee this commercialisation.

The Government's response to the Review was published on 26 June. This confirmed the Government's support for the Review's findings and the overall direction set by its recommendations. The response went on to outline how each of the recommendations, most of which have been accepted in their entirety, would be taken forward.

**Recommendations about developing HSE's commercial potential**

Those recommendations that have a bearing on how HSE develops its commercial potential are being taken forward under the oversight of the Commercialisation Steering Group described in the Government response. HSE's Board and senior management team are working together to consider the challenges and opportunities presented by commercialisation within the broader context of how HSE will continue to operate effectively in the future. They have agreed the future strategic direction for HSE as an organisation. This includes a framework for taking forward the commercialisation agenda the essential elements of which are that:

- Commercialisation provides a real opportunity to maintain HSE's capacity, capability and philosophy as an effective risk based regulator
- HSE will seek to develop commercial opportunities where they contribute to improved management and control of risks
- Most of HSE's commercial opportunities are likely to be dependent on HSE's hard-earned reputation as a world-class regulator and therefore protecting and enhancing this was a fundamental requirement when identifying commercial opportunities to pursue.

To take this work forward the Board and Senior Management Team (SMT) has set up its HSE2020 programme. This aims to transform the way HSE operates in the future so that it can better realise the commercial value of its knowledge and reputation, and use this to support its work regulating GB workplace health and safety with reduced reliance on taxpayer funding. Formal programme management arrangements will provide assurance to the Commercialisation Steering Group and HSE Board.

**Recommendations regarding the HSE Board**

A review of the remit and skills/competencies of the HSE Board has concluded that the formal remit is broadly appropriate but needs amendment to reflect the move towards commercialisation. It has also concluded that it is possible to achieve the range of skills/competencies needed across the HSE Board without changing the current statutory number of appointments requiring consultation with representational organisations. A need to enhance Board skills in some areas (primarily relating to commercial and communication expertise) has been identified which the current HSE Board recruitment exercise is seeking to fill.

**Recommendations about delivery of HSE's regulatory functions**

The Triennial Review's remaining recommendations provide welcome support and direction on where the delivery of HSE's regulatory functions can be improved. The recommendations cover a broad range of HSE's activities and it has been possible to incorporate much of the work needed into HSE business plans for 2014/15 and beyond. Of course, work on implementing the recommendations has been underway since the outcome of the Review was published and as noted in the Government response some of the actions have already been completed:

- The Fee for Intervention (FFI) dispute process has been amended
- The website has been changed to include links to show how health and safety concerns can be raised
- New occupational disease webpages have been launched.

With regard to the recommendation about reviewing FFI, HSE set up an independent FFI Review Panel led by Professor Alan Harding of the Heseltine Institute at Liverpool University and including representatives from business and TUs. The Panel has completed its review. It has concluded that whilst there are challenges associated with FFI it has proven effective in achieving the policy aim of shifting the cost of health and safety regulation from the public purse to businesses that break health and safety laws. The Panel could see no viable alternative to FFI at this time. The HSE Board will now advise the Minister in the light of the review and publish the Panel's report in due course.

In the Triennial review, Martin Temple identified a number of areas where there is scope for innovation and change, to ensure that HSE continues to operate efficiently and effectively in the 21st century. The Government Response sets out how HSE will ensure that it continues to improve efficiency and effectiveness in how it delivers its essential functions. This includes measures to increase transparency, such as publishing new performance indicators and setting out clearly how HSE works in partnership with other regulators.

**The agenda looking forwards**

**In the next few months**

- HSE will begin testing with possible customers the market demand for a fully chargeable inspection service for organisations with mature health and safety management systems
- the HSE Board will provide advice to the Minister on the future options for FFI
- DWP will publish the revised HSE/DWP framework agreement
- HSE's new asbestos behaviour change campaign will be launched
- HSE will have fully implemented a new performance framework.

**By the end of 2014**

- HSE's updated sector strategies will be published
- Work to deliver the recommendations in Professor Löfstedt's report will be completed
- A review of the National Local Authority Enforcement Code following its first year in effect will be undertaken.

**Early 2015**

- HSE's early advice service on land use planning applications will be available.

**By end of 2015**

- HSE and DECC will have established the joint Competent Authority for the Offshore Safety Directive, taking into account the lessons learned from Focus on Enforcement reviews.
- HSE will have reviewed its interfaces with other regulators and published revised Memoranda of Understanding.

The Triennial Review and the Government's response can be found at the following website:
https://www.gov.uk/government/publications/triennial-review-report-health-and-safety-executive-2014
[Short URL: http://goo.gl/hwtgxr]

# Reducing Risk through Sharing Experience – Why Wouldn't You?

Neil Carhart

On **Tuesday 17th June 2014** the Hazards Forum hosted an **evening event** at the Institution of Civil Engineers, 1 Great George Street, Westminster, London.

The chair for the evening was Rear Admiral (retd) **Paul Thomas CB** FREng, who is also **Chairman of the Hazards Forum** and the RSSB. The chair opened the event by thanking the evening's co-sponsors, the Institution of Civil Engineers and the UK Petroleum Industry Association, for their support.

The first speaker of the evening was **Kevin Bridges**, Partner in Pinsent Masons Health & Safety and Regulatory Team. His experience is in health and safety, fire safety and environmental law, and related criminal and civil litigation. He is dual qualified as a solicitor and chartered safety and health practitioner and provides pro-active advice on a wide range of health and safety and regulatory issues to corporate and commercial clients in all sectors, as well as responding to incidents when they happen. Kevin provided a lawyer's perspective on the

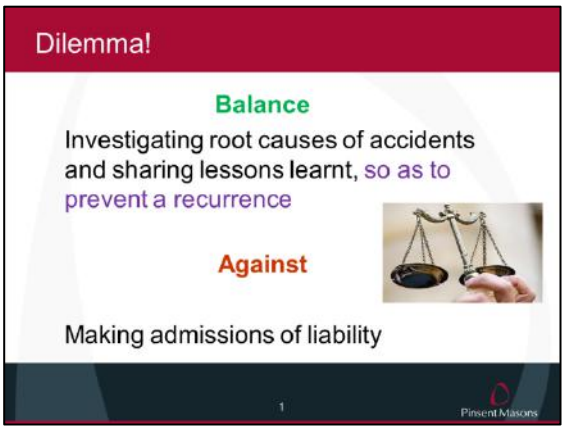
legal duties to investigate incidents and the barriers, whether real or otherwise, to learning lessons internally within an organisation and from sharing with others.

The second speaker was **Peter Davidson,** architect of the UK Petroleum Industry Association's (UKPIA) 'Assuring Safety' strategy for sector level Process Safety, who is tasked with promoting process safety leadership in the downstream oil industry - helping members achieve excellence and work toward becoming high reliability organisations. Peter works in close collaboration with the UK Regulator and is a leading member of many Process Safety forums and committees. Prior to joining UKPIA in January 2009, Peter worked as the Regulatory Compliance Manager for ABB Automation in the UK, specialising in the delivery of automation systems to highly regulated industries, including Oil and Gas, Petrochemical, Pharmaceutical and Nuclear sectors. Peter presented on Effective Sharing and Learning through the Process Safety Forum. With a focus on the downstream oil industry, Peter described how the sector has set in place a process by which it can achieve a proactive approach to Process Safety improvement - one that encourages continuous improvement through learning from itself and others.

The final speaker of the evening was **Greg Morse**. As RSSB's single point of contact with RAIB (Rail Accident Investigation Branch), Greg is responsible for reporting back to rail industry members and groups on lessons from accidents and incidents that have occurred across the globe, and across other industries. In addition, he is the Rail Editor of the rail industry's Right Track magazine, meaning that he not only helps oversee production, but also writes some of its main features. An author in his own right, Greg's next book - on the subject of railway accidents - will be published by Shire in October. Greg discussed his experience of the sharing of learning from incidents globally in the rail industry.

The Chair set the scene for the evening's event by describing that when examining any incident, and not just those associated with safety, it is often found that the underlying causes are the same time and time again. The challenge is how we might manage risk and opportunity better by sharing experience and learning from each other.

The first talk of the evening, given by **Kevin Bridges**, offered a legal perspective on sharing experience. Kevin is particularly well placed to give this view being both a partner in Pinsent Masons Health and Safety Regulatory Team but also having experience as a safety practitioner and is currently Vice-President of IOSH. Kevin began his talk by suggesting that organisations need to be equally flexible in weighing up the potential competing and conflicting interests, whether real or perceived, when it comes to learning lessons from incidents. On the one hand sits the moral desire to share experiences, learn lessons, and be open and transparent. Competing with this though are the commercial realities of business and the need to protect intellectual property together with the legal considerations relating to prosecution following an event.




Kevin argued that striking a balance between these competing considerations needn't be a dilemma at all. It is possible to efficiently learn lessons while still protecting the organisation from the commercial and legal risks to which they may be exposed.

Sharing experience is not only an important thing to do, it is the correct thing to do. Kevin stressed that it is fundamentally important that lessons are

learnt internally and externally across industry to prevent recurrence.

This does come with a warning though: sharing information has potentially very significant legal and commercial consequences. Potential problems, which relate to losing control of the information, emerge from the detail of what is shared and how it is shared. The legal risks are both civil and criminal in nature. For example, there may be civil personal injury claims for compensation of which accident investigation reports form part of standard disclosure both pre and post-litigation. On the criminal side there may be prosecutions following an event giving rise to fines and potential imprisonment of individuals. Accident reports, which might contain admissions of liability, would ordinarily be discloseable to enforcing authorities investigating workplace accidents.

The dilemma can be summarised as therefore balancing the investigation of accidents and sharing lessons learnt against making potentially damaging admissions of liability. Sometimes the admissions are misplaced because the author of the report, the person whose opinions are being shared, may actually be judging what has happened against a gold-plated standard as opposed to a reasonable and satisfactory standard.

In the light of any incident or near miss occurrence, an organisation's - and perhaps an industry's - foresight will have changed. Far too many prosecutions are brought from this new position, a position of hindsight.

Safety is about foresight and what is reasonably foreseeable at the time of the event. A change in foresight needs to be fed back into the risk management process. It is therefore important that information that can change and advance foresight is shared, not retrospective views of liability.

Kevin then turned to look at the legal solution to this dilemma. How can an organisation best protect its business, protect its brand and protect itself from prosecution whilst still learning and sharing lessons? The legal solution comes from legal/litigation privilege which allows the organisation to control the flow of information. Privileged documents are immune from ordinary disclosure requirements. They do not have to be disclosed as part of either civil or criminal investigations and proceedings. Privileged documents do not stop you from learning lessons internally or externally, but they allow you to do this in a managed way.

Not every incident will be subject to legal privilege, there is a test to determine this. An organisation cannot just decide that an investigation is protected by legal privilege. The legal test to determine this is known as the dominant purpose test, as established in 1980. Broadly this can be summarised as whether or not the dominant purpose of the document coming into existence was in contemplation of legal proceedings. Privilege should be confined to the more serious incidents likely to require legal advice in anticipation of civil and /or criminal proceedings.


For many incidents the dominant purpose of any investigation will be to learn lessons in order to prevent reoccurrence, but in some instances the information from an internal investigation will be highly relevant to obtaining early specialist legal advice. It is important to note that it is the dominant purpose and not the sole purpose that determines whether an investigation is privileged or not. Even if a lawyer commissions an accident investigation so that they can brief their client, it doesn't prevent the organisation from also identifying the root causes so that lessons can still be learnt (as a secondary

purpose) and something done to prevent the event from happening again within the organisation or elsewhere.

The courts therefore recognise that documents such as accident investigations can be legally privileged provided they have been prepared for the benefit of obtaining legal advice.

Creating a privileged investigation therefore gives the organisation control over the flow of information, i.e. when and what to disclose. This better protects them against commercial and legal risks. Kevin reiterated that it is the dominant and not sole purpose of the investigation that has to satisfy the legal test. Lessons can and should still be learnt internally and externally, but in a managed and focused way. The organisation can still prepare a safety briefing or a factual note of investigation findings for communication to others.

Kevin concluded by emphasising that this approach is not about failing to co-operate with the regulator. It is wrong to think that not disclosing an investigation which is subject to legal privilege is obstructing an inspector, unless of course you fail to comply with a specific statutory duty or intentionally mislead the inspector. Neither privilege (nor lawyers) should be an obstacle to sharing experiences or learning lessons, but it is a legitimate means to take control of information gathering and protect the commercial and legal interests of the organisation. Kevin advocated the benefits to all organisations having in place a documented and tried and tested Incident Response Protocol incorporating legal privilege over internal investigations when appropriate, and access to specialist health and safety lawyers to advise in the event of an incident that is likely to give rise to criminal proceedings.

The second talk of the evening, '*Effective Sharing and Learning*', was given by **Peter Davidson**, Director of Safety, Commercial and Projects at the United Kingdom Petroleum Industry Association (UKPIA). Peter began by introducing UKPIA, whose member companies are engaged in the UK downstream oil industry in the UK (operating oil refineries, fuel terminals, distribution networks and approximately 2,500 retail sites). Up until 2008 UKPIA was essentially a lobbying organisation, helping to form and advocate the industries position, but this changed somewhat as a reaction to the Buncefield fire and similar incidents. UKPIA took a leading role in terms of promoting process safety across its membership. A large part of UKPIA's work today is related to process safety, representing a huge change in a small number of years.

Following incidents like those at Buncefield and Texas City, there was a need to demonstrate leadership in process safety within UKPIA member companies, with other sectors and externally with regulators. This included actively sharing, learning and ultimately, avoiding complacency. Just because something hasn't happened within an organisation or industry, doesn't mean it isn't going to. As an example, prior to the Buncefield fire there was a general view that a large vapour cloud explosion wasn't credible. Shortly after the Buncefield fire there were two similar vapour cloud explosions in Jaipur and Puerto Rico. Incidents will happen, the industry has inherent risks that must be managed and controlled to the best of our abilities. What is important is that we learn from incidents so that they are not repeated. This is one of the main reasons why it is so important to share our learning and understanding.

The Buncefield Major Incident Investigation Board made a number of key recommendations in this area:

- **Recommendation 21**: The sector should put in place arrangements to ensure that good practice in these areas, incorporating experience from other high hazard sectors, is shared openly between organisations;
- **Recommendation 23, 24**: The sector should setup arrangements to collate incident data on high potential incidents including overfilling, equipment failure, spills and alarm system defects, evaluate trends, and communicate information on risks, their related

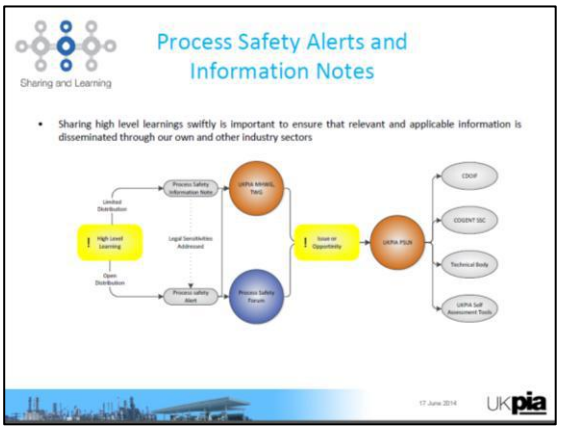
solutions and control measures to industry;

- **Recommendation 25**: In particular the sector should draw together current knowledge of major hazards events, failure histories of safety and environmental protection critical elements, and developments in new knowledge and innovation to continuously improve the control of risks.

It is difficult for individual companies to achieve this, and that is why UKPIA worked with its members to fulfil the leadership role for the downstream oil sector. The solution came through the creation of 'Assuring Safety', a strategy for attaining sector level process safety. It consists of three different streams: Working Together, Sharing and Learning and Encouraging Excellence.


For the remainder of the talk, Peter focused on the role of 'Sharing and Learning' and how this is enacted both within the UKPIA community and with other sectors. The first element is how the industry shares and learns from incidents and near misses. This is achieved through a two tier system consisting of Process Safety Information Notes and Process Safety Alerts. It was recognised that it was important to share high-level learning information as quickly, effectively and as accurately as possible amongst the sector, however, as discussed in the previous talk, there may be certain legal constraints on what can be done. To tackle this, information can be shared within the UKPIA membership with certain restrictions. This is done by issuing a Process Safety Information Note. If the information can be shared more widely with other sectors and regulators, then a Process Safety Alert is issued via the Process Safety Forum (see later).

While issuing these Notes and Alerts is very important, it is also necessary to analyse the information, and determine if further action is required. UKPIA's Process Safety Leadership Network (PSLN) reviews all Process Safety Information Notes and Process Safety Alerts to determine whether there is an issue or opportunity for learning. If there is, it will commission work to develop high-level industry/regulatory guidance (via the Chemical and Downstream Oil Industry Forum), detailed technical guidance and research (through the Energy Institute or other technical bodies), self-assessment tools or training, competencies and standards within a particular area (through the UK's Sector Skills Council).




Whenever discussing sharing and learning there is a tendency to focus on the learning from incidents and near-misses, but it is also important to learn from best practice. Sharing good practices can have just as big an effect, if not more so, than just sharing information about an incident. In addition to this, learning from good practice is not subject to the same legal considerations as learning from incidents. Commercial impacts would however still need to be considered, but good practice on auditing a management of change process, for example, would be unlikely to have commercial implications.

The Process Safety Forum allows UKPIA to exchange learning about incidents, near-misses and best practice more

widely with other sectors. The Process Safety Forum has members covering a number of industries including Explosives, Chemicals, Power Generation, Upstream Oil and Gas, Liquefied Petroleum Gas, Engineering & Construction, Nuclear, Tank Storage, Aerosol and Rail sectors. This is important because many of the lessons learnt and subsequent root causes are relevant across different sectors. If, as was the case for many of Buncefield's root causes, there is applicability across multiple sectors, then there should be a mechanism to facilitate the wider sharing of these lessons. Peter demonstrated this by explaining how UKPIA had learnt some very important lessons from information shared by the rail sector. Indeed, UKPIA is about to start a piece of work through the Process Safety Forum, looking at strengthening human factors performance, with input from both the rail and nuclear industries.

The Process Safety Forum itself publishes Process Safety Alerts and Learning Briefs to its member organisations from across the different sectors. These are all available on the Process Safety Forum website.

It can be difficult to measure the success of these initiatives, as the way of measuring it is via the number of incidents that occur, and this is thankfully very small. Nevertheless the number is reducing over time. Peter concluded that despite this difficulty in demonstrating the impact quantitatively, it is very important that a mechanism through which information can be shared within the sector and with others in in place.

The final talk of the evening was given by **Greg Morse** from the Rail Safety and Standards Board (RSSB). Greg began his talk by describing the Brétigny-sur-Orge train crash which occurred in the suburbs of Paris on 12th July 2013. The train, carrying 385 people and travelling at 85mph, derailed. The last four coaches divided and slid across the tracks, impacting on the station's platforms. Seven people were killed: three passengers in the train and four who were standing on the platform. Many more were injured. Eight air ambulance helicopters and 20 paramedic teams rushed to the scene to take the injured to hospital.

One of the coaches came to rest lodged on the platform, reminding many of the 2002 Potters Bar derailment. Indeed both events occurred at suburban stations just outside a capital city, both trains were travelling at similar speeds, and both were the result of defective track on or near a set of points. These similarities led the RSSB to quickly send its support to SNCF, the French national rail company, as well as a copy of its investigation report into the Potters Bar event. This had highlighted, among many things, the failings in Railtrack's oversight of the contractors tasked with maintaining the points.

As the investigation into the French rail crash progressed it became clear that the problem involved a fishplate (a form of rail joint) breaking off from the track and becoming lodged in the 'V' of a double slip switch crossing. This was markedly different to the Potters Bar incident, which had arisen due to a bolt working loose freeing a linking bar to move under the train. In fact the incident in Paris was similar to a different rail accident at Southall East Junction on 24th November 2002. When this became apparent, RSSB shared the report into that event with SNCF too.

July 2013 actually saw four major rail accidents: a runaway train and explosion in Quebec on the 6th, the Paris derailment on the 12th, a fatal high-speed derailment in Spain on the 25th and a fatal collision in Switzerland on the 29th. This succession of events resulted in a period of reflection on operations within the UK rail industry. Each of the four events was assessed in the light of operations within the UK, and each provided new lessons.

The explosion in Quebec involved the transportation of oil which had increased in the region. Analysts have predicted up to 40 times more oil will be transported by trains over the next five years, much of it due to a rise in the extraction of shale oil. This is relevant in the UK, given current

considerations to pursue similar extraction techniques here.

Greg noted that while looking at the trends can help focus resources where they are most needed, it is also useful to focus directly on significant accidents. This is an important part of learning, and something the rail industry has been doing for over 200 years. Reflection and learning has led to the development and implementation of interlocking, block signalling and continuous brakes, safer rolling stock and a better understanding of change management. Such advances have all contributed to a significant drop in accident fatalities.

This process of investigating events, as well as recommending and tacking changes creates something akin to an industry memory. Organisational learning is very difficult, perhaps more so than it is for individuals, because companies comprise a number of different, disparate and perhaps fragile memories. Not only are there issues in the interface between these company memories, but they can change as the people within the company change. Vigilance is required within such a dynamic and complicated system in order to combat complacency.

RSSB helps the railway industry to combat complacency by reminding it of past lessons, including those from other industries. For example, it produces a *Learning from Operational Experience Annual Report* to capture lessons from that year. The 2012-13 edition shows that major injuries are rising at the platform-train interface (PTI) despite a 10% drop in overall harm. Greg illustrated the severity of this issue by describing an accident at James Street Station in 2011.

At 23:28 on Saturday 22nd October 2011, 16-year-old Georgia Varley was tragically struck by a train and killed. She was leaning against the unit as it began to move out of the station and fell between it and the platform edge. She was killed instantaneously.

The Rail Accident Investigation Branch concluded that the guard performed the dispatch task while Georgia was leaning against the train. Their report suggested that he possibly did this because he expected her to move away or possibly because he had not seen her. A post-mortem toxicology report found Georgia to have a blood alcohol concentration of almost three times the UK legal drink drive limit. In the subsequent court case the guard who dispatched the train said he had not known this, and thought she was moving away from the platform edge when he gave the driver permission to move. The court ruled that he was guilty of manslaughter and gross negligence. He was sentenced to five years in prison, and lost a subsequent appeal for sentence reduction.

As a result of the accident, the rail operator amended the dispatch procedure to allow guards to send the driver a ‘ready to start’ code before their door has fully closed, should they decide it necessary. This change means that the guard can view more of the dispatch corridor than under the previous process. We may study the data, but we can never forget that there is a person behind every statistic.

In reaction to a worrying trend in PTI-related incidents, RSSB initiated a Station Safety Improvement Project in June 2011. The project is ongoing and aims to develop a holistic approach to the assessment of all types of station risk, along with specialist research into potential human factors, engineering and asset solutions, including platform-edge gap fillers.

In addition to this, RSSB and the Office of Rail Regulation hosted a joint workshop to discuss the issues highlighted by the incident at James Street Station. This was attended by train operators, Network Rail, the trades unions and representatives from the Office of Rail Regulation (ORR), Rail Accident Investigation Branch (RAIB) and RSSB. From this, the need was recognised to take a consistent approach to station safety management for which RSSB agreed to develop guidance. The workshop also recognised the important and powerful role the media can play. Television adverts have been used

successfully to communicate the hazards associated with the misuse of level crossings, so perhaps the same approach could be used for station safety and PTI risks. This option is currently under consideration by the industry.

Greg then turned to look further at corporate memory, and in particular corporate memory loss. He described how since the late 1960s Iarnród Éireann, the Irish national railway operator, suffered a slow loss of corporate memory pertaining to bridge maintenance. In 2009 this resulted in the collapse of Malahide Viaduct as a passenger train was going over it.

On 13th January 2012, a Hamburg-bound push-pull service running in 'push mode' struck a herd of cattle and derailed. One passenger was killed; the driver and one further passenger were injured. This caused the rail industry in the UK to assess its corporate memories regarding the last incident of this nature in the UK, which occurred at Polmont, near Falkirk on 30th July 1984. The industry reflected on whether the lessons had been learnt from this previous fatal collision between a train and a cow involving a push-pull service in push mode.

To do this, RSSB conducted some research and analysis with the early findings appearing in Right Track magazine. This was followed by a more in depth report on British Rail's improvement actions following the event. Greg then went on to describe the Polmont event, noting the differences between the railway in 1984 and the railway now.

The incident occurred around 17:45, when an Edinburgh express train slowed in reaction to restrictive signals just past Falkirk. As the driver slowed he noticed that there was a cow on the bank next to the track. Soon after, when they reached Polmont station, the driver asked his assistant to inform the station staff. As he did so, another train passed through the station.

Had the cow actually been on the track, or if there had been more than one cow, the driver would have stopped sooner and phoned the signaller, but given the current situation there was little perceived risk. However, this assessment was sadly incorrect.

The driver of the 17:30 to Glasgow, having just passed through Polmont station and accelerated to around 85 mph, spotted a cow on the track. Having only a matter of seconds to react he applied the emergency brakes. The train hit the cow, and what was thought to be a bone caused the train to lift off the track and derail. 13 people were killed and 17 were injured.

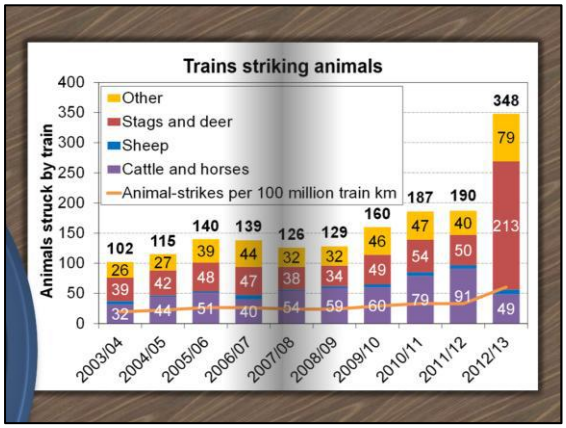
The specifics of the accident were actually quite unusual as it required a specific part of the cow to be struck at a specific moment, in such a particular way that the force and angle could lift the wheel off the track. The subsequent investigation recognised a number of operational and engineering factors that had contributed to the accident.

- The **fencing** at an unused level crossing had been vandalised, allowing the cow on to the line;
- The **rules** at the time did not treat a cow within the boundary as an immediate danger to trains;
- There was no means of **communication** through which to inform the driver of the hazard other than the signalling system;
- The **DSBO** (Driving Brake Standard Open – a type of carriage converted to a control car) had a light axel weight and no obstacle deflectors.

This led to improvements in fence inspection and damage reporting processes, a change to the rules to treat any large animal within the boundary as an immediate danger to trains, a £3 million investment in the National Radio Network (now being replaced by GSM-R), and the introduction of deflectors. All these developments help explain why the current risk is so low.

In terms of the statistics, train accidents make up about 6% of the total railway system risk, of which 0.6% relates to trains striking animals. Of this small amount

about 60% relates to the associated risk of derailment. However, while the total number of animal on the line incidents has fallen by 43% since 2002/03, reported cases of animals actually being struck by trains has increased by 77%. This is shown in the chart below.




RSSB investigated some of these reports on the Safety Management Information System (SMIS), an online accident database, which led to the identification of damaged fencing as a recurring cause. The damaged fencing was the result of vandalism, maintenance issues and even flooding. This means climate change is a possible contributor to this risk in the future.

Network Rail now assess the risk, taking into account unauthorised access, adjacent land use and the condition of the existing boundary in order to determine the initial level of fencing needed and the subsequent levels of inspection, repair and replacement. If the boundary does fail, and cattle accesses the line, then general improvements to train crashworthiness also help reduce the chance of derailment. One source of increased risk comes from the growing deer population, capable of jumping some fences. Despite this the derailment risk posed by deer is thought to be lower than that for cows and horses.

Network Rail continues to monitor the situation, which can have commercial risks in terms of delays as well as safety implications. Animals on the line will be part of a 'deep dive review' running from July to September 2014.

Gathering together the learning from events is very important, but equally important is feeding this information back. RSSB issues periodic safety reports as well as briefing tools such as the RED DVD and Right Track magazine. They offer data and expert knowledge to the Rail Accident Investigation Branch and bring together groups from across the industry to tackle common issues. The rail industry has a good record in this area. Greg highlighted the book *Red for Danger*, published in 1955 and once considered required reading, which teaches how accidents happen and why things are the way they are. One of the strengths of *Red for Danger* is that it tells a compelling story in a compelling way. Stories can be a memorable form of communication. Right Track magazine adopts a similar 'novelistic' style.


Greg concluded his talk by emphasising that the key message is about sharing. If we keep sharing in a way that really includes everyone, we will continue to improve.

The Chair thanked the speakers before opening the **Question and Answer** portion of the evening's event by asking a question regarding the sharing of information pertaining to an incident at the Thermal Oxide Reprocessing Plan at Sellafield. In an effort to be upfront, honest, and to promote learning, the board of BNFL decided to quickly make available a redacted version of the inquiry conducted into the event. The question asked whether this was appropriate given the subsequent conviction and fine for health and safety breaches. Kevin Bridges

responded that it is always a question of strategy whether or not to disclose a report of that nature. A lawyer's instinct may be to advise against such actions as it will present commercial and legal risks, however, sometimes those commercial considerations may be in favour of early disclosure. Criticism is often levelled at an organisation for failure to apologise or accept their failings early enough. Not releasing information in a timely manner can influence the perception of a cover-up. Providing information can therefore be very important from a commercial perspective as well as its benefits in terms of sharing lessons. This is particularly true if there is a great deal of public interest in the event. How and what is shared is a challenge that must be managed.

The first question from the floor asked whether the structure of the law was supportive in striking the balance that the first speaker had described, and whether the risk of legal consequences it presents were misaligned with a moral instinct to share the lessons to prevent recurrence of events. Kevin responded that the law in question did introduce certain challenges in sharing information, but the question is really about what is shared when, and how. If approached appropriately the undisputable facts pertaining to an event can be shared in a useful way without affecting legal or commercial risk. Nevertheless, the law can lead to some being protective about such information. Greg Morse added that journalists reporting on events without access to the facts can have an exponentially bad effect on an organisation. Sharing the facts can be crucial. Peter Davidson highlighted the restrictions that an ongoing criminal investigation can have on the ability to share information following an event.

The second question asked about the trends in sharing information. It has been suggested that there is a trend towards sharing less information as a result of increasing legal advice to the contrary, the audience member asked whether the panel had noticed such trends. Peter Davidson responded first by explaining that within the downstream oil sector the trend is in fact towards sharing more not less. Previously sharing across the industry was done on a very informal basis, which may meet some needs, but is certainly problematic in terms of retaining the resulting knowledge. At present there is far more action to document the lessons and making them widely available. Indeed there is frustration, as in the situation mentioned previously, where the industry would like to share more information, but ongoing criminal investigations prevent this. Kevin added that he has perceived an increasing trend towards sharing information throughout the construction industry. There is certainly a trend in increasing post-event, industry awareness raising activities. Greg agreed with the other speakers, that the trend seemed to be towards sharing more. He suggested that this might be a result of changing demographics within the industry. Peter described how there was a tendency to focus on the large events, but there Is also a substantial amount of learning that can be achieved from smaller events and near-misses that are do not pose such a legal or commercial challenge, as well as good practice. Greg described a 'close-call' system developing within the rail industry for reporting events that may be a level below near-misses, while Kevin suggested there were further opportunities to proactively share and learn from best-practice. Paul Thomas stressed the importance of also demonstrating to those within an organisation that good practice and reporting is really valued.

A further question from the audience asked whether there was a potential problem arising from too much data. Individuals may not have time to read and address all of the alerts or briefs that are being shared. What can be done to help in this area? Peter Davidson agreed that this could be a challenge, adding that there are luckily very few high-level events from which specific learning can be extracted. However, there are a large number of smaller events and near-misses that can provide valuable learning opportunities. Asking members to collect this information in the same way allows for a database to be established which can aggregate this and highlight the trends over a period of

time, for example the repeated causes of small fires. These trends and patterns in the data can be used to drive the guidance rather than the individual data points. Greg Morse gave the rail perspective on this question. As it is mandatory to input data relating to events on the Safety Management Information System there is a huge amount of data available. Analysts look at this data in as many different ways as they can in order to identify the patterns, trends and lessons. There is a risk of over-reporting, but on balance there is a lot of very useful data. One potential issue arises from the tendency to talk about this data in a mathematical way. Many people, whether on the front line or on the management board, do not engage with this sort of language. There is no point having all this information if the decision makers and people who need to know about it don't understand it. Hence for some there is value in stories which engage people, and talking in simple language that as many people as possible can understand. Getting the balance right is very important.

One contribution from the audience related to the development of a system recovery approach. This approach advocates an analysis of the process and an estimation of what could go wrong (looking beyond past events) in order to identify what would need to be in place to put the system back to normal. The management process and costs needed to achieve this can then be estimated and put into place if necessary. It was asked to what extent had such an approach been adopted? Peter described how such a process was in place, though not referred to in quite the same terms. He added to this a warning in putting too much faith in risk assessment, which is only one approach within the safety management process.

The final comment from the audience raised the challenge of communicating the lessons from events to decision makers who may have a commercial rather than technical background. How the information is presented is very important. There can also be a degree of complacency amongst smaller companies which have a good safety record. It is necessary to make the potential impacts and benefits of reporting, sharing and learning from events, near misses and best practice tangible.

The evening's chair drew the proceedings to a close by thanking the speakers on behalf of the Hazards Forum and audience for their informative talks, before inviting all those present to continue discussions over refreshments.

# Parliamentary and Scientific Committee

The latest issues of "Science in Parliament", the journal of the Parliamentary and Scientific Committee of which the Hazards Forum is a member, has among its contents the following articles. Any member who would like any further information on any of the articles below should visit the PSC website www.ScienceInParliament.org.uk

| | |
|---|---|
| 50 YEARS OF MATHEMATICS AND ITS APPLICATIONS | Rebecca Waters |
| THE SCIENCE OF MAKING COLOUR | |
| L'OREAL-UNESCO 2014 FOR WOMEN IN SCIENCE FELLOWSHIPS | |
| 3D PRINTNG – A REVOLUTION IN THE MAIKING | |
| CELEBRATING 100 YEARS OF PLANT HEALTH AND AGRI-FOOD SOLUTIONS | Dr Philip Newton |
| FARMING NEEDS SCIENCE | Meurig Raymond |
| PRECISION FARMING AND ANIMAL WELFARE | Professor Marian Stamp Dawkins |
| A TASTE OF THINGS TO COME? | Professor Dame Julia Slingo |
| CARBON CAPTURE AND STORAGE | Nic Bilhamr |
| HYDRAULIC FRACTURING | Addresses to the P&SC by Richard Davies and Huw Clarke |
| STRENGTHENING LINKS WITH JAPAN ON EDUCATION AND RESEARCH | |
| VALUING AND REALISING OUR NATURAL CAPITAL ASSETS-TELLUS | |

# Calendar of Events

Please check the Events section of the Hazards Forum website for more information at **www.hazardsforum.org.uk** and to see any updates in the calendar. These may include additional events or perhaps amendments to the Events shown below.
Please note that attendance is by invitation.

| Date | Event | Venue | Contact/further information |
|---|---|---|---|
| September | | | |
| 16th | IChemE Event: Layer of Protection Analysis (LOPA) | Staff House Conference Centre, The University of Manchester, Sackville Street Campus, Manchester, M1 3AL | courses@icheme.org |
| 17th | IET Event: Railway Condition Monitoring | University of Birmingham, Birmingham, West Midlands, B15 2TT | http://conferences.theiet.org/rcm/index.cfm |
| 17th | ICE Event: Risk Analysis and Management for Projects | Institution of Civil Engineers, One Great George Street, Westminster, London SW1P 3AA | events@ice.org.uk |
| 23rd | Hf Event: Managing Risk in a Connected World – Time for the Next Generation | Institution of Mechanical Engineers, One Birdcage Walk, Westminster, London, SW1H 9JJ | admin@hazardsforum.org.uk |
| 25th | IET Event: Britain's Rail Future – User Focused, Engineering Led & Technology Driven | The Royal Institution of Great Britain, 21 Albermarle Street, Mayfair, London, W1S 4BS | http://conferences.theiet.org/henry-royce/ |
| October | | | |
| 2nd | SaRS Event, Hf Supported: SaRS2014 Annual Conference: Don't Panic! No cause for alarm… | The Marcliffe Hotel & Spa, North Deeside Road, Pitfodels, Aberdeen, AB15 9YA | info@sars.org.uk |
| 27th | IChemE Event: Fundamentals of Process Safety | Staff House Conference Centre, The University of Manchester, Sackville Street Campus, Manchester, M1 3AL | courses@icheme.org |
| November | | | |
| 25th | HF Event: Health Care – Addressing Risks and the Surrounding Issue (Provisional Title) | Institution of Chemical Engineers, One Portland Place, London, W1B 1PN | info@hazardsforum.org.uk |

The Hazards Forum's Mission is to contribute to government, industry, science, universities, NGOs and Individuals to find practical ways of approaching and resolving hazard and risk issues, in the interests of mutual understanding, public confidence and safety.

The forum was established in 1989 by four of the principal engineering institutions because of concern about the major disasters which had occurred about that time.

The Hazards Forum holds regular events on a wide range of subjects relating to hazards and safety, produces publications on such topics, and provides opportunities for interdisciplinary contacts and discussions.

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