

Although blessed with one of the best industrial health and safety records on the planet, statistics reveal that the UK cannot afford to become complacent. Brian Tinha examines problems with people, and hazardous plant and equipment – and some of the solutions

Figures published by HSE (the Health and Safety Executive) last month show that the number of workers fatally injured in Britain in 2011 remained largely unchanged against the previous year – with 173 killed (down two) and a flat per-capita rate of 0.6 per 100,000. Reactions to the announcement were predictably mixed.

“Britain continues to have one of the lowest levels of workplace fatal injuries in Europe, part of a long-term downward trend,” said HSE chair Judith Hackitt. “But we must not forget that these are lives cut short, not statistics.” Meanwhile, Neal Stone, director of policy and communications at the British Safety Council, commented: “The fatal injuries that occurred in 2011–12 are a tragedy and a stark

reminder that the health and safety regulatory framework is a fundamental protection.” And St John Ambulance commercial director Richard Evens worried that the “lack of improvement comes despite a strong focus on health and safety over the last five years”.

Concern, yes; exhortations to do better undoubtedly. But what about outrage and action? Dr Julian Hought expresses little surprise at the measured tones. Now managing director of HFL Risk Services, he has many years’ experience managing engineering and regulatory compliance on high-hazard sites. “When there’s an incident on a process plant, it’s big and a lot of people either get hurt or experience near misses. Either way, it’s

Accidents waiting



Professor Sayeed Khan, chief medical adviser to the EEF: primary problems are skin diseases, lung problems, cancers, musculoskeletal injuries and stress

Occupational health

When it comes to workplace-induced illnesses, as opposed to accidents, the primary problem groups remain skin diseases, lung problems, cancers, musculoskeletal injuries and stress – as well as hand-arm vibration and noise-induced hearing loss (page 12).

Taking them in order, Professor Sayeed Khan, the EEF’s chief medical adviser (pictured), believes that occupational dermatitis is common – and probably more than many realise, irrespective of the workplace. “People are exposed to all sorts of skin irritants, so health surveillance is important – particularly if safety data sheets indicate a potential for problems – to pick up conditions early,” he suggests.

Khan makes the point that this is not just about allergies, but also low-grade irritant reactions. “Society’s view that ‘a bit of rough skin doesn’t matter’ is misplaced, because chronically damaged skin leads to other problems, such as cross reactions. And the fact is that poorly functioning skin doesn’t work as well as a barrier to infections.” For him, beyond a solid skin surveillance programme, this is about helping people, and especially men, to understand the importance of barrier and moisturising creams, as well as appropriate PPE.

Moving on to lung conditions, Khan believes that occupational asthma is being under-diagnosed. That matters, because, untreated, the condition can worsen and become “irreversible, with life-long consequences”. His view: where there are likely to be respiratory sensitisers, surveillance is again essential, with persistent coughs and wheezing reported and annual spirometry offered, where appropriate. And much the same goes for other occupationally derived lung diseases, such as alveolitis (inflammation of the alveoli in the lungs).

All such conditions are manageable, providing sensible precautions and formalised reporting are in place – and the same goes for cancers, which Khan sees as a growing risk. “Everyone knows

about asbestosis and a lot of people know that exposure to nickel can result in allergies – but relatively few know it can also lead to lung cancer. The fact is there are a lot of chemicals with high attributable fractions for lung cancer and we now believe there is more than twice the incidence of occupational cancers than was originally thought. The numbers may be low, but they are all preventable.”

And occupational cancers that attract compensation from the DWP (Department of Work and Pensions) industrial injuries and disabilities benefit scheme (www.hse.gov.uk/statistics/causdis/cancer) might surprise you. Included on that list are: leukaemia (other than chronic lymphatic leukaemia) or cancer of the bone, breast, testis and thyroid, due to electromagnetic radiation; skin cancer from exposure to tar, pitch, bitumen, mineral oils and soot; and lung cancer, due to nickel, exposure to chloromethyl ether, zinc, calcium or strontium chromates.

As for musculoskeletal disorders, Khan points out that we’re all getting older, and skilled workers are working longer. “I’m seeing more people in my clinic with shoulder, neck and knee problems that are to do with degenerative changes related to age, but exacerbated because they are still trying to work,” he reveals. As for what can be done, Khan recommends simple remedies, where possible, such as bigger handles and grips for those with arthritis, but also flexible working.

And finally stress: “Not all stress is work related,” concedes Khan, “but issues at work may be the final straw that pushes someone over the edge. So although managing directors might get very irritated by the mention of stress, if they can do something about it they could prevent it from happening.” He worries about the recent hike in long-term sickness absence – probably linked to the recessionary situation – but points to the HSE’s stress management standard and its associated guidance ‘INDG430: How to tackle work-related stress’.

seriously life changing. But when it comes to factory accidents, mostly one person gets injured and society seems almost to find that acceptable.”

Indeed. But don't be fooled: numbers of non-fatal, but serious workplace injuries, remain high, with 118,000 reported by employers last year (as well as 200,000 over-three-day incidents) – by far the majority caused by nothing more sinister than slips and trips, manual handling and falls from height. Meanwhile, the figures for occupational health problems (see panel) – ranging from musculoskeletal disorders to a range of diseases – are also in the hundreds of thousands per annum. And consider the numbers of incidents involving electrical hazards – not just shocks, but also fires, including many caused by Pat (portable appliance testing).

The bottom line: we all think we know what we're supposed to do, in terms of risk assessments and mitigation but, collectively, the numbers tell a different story. Which is why it's worth reviewing practical

Charles Milligan

to happen ?

points. Taking it from the top, workplace operations and methodologies are key, and Bob Wallace, senior audit consultant and health and safety adviser with the British Safety Council, has some penetrating observations.

Best practical practice

First up for him is the issue of managing contractors on site. Citing the Management of Health and Safety at Work Regulations 1999, he points out that duty of care and risk mitigation should be a two-way street. “The host employer must communicate hazards and risks before, and again when, contractors arrive – everything from providing clear boundaries about where they can and can't operate, to emergency procedures. But, equally, contractors must communicate hazards and risks that they're bringing onto the site,” explains Wallace.

This matters, and he worries that, while larger organisations are generally well versed in both legal requirements and best practice, when it comes to smaller contractors and employers the picture is less rosy. He gives the example of a contractor hired to install new machinery likely to involve some plant disruption – meaning implications, in terms of asbestos at one extreme, but chemical lines and electrical equipment at the other.

“Contractors bringing in heavy lifting plant, for instance, must have equipment that has been inspected according to the regulations and have checked that any electrical equipment is fit for purpose – as well as ensuring that their personnel

are trained and competent,” states Wallace. “But, also, the employer has a responsibility to confirm that contractors are competent and they should obtain verification.” And that includes checking risk assessments are valid and understood, so that, for example, ground areas being traversed or used as a base are strong and stable, overhead electrical systems are not compromised and traffic does not stray into the area of operations.

“Also, check that communications are effective, especially if operatives don't have line of sight,” warns Wallace. “Are loads being slung properly by competent people?” And so on. Which brings us to his second point: don't let the current economic climate negatively impact health and safety. “The problem is that most companies have cut back on manpower, yet they need their new investments in and working quickly to start getting payback,” he explains. “That means the pressure is on everyone to work fast, so managing behavioural safety becomes even more important.”

Wallace suggests meetings beforehand and regularly during the project, including unannounced visits to ensure that everyone is working to method statements agreed between client and contractor, and not cutting corners. And he makes the point that both non-conformities and correct procedures, as well as actions arising, should be documented.

Foresight or hindsight? Make sure you're on the right side of that equation





Above: Bob Wallace

Below: Stuart King



"You can't be there all the time, but, if you can demonstrate due diligence and reasonably practicable processes, you have some defence, if things go wrong. If people are attempting to rush the job, they are putting themselves and others at risk of injury or death, and they could cause damage to plant and equipment that might stall a project for days, weeks or even months. So it makes business sense to get jobs done properly."

Wallace's third point concerns machinery and plant isolation – high on the HSE's serious incidents list. "I was with a large organisation yesterday, with a group of engineers working on a pressurised system. The host employer claimed they had locked out the steam pressure lines and electrical connections. But they hadn't ensured that the contractors also held keys and padlocks. So equipment could have been accidentally re-energised." Plant managers must make sure that everyone has their own padlocks connected to isolation points for all energy sources – steam, electrical, pneumatic or hydraulic – including if employing key box systems.

His list is long, but no piece on health and safety is complete without due consideration of working at height – and Wallace is convinced that problems arise from individuals simply not recognising the risks. "They're blasé about height. They think that, if they're on a scaffold, tower or MEWP [mobile elevated work platform], it's all fine, but it's not. Was the scaffold put up by competent people? When erecting the scaffold, were they wearing harnesses? And were they clipping them on? People putting up mobile towers should ideally be PASMA certified and scaffold erectors should be accredited. Where MEWPs are involved, they should have IPAF [International Powered Access Federation] cards.

Removed guarding crushes hand – company prosecuted

Stockport engineering firm Hayles Pressings was recently prosecuted after one of its employees lost four fingers when they were crushed in machinery. The 62-year-old, from Whaley Bridge, had been using a power press to cut electrical components from a thin strip of steel when his hand became caught between the unguarded cutting tools.

An investigation by the HSE found the machine guards had been disconnected and tied back, several days before the incident, to allow easy access. As a result, operators could put their hands under the tools to remove components, without the power being isolated. The court was told the most likely explanation for the worker's injuries is that he accidentally leant on the foot pedal that operated the press.

Hayles Pressings pleaded guilty to three breaches of the Provision and Use of Work Equipment Regulations 1998 by not providing adequate training to employees, not checking guards were in place and not preventing access to dangerous parts of the machine. "If [the company] had allowed the machine to be used as it had been designed, with the guards in place, then the worker's injuries could have been avoided," said HSE inspector Jayn Johnson. "Instead, he has lost all four fingers on his left hand."

The Hayles Pressings employee was one of 3,806 workers in manufacturing to suffer a major injury while at work in the UK during 2010–11. Another 27 workers lost their lives.

"People take chances all the time. For example, they'll climb on handrails to get extra height, because they brought the wrong equipment. And, if they use harnesses at all, they use the wrong type. If they're working close to edges, they should be wearing a fall-restraint lanyard to prevent them from going beyond the limit, or, if there is a potential to fall, they will need a full arrest harness and lanyard. It's designed to break a fall and minimise whiplash."

And what about emergency procedures to rescue people, if things go wrong? "Even if you're just on an MEWP, you cannot rely on the emergency services. My view: if you find people not working safely, and you suspect they will carry on ignoring your procedures, you should remove them from site."

Human behaviour

So far, so good, but time and again problems come down to people and behaviour – and, on a process plant in particular, problems can lead to major incidents. That's why the Energy Institute is running a growing human factors scheme that most recently has been focusing on so-called crew resource management (CRM), which comes out of the airline industry. Stuart King, the institute's hearts and minds programme officer (the people-centred safety culture scheme currently seeing growing uptake), explains that it's all about preventing major incidents by improving behaviour through non-technical skills, including leadership, communication, team working, risk assessments and hazard awareness.

Sounds woolly? Not really: health and safety professionals see CRM type training as one of the keys to preventing or mitigating major incidents – building on the technical and procedural guidance built up over the last 50 years. "We believe it could be a very important tool to help prevent major incidents, not just offshore, but elsewhere in the energy sector and arguably in other major hazard industries," states King.

Major incident avoidance

"In the shipping sector, CRM training will likely be used to meet amendments to training certification being phased in over the next few years, and HSE suggested adoption of CRM training in the offshore energy sector back in 2003," he adds. "Indeed, a number of bodies [such as OLF, the Norwegian Oil Industry Association] are beginning to suggest that some of the lessons learnt from the 2010 Macondo [Deep Water Horizon] incident provide a good case for CRM-type training, particularly as it is good at addressing issues relating to situational awareness and emergency response."

Professor Sayeed Khan, chief medical adviser to the EEF, agrees that behaviour is key: "There is a mature system for preventing injuries in this country, so the issues we're facing today are much more to do with employee behaviour than anything else," he

confirms. "Someone falls off a platform, for example, and fractures their skull, but it's likely the job wasn't set up correctly. And it's the same with potentially dangerous machinery: guards and interlocks are mostly in place, but, for whatever reason, some workers override them."

Khan is not convinced about further functional training, unless the work is particularly complex. He contends that problems relate mostly to workers cutting corners, processes not as ergonomically designed as they might be and, beyond that, failures of communication, understanding and context. "Either way, it's the human factors that matter. People don't go to work one day to injure themselves. It's the processes and environment that make them behave as they do, so we need to be more aware of human factors."

That being the case, the Energy Institute's release of guidance next year – with an introduction to CRM, its history, claimed benefits and scope – will be welcomed across industry. King expects the publication to include everything from methodologies to the training and competencies likely to be needed. And it will provide information on how organisations might integrate CRM into their

Machine guards and the law

Laidler, now part of TUV SUD Product Service, reminds plant engineers and managers that there have been significant developments with the Machinery Directive. It warns that, as a result, many individuals and companies are breaking health and safety laws, certainly where machine guards are concerned.

The new Machinery Safety Directive, 2006/42/EC, which came into force at the end of 2009, introduced a range of new requirements for guards, not the least of which is that they must carry CE marking, it explains. That, in turn, requires compliance with all applicable EU standards.

Those include: EN 953, Safety of Machinery – Guards – General Requirements; EN ISO13857 – Safety of Machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs; and EN 349 – Safety of Machinery – Minimum gaps to avoid crushing of parts of the human body.

existing safety management systems. In the meantime, the institute has also recently issued free e-learning training to increase awareness of human factors in health and safety.

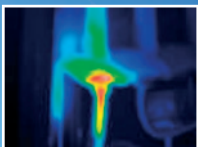
The interactive course mirrors key topics identified by the HSE, with modules covering: an introduction to the topic; problems and issues; causal factors; possible solutions; and real case studies where applying human factors has been beneficial. **FE**

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