



*Hazards forum*



# The Hazards Forum Newsletter

Issue No. 64  
Autumn 2009

Web version

# Hazards Forum Newsletter

## Issue No. 64 - Autumn 2009

### Contents

- 2 Dr John Bond
- 3 New members of the Executive Committee
- 4 How Ergonomics Improves Patient Safety
- 8 Sixty Years of the Ergonomics Society
- 10 Welcome to the Hazards Forum Portal
- 11 HSE eNews – some examples
- 11 From the Secretary
- 12 Solution to Crossword number 4
- 12 Calendar of Events

***Edited by Dr Ian Lawrenson OBE***

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

Further information regarding the articles in this issue is available from  
*Adam Kirkup* on 020 7665 2230, in the Hazards Forum Secretariat Office

e-mail: [admin@hazardsforum.org.uk](mailto:admin@hazardsforum.org.uk)

Hazards Forum website: [www.hazardsforum.org.uk](http://www.hazardsforum.org.uk)

*Hazards Forum Secretary: Brian Neale*

*September 2009*

## Dr John Bond

John Bond's colleagues on the Hazards Forum, and his contacts in the wider safety field, were extremely saddened to learn of his death on Saturday 13<sup>th</sup> June following a short illness.

John's contribution to process safety was considerable and was sustained over many decades. John spent his career with BP and was one of the first people to realize that the biggest single cause of accidents in the chemical industry was ignorance of past experience. He worked hard to spread such information and, equally importantly, to suggest better procedures for recording and retrieving the lessons of the past.

John made a major contribution to the chemical engineering profession. His work to create an Accident Database established a valuable resource on process safety which is now being made available to students on University Chemical Engineering courses - ensuring that tomorrow's engineers can learn from the past. He was a member of the Institution of Chemical Engineer's Safety and Loss Prevention Subject Group and Loss Prevention Panel. He organized numerous seminars and regularly attended those organized by others. In 1996 John was awarded the Institution's Ned Franklin Medal for 'outstanding service in the fields of occupational health, safety, loss prevention and care for the environment'.

John also prepared and presented many papers on process safety and was respected by colleagues across Europe. Of particular note was the paper he presented at the International Symposium on Safety & Loss Prevention in the Process Industries in Edinburgh in 2007 on the topic of a 'Just Culture'. This paper questioned some traditional ways of thinking and following review by colleagues was given the distinction of being a 'Keynote Paper'.

John was always prepared to look and learn from the experience of others, including other industries. For example he had a particular interest in bringing some of the practices within the airline industry into the process industries. It was this cross industry interest that led John to become an individual member of the Hazards Forum. He was a regular attendee and contributor to Hazards Forum meetings and latterly was appointed as newsletter editor.

There can be no doubt that John's work has made an important contribution to safety in the process industry, not only in the UK but worldwide and that it will have prevented many accidents and the associated pain and suffering.

All of the above achievements are a worthy testament to John's contribution. However of equal, or perhaps greater, importance is the regard in which John was held by his many colleagues across both the UK and Europe. He received many tributes of which the following are but a small sample:

*In each sphere of our society there stands a giant of a man who makes an impact on those surrounding him and John was such a person. His presence among us will be sorely missed.*

*It was with sadness to hear of John's passing away. I shall remember him for his kindness and willingness to give so freely of his time, and also for the tireless enthusiasm with which he approached process safety, and specifically his recognition of the need to promote 'learning from accidents'. Our industry has lost a strong voice and the world a true gentleman.*

*John was one of those people who never gave up whatever happens. He is an inspiration to us all to keep plugging away at the seemingly impossible stuff until we get to where we want to be. John was a larger than life character who will never be forgotten by those of us who had the privilege to meet and work with him.*

John was devoted to his wife, Pat, and very proud of his two sons Stuart and Robert and of his grandchildren who were often referred to by John. All members of the groups that John worked with will have fond memories of John and will sorely miss him.

**Mike Considine and Robin Turney**

## **New Members of the Executive Committee**

The Executive Committee is pleased to announce two new members of the Committee. They are Patrick McDonald and Rear Admiral (retd) Paul Thomas CB who have both agreed to join as co-opted members and are welcomed. As a brief introduction to each:

### **Patrick McDonald**

After taking a degree in chemistry I undertook research in sodium chemistry as part of the United Kingdom's fast breeder reactor programme. During this time I became a Member of the Royal Society of Chemistry and a Chartered Chemist. Following that I was appointed as a forensic scientist, first with the Metropolitan Police and then with the Laboratory of the Government Chemist, specialising in drugs of abuse.

In 1987 I joined the Department of Trade and Industry, initially as a technology specialist and have worked with a number of sectors ranging from footwear and furniture manufacture to advanced computer and communications applications. In 2002 I was appointed Director of Key Business Technologies in DTI where I was responsible for policy on applied research and technology transfer. In 2004 I was appointed Technology Director for DTI with policy and operational responsibility for industrial R&D, sustainable development, corporate social responsibility, the UK national measurement system and standards and technical regulations. I was also Executive Director of Knowledge Transfer and Innovation managing an annual budget of £325m.

I was appointed as Chief Scientist of the Health and Safety Executive in September 2006. As Chief Scientific Advisor I have responsibility for ensuring that the provision of science to HSE is fit for purpose and of good quality. I manage the research budget (some £40m pa - £30m of which is spent at our agency, the Health and Safety Laboratory). I provide analytical services to HSE (economic, social, statistical and epidemiological sciences). I am part of the wider network of Government CSAs.

I am a Chartered Engineer and a Fellow of the Royal Society of Chemistry, the Institution of Chemical Engineering and of the Royal Society of Arts, Commerce and Manufacture.

### **Rear Admiral (retd) Paul Thomas CB**

After education at Haileybury, I joined the Royal Navy in 1963. Following initial training at Britannia Royal Naval College, Dartmouth and in HM Ships TORQUAY, LONDONDERRY, ALBION and ARK ROYAL I joined the Royal Naval Engineering College in 1965. Gaining a degree in Mechanical Engineering, and subsequently an MSc in Nuclear Science and Technology, I went on to submarine training at HMS DOLPHIN and at sea in HMS OCELOT. Submarine appointments followed in HM Submarines ORACLE, RENOWN and REVENGE. Shore appointments included Assistant Director Reactor Safety, Superintendent VULCAN Naval Reactor Test Establishment Dounreay, Chairman Naval Nuclear Technical Safety Panel, Director Nuclear Propulsion, Captain Royal Naval Engineering College and Chief Strategic Systems Executive.

I retired from the Royal Navy in 1998 joining AEA Technology, Nuclear Engineering where I held the positions of Director Engineering Projects and Director Strategic Development. I moved to British Nuclear Fuels plc in 2001 as Group Director Environment, Health, Safety and Quality retiring at the end of 2008.

In 2005 I joined the Board of RSSB Ltd as a non-executive Director being appointed Chairman in 2008. I am the first President of the newly formed Nuclear Institute, a Trustee of the Engineering Development Trust (EDT) and I chair the Defence Nuclear Safety Committee.

I was awarded the Queen's Commendation for Brave Conduct in 1980 and the US Legion of Merit in 1998. I was appointed a Companion of the Order of the Bath (CB) in 1998. My interests include cycling, ballooning, walking and 'anything mechanical'.

## HOW ERGONOMICS IMPROVES PATIENT SAFETY

A diverse audience from across the high hazard industries attended **an evening event** jointly hosted by Hazards Forum and the Ergonomics Society, at the Institution of Civil Engineers in London on **Tuesday 16<sup>th</sup> June 2009**. The two speakers discussed 'How Ergonomics Improves Patient Safety' – and it provided a salutary lesson in reasons to stay healthy. **Sir David Davies, Chairman of the Hazards Forum** welcomed everyone and on behalf of the organisers thanked the two sponsors, the Institution of Occupational Safety and Health and the Institution of Civil Engineers, for their support for this event. He then introduced **Reg Sell** as the **chair for the evening**, who is a past President of the Ergonomics Society and a regular attendee at Hazards Forum events.

According to **Professor Peter Buckle**, from the **Robens Centre for Public Health, University of Surrey**, the first of the evening's two speakers it would appear that if you wanted to design a system to maximise the likelihood of significant human error, you could do a lot worse than simply copying the current methods for communicating information on medication. Similarly, according to the second speaker, **Dr Sue Hignett** of the **Healthcare Ergonomics and Patient Safety Unit, Loughborough University**, hospitals can be surprisingly dangerous places for the very people they are intended to provide care for.

Both presentations addressed a common theme – the importance of Ergonomics and human-centred design to improve patient safety (and also to enhance staff safety and well-being). The presentations showed both how systems could be improved, and also how much ergonomics has already achieved, either directly or by influencing approaches.

One of the challenges in any complex system is the need to address the issue of human error. This is of particular relevance to healthcare, given the extent to which people interact with and are a part of the system. In his introduction to the session, the chairman, **Reg Sell**, noted that all too often ergonomics (i.e. the designing of equipment, situations etc to take account of human limitations, capacities and needs) is given very little attention. Whilst it may not be possible to produce an error-free system, what we require is an error-tolerant system – one that recognises the nature of predictable human errors, minimises their opportunities, and provides 'painless' means of accommodating them or recovering from them.

**Peter Buckle** provided a wealth of examples drawn from medication errors to highlight a range of ways in which human error can be defended against.

- Potential for confusion in drug packaging



In doing so he showed many aspects of medication packaging, labelling and guiding which seem as if they were deliberately designed to maximise the likelihood of error – similar but non-meaningful names, similar packaging for very different products or dosages (such as one patient being confronted by very similar packaging for medicines, with one being relatively benign and to be taken three times a day whilst the other being a very potent drug that must be taken only

once per week), unreadable or easily lost instructions, and a failure to take into account the predictable difficulties that would be experienced by a patient who has been prescribed the medication (instructions in a tiny font for eye-care medication was but one example).

### Labelling

- Potential for confusion in 'look alike' medication.. In this example two drugs often prescribed together, one (Methotrexate) to be taken weekly the other (Folic Acid) to be taken daily.



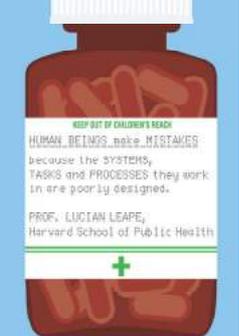
Methotrexate



Folic Acid



Peter repeatedly emphasised the challenges for ergonomics – the importance of a systems approach to design, the complexity of healthcare as a system, the lack of an effective feedback loop to improve design and a flawed product design process.




However, having painted a somewhat dispiriting picture, he also emphasised the very significant contributions that ergonomics thinking has already made, the tools that are available, and the work that is underway. But he did not minimise either the challenges to be overcome or the importance of so doing. The benefits of even minor improvements would be dramatic, given the magnitude of the healthcare system just within the UK.

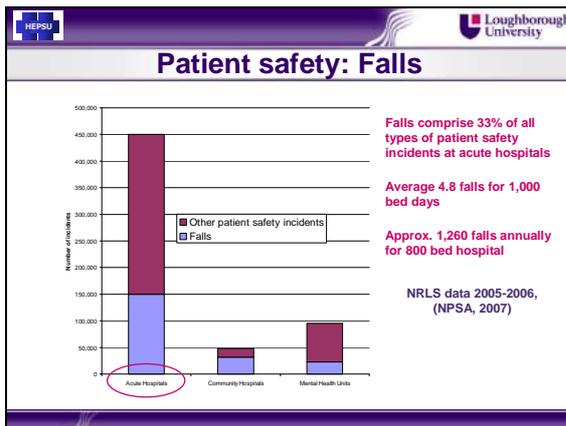


**Sue Hignett**, by selecting aspects of hospital design to illustrate similar themes, focused on how good design of equipment, facilities and environments can reduce the likelihood of error, accident and injury. She showed that these benefits could be realised without excessive cost or difficulty. However, to do so does require careful analysis of the system together with a proper understanding of the characteristics of the users.

**Background**

- Principles and concepts behind healthcare building design have changed over the last 50 years
- Focus of healthcare building has gone from:
  - Design for designers (1960s) ....
  - To design for healthcare planners ....
  - Finally design for service delivery (2000s)

She described how different types of patients (elderly, infirm, etc) present different challenges for ergonomics, but indicated how ergonomics has the tools and techniques properly to understand the user requirements (and users include both patients and staff – two very distinct groups who often appear to have somewhat conflicting requirements).



Sue provided many examples drawn from the physical design of hospital spaces and facilities. Even something as simple as bed design, or making access to bathrooms simple for elderly or infirm patients was shown to be capable of benefiting from a proper ergonomics approach. She also noted that there appears to be far less consensus on what is good design than might be expected.

The many examples illustrated the difficulties faced by frail or elderly patients, particularly those with limited mobility suddenly finding themselves outside their familiar surroundings.

**Falls: through the patients' eyes?**

**Maslow's Hierarchy**

**Level 1: Physiological**  
Getting out of bed  
Homeostasis (including bladder and bowel function), hunger, thirst, oxygen, temperature regulation, sleep, sensory pleasures, activity

**Level 2: Safety**  
The bed space  
Safety and security, freedom from pain and the threat of physical attack, protection from danger or deprivation, need for predictability and orderliness

**Level 3: Love (Social needs)**  
Socialising  
Affection, sense of belonging, social activities, friendships, giving and receiving of love

**Level 4: Esteem (Ego needs)**  
Self-respect and esteem of others, desire for confidence, strength, independence and freedom, achievement, status, recognition, attention and appreciation

**Level 5: Self-actualisation**  
Development and realisation of one's full potential. May not necessarily be creative urge, may take many forms which vary widely from one individual to another

She noted the importance of considering their motivations and expectations, issues concerning the use of bed rails and how they can aggravate a situation, and the importance of understanding how elderly people 'furniture walk' – using objects in the environment to steady themselves as they move.

**Slips, trips & falls interventions for patients**

- Identifying 'at risk' patients
  - Assessment tools
- Supervision
  - Hourly scripted rounding
  - Dispersed nursing stations
  - Cameras
  - Patient sitters
- Labelling
  - Patient: arm bands, socks
  - Room: signs in/outside
- Communication
  - Staff: signs
  - Patient and family: education/signs

Many examples of 'unintended consequences' were provided, such as the impact of reduced personal monitoring of patients, and then showed how these could be overcome with a proper systems approach to design.

The overarching theme was similar to Peter Buckle's – that providing good design need be no more costly or difficult, but that it does require a systems approach with effective ergonomics being incorporated from the outset.

**A wide-ranging discussion** was inevitably prompted, particularly as the two presentations together provided a salutary message, which was that whereas ergonomics may be very well established

within many high-hazard industries, such as nuclear power or rail, there remain other sectors where the contribution from people to system performance is less well understood and 'serviced' and hence where ergonomics can and should be making a very real difference. At the same time, the presentations highlighted the uphill struggle that still faces ergonomics if it is to deliver the potential benefits that are on offer. Indeed, although both speakers emphasised the broad extent of excellent work that is being done, ranging from design of facilities to the 'import' of risk assessment methods currently used in other industries, they laid down the gauntlet for ergonomics to increase its involvement in healthcare.

Sue noted that the differing needs of patients can be accommodated, but that it requires a design process that is capable of recognising those differences – and that sometimes 'lateral thinking' is needed. Peter responded to the issue of balancing risks to staff and patients (such as the benefits of a low bed for the patient, but its adverse impact on nursing staff) by reminding the audience that flexible equipment (such as electrically adjustable beds) can be provided. What is important, again, is a design process that can make explicit the different risks and also identify how they can be managed. Both speakers reminded the audience that there are solutions to many of the problems that were being raised, but that there needs to be a commitment to accommodating the solutions.

The atypical nature of the product cycle was discussed. There is a disconnection between the manufacturers, the users (the patients) and the buyers which means that conventional pressures to improve design are not always present. Most pharmaceuticals do not receive user-testing in the conventional 'consumer' sense. Many design solutions are not in the gift of a single manufacturer and hence the NHS needs to be a better surrogate for the consumer.

Ergonomics is a scientific discipline that can offer real solutions within the healthcare context – but the 'buyer' must recognise the value of those solutions. It therefore needs sustained effort both by the ergonomics community, and the broader risk management community in order that good practice is taken up.

**Chris Elliott, the Deputy Chairman of Hazards Forum**, in his concluding remarks, issued something of a challenge both to healthcare and to ergonomics. If we don't want to try to change the patient to make them 'fit' the healthcare system, then we need to be better at defining the user requirements before the design process progresses. Whilst this is axiomatic for ergonomics, the message needs to be better understood within healthcare. Currently, too many people are forced to accommodate an inadequate system – medication packaging that you can't open, drugs that can be confused, hospital beds that contribute to injury, and wards that present unnecessary obstacles. Improvements to these shortcomings would provide a win-win situation.

The title of the session was "How Ergonomics improves patient safety". Peter Buckle and Sue Hignett showed that this can be the case, that it should be the case, but that it isn't always achieved. It is for the ergonomics and risk management communities to make sure it happens.

**The chairman for the evening** thanked the speakers for their contributions and also those who contributed to the discussion session. He also thanked the co-sponsors and invited attendees to network and continue discussions over the light refreshments which followed.

Contact details:

Peter Buckle [p.buckle@surrey.ac.uk](mailto:p.buckle@surrey.ac.uk)  
Sue Hignett [s.m.hignett@lboro.ac.uk](mailto:s.m.hignett@lboro.ac.uk)

**Rapporteur:** Jonathan Berman

# Sixty years of The Ergonomics Society

## Reg Sell

### A Past President of the Society

**The Ergonomics Society was set up in 1949** and is celebrating its 60<sup>th</sup> anniversary with an exhibition on “Ergonomics: real design” at The Design Museum from 18 November 2009 to 14 March 2010. (*See notice in diary*) A lot has been achieved in that time but those in the profession feel that there are areas where it still has not had the attention that it deserves.

Ergonomics is concerned with fitting jobs, equipment and environments to people, taking account of their limitations, making good use of their capacities and meeting their needs. It aims to produce benefits for the individual, the organisation they are employed by and clients of the organisation or system. It has been described as “*the science of everyday life*”.

Its major benefits are to reduce the risk of human error and ill health by designing them out from the start. Logically, this seems the way to do things. However, all too often, this is the last approach to be considered. Where there is perceived to be a “people problem”, blame is attributed to the poor unfortunate on the spot and attention paid to selection, training, new operating rules and discipline procedures before thinking of how design might improve the situation. Even at many Hazards Forum meetings the subject has not had the consideration it requires.

There are many areas **where ergonomics is important:**

- Where a small number of qualified people have important jobs to carry out and where any error is likely to lead to loss of life or major disruptions, such as railway signallers, air traffic controllers, or nuclear power station operators.
- Similar control situations where many people carry out similar jobs

and where the consequence of error can be serious, such as aircraft pilots, car drivers, or train drivers.

- Where large numbers of people are employed and bad job design can lead to physical illness, as with many manual handling jobs. Also, though less recognised, is where bad job design such as role conflict can lead to job related stress.
- Those no-learning situations where you, for instance, have to find your way around an unfamiliar situation such as a strange airport and have to rely on symbols and signage. Or, to distinguish between all too similar signs for the ladies and the gents toilets.
- The design of domestic equipment, where controls can be designed in ways which go against normal expectations. Modern gas cookers are an example in that a clockwise operation both increases and decreases flow.

**Ergonomics is an interdisciplinary science** involving the application of psychological, physiological and other human and social sciences to design

Whilst we in the discipline complain about the general lack of understanding of ergonomics, its importance has been recognised over many years in a number of ways. During the First World War the Industrial Health Research Board established that excessive working hours were self defeating in that they reduced output due to fatigue, and during World War II it was found that many aircraft accidents were due to pilots being confused between the controls for the

undercarriage and the flaps resulting in many crashes.

One area where ergonomics has become well established and recognised is where biomechanics has been applied to manual handling jobs. The HSE and The European Commission have been influential here; similarly, with the biomechanics of computer work stations.

One problem we have is that ergonomics often does not become recognised until there has been a disaster. If everything works well and the people aspects are considered in the design of a system, then credit is all too often not given. Almost all developments in the subject have been due to someone, after an incident, seeing that either there is a pattern of errors which could have been prevented or has undertaken a systemic analysis of the situation and identified a failure to take account of ergonomic aspects.

If we look at **some of the examples over the last sixty years** we can see where ergonomics has been recognised as important.

- Soon after the war it became clear that many aircraft accidents were due to pilots misreading the then standard three pointer altimeter dial and crashing into the ground when they thought they were considerably higher. The design was changed to reduce the number of pointers with digital displays.
- I was employed by the Central Electricity Generating Board because a control engineer misread his circuit diagram, leaving all of South East England without electricity one Sunday afternoon.
- Attention has, at last, been paid to the importance of ergonomics on the railways following the Ladbroke Grove accident where many human factors led to a signal being passed at danger.

- Many large scale IT systems over many years have not reached their expected potential because of failure to consider the interface between them and the people who have to work the system.
- As will be seen from the report on a recent Hazards Forum meeting, reported in this newsletter, there is now recognition of the importance of ergonomics in making the health service safer. Too many people still come out of hospital with problems they did not have when they went in due to medical errors.
- In the government's recent response to Dame Carol Black's review of the Health of the Working Age Population, it agreed to support an existing multi-disciplinary group of occupational health professionals to develop a 'Council for Occupational Health'. This work is continuing and, at its last meeting, an invitation to join the group was extended to the Ergonomics Society.

**There are still many concerns.** As was shown from the Cullen inquiry into the Ladbroke Grove crash there was knowledge of the problems with the particular signal for some time before the crash but no action was taken.

Even though the CAA had a working party set up to consider the ergonomics aspects of the new air traffic control centre at Swanwick there was still a threat of industrial action because the initial installation had ignored advice on the size of screens.

### **Where are we now?**

The word "ergonomics" has always been a concern as far as understanding goes. Whilst it is the one word that puts the emphasis on all aspects of design for people it seems to have lost its claim to cover the more cognitive aspects such as

control room design. As a result the Society is to change its name (subject to official approval) to The Institute of Ergonomics and Human Factors.

The major development over recent years has been a big increase in work concerned with rail and medical issues.

A major continuing interest is in **the role that the human has to play in relation to technology**. Allocation of function between human and machine has been of interest to ergonomists over all of its 60

years. With developing technology this is becoming ever more important. Whilst we can automate ever more functions how far should we go? A lift can be fully automatic, but should we automate air traffic control? Similarly we can now automate many of the roles of the car driver. If we want to keep them awake and in full control which ones should we give to the computer and which ones should we leave to the driver. **These are the kinds of challenges** that will face the discipline, and the Society, over the next 60 years.

## Welcome to the Hazards Forum “Portal”

The Hazards Forum understands that not all of its members are able to make their way to London to attend the events it organises for members and guests. To help overcome this and to make those events more available, or accessible, it has conducted an innovative trial in the first half of this year with two such events.

This has been achieved by **broadcasting those events live via the Internet** through the “Interwise” set-up. Not only were the events transmitted in real-time, they were recorded for future viewing as a useful resource tool. This all needed to be achieved subject to speaker approval, of course. Also during the events, those viewing on line were able to participate in the discussions on a live real time basis.

The recordings of the last two Hazards Forum events ...

- *How ergonomics improves patient safety* (June 2009) and
- *Safety when road meets rail: trams, trains and level crossings* (March 2009)

... are both **now available to view** via the following web link:

<http://scenta.interwise.com/etechb/Portal/Hazards/>

Instructions are available via this weblink. In order to access any live or recorded event, you will need to download the appropriate software. This is quick and easy to do, although some users may experience difficulties in accessing either the software or the event due to their local firewall restrictions. If this should occur, we would advise that you contact your network administrator to resolve any such issue.

The Hazards Forum wishes to thank the Institution of Civil Engineers for facilitating this trial.

**Adam Kirkup**  
 Hazards Forum Secretariat  
 Tel: +44 (0)20 7665 2230  
 email: [admin@hazardsforum.org.uk](mailto:admin@hazardsforum.org.uk)

## HSE eNews – some examples

Good news from HSE PUBLICATIONS:

++ Online publications now freely available to download ++

230 priced publications freely available through the new HSE Books website.

<http://www.hse.gov.uk/news/2009/hse-books.htm?ebul=hsegen/07-sep-2009&cr=5>

In the first edition in September 2009 of the HSE weekly email bulletin there are, as an example, links to items related to LIQUEFIED PETROLEUM GAS in industrial premises, including a Consultative Document (CD 224) where questions include safety of structures and the potential for future guidance.

- Letter of response to Secretary of State for Work and Pensions on ICL Plastics. HSE outlines the action it will be taking to address the areas of concern the report identified.  
<http://www.hse.gov.uk/gas/lpg/letter.htm?ebul=hsegen/01-sep-2009&cr=2>
- HSE launches LPG Consultation. HSE seeks the views of suppliers and users of liquefied petroleum gas.  
<http://www.hse.gov.uk/lpgconsultation/index.htm?ebul=hsegen/01-sep-2009&cr=3>
- Press release: HSE publishes its response on the explosion at ICL Plastics  
HSE response to the Lord Gill Inquiry of the explosion at the ICL factory in Glasgow, in 2004.  
<http://www.hse.gov.uk/press/2009/e09071.htm?ebul=hsegen/01-sep-2009&cr=4>

## From the Secretary

**The Forum wishes to thank Dr Ian Lawrenson** for stepping in so readily as Guest Editor for this edition of the Newsletter. We shall miss Dr John Bond who took over as editor just last year.

**The website continues to be updated** with more events from other organisations being added. It is thus worth visiting from time to time to what else might be of interest – that is, in addition to Hazards Forum events. As well as seeing developments in the events programme, a visit to the sponsor's page at [http://www.hazardsforum.org.uk/events/events\\_sponsors.asp](http://www.hazardsforum.org.uk/events/events_sponsors.asp) will show current and recent supporters of Hazards Forums events together with a link to their home page as a gateway for seeking further information about them and areas of business that may be of particular interest.

### Opportunities for involvement:

(i) Readers are asked to send in their views as **feedback** from the **internet broadcast trial** held earlier this year. A piece elsewhere in this Newsletter describes the trial and gives a web address for seeing the two events broadcast. To help assess the trial, your views would be appreciated. Please send your views to Adam at [admin@hazardsforum.org.uk](mailto:admin@hazardsforum.org.uk).

(ii) The Hazards Forum now wishes to hear from you if you have an interest in becoming more involved by learning more about the **role of editor of the Newsletter** and the potential for undertaking that very important role. If you would like to know more about this rewarding role, please contact the writer at [secretary@hazardsforum.org.uk](mailto:secretary@hazardsforum.org.uk) initially.

**Brian Neale**

## Solution to Crossword number 4

### Across:

1. Reducing
5. Jetsam
9. Contrary
10. Carbon
12. Limbo
13. Onrushing
14. Manslaughter
18. Inadequately
21. Disrepair
23. Guard
24. Anorack
25. Fumigant
26. Module
27. Shredder

### Down:

1. Recall
2. Dynamo
3. Corporate
4. Narrow squeak
6. Exams
7. Sobriety
8. Managers
11. Breakthrough
15. Galignite
16. Windfarm
17. Password
20. Editor
22. Email

## CALENDAR OF EVENTS

Please check the Events section of the Hazards Forum website at [www.hazardsforum.org.uk](http://www.hazardsforum.org.uk) for more information 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. If you wish to attend please contact Adam.

Date	Event	Venue	Contact/further information
2009 SEPTEMBER			
22	HF Event joint with The Royal Academy of Engineering: <i>Risks associated with alternative fuels</i> ; the First of three in the Energy Series.	The RAEng, 3 Carlton House Terrace, London, SW1Y 5DG	Adam at <a href="mailto:hazards.forum@ice.org.uk">hazards.forum@ice.org.uk</a>
23	Institution of Civil Engineers (ICE) and Capita Symonds Health and Safety Lecture	ICE, One Great George Street, London, SW1P 3AA	Registration essential via Ms Helen Taylor at ICE: <a href="mailto:events@ice.org.uk">events@ice.org.uk</a>
NOVEMBER			
5	HF Supported Event: <i>Engineering Judgement - A Core Competence</i> .	University of Strathclyde, Glasgow.	An IMechE one day seminar. Diane Lorenzelli at <a href="mailto:D.Lorenzelli@imeche.org">D.Lorenzelli@imeche.org</a>
18 (to 14 March)	Ergonomics; <i>Real Design - an Exhibition</i>	The Design Museum, 28 Shad Thames, London, SE1 2YD.	Organised by The Ergonomics Society
24	HF Event: <i>Nuclear Build – Achieving High Standards of Safety and Environmental Performance</i> ; the Second of three in the Energy Series	Institution of Engineering and Technology 2 Savoy Place London, WC2R 0BL	Adam at <a href="mailto:hazards.forum@ice.org.uk">hazards.forum@ice.org.uk</a>
2010 MARCH			
16	HF Evening Event: Third of Three in the Energy Series.	Central London	Adam at <a href="mailto:hazards.forum@ice.org.uk">hazards.forum@ice.org.uk</a>
16	Hazards Forum Annual General Meeting	Central London	Adam at <a href="mailto:hazards.forum@ice.org.uk">hazards.forum@ice.org.uk</a>

Back cover

The Hazards Forum's Mission is to enable 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 meetings on a wide range of subjects relating to hazards and safety, produces publications on such topics, and provides opportunities for interdisciplinary contacts and discussions.

The Hazard Forum  
One Great George Street  
Westminster  
London SW1P 3AA

Telephone: 020 7665 2230  
Fax: 020 7799 1325

Website: [www.hazardsforum.org.uk](http://www.hazardsforum.org.uk)

*Registered charity number 1047047*