

# SAFETY AND LOSS PREVENTION SUBJECT GROUP NEWSLETTER

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## EDITORIAL

The Local Authority Pension Fund Forum is urging its members to oppose director's remuneration policies that do not include health, safety and environment issues. This is a new development in bonuses which should be watched for the future. I wonder if companies that will not share accident information should be named.

It is with great sadness that I have to report that Roger Kingsley died recently. I worked for Roger for a number of years and learnt a lot on safety in chemical engineering from him. He also was inspirational in promoting loss prevention in the profession

## GOOD AS NEW – MANAGING THE RISKS OF AGING PLANT.

This well attended seminar in London (October 2007), had numerous themes running throughout the day. These included

- Aging awareness
- Management systems and culture
- Aging identification
- Addressing aging

Speakers drew on their own experiences of dealing with aging plant, and the various methods that had been found to work when it came to implementing a successful integrity management scheme.

The meeting was chaired by John Atherton in the morning and by Ian Partridge in the afternoon.

The first speaker was Andrew Holt of the Health and Safety Executive who gave a regulator's view of plant integrity management. He summarised the "statutory inspection" equipment regulations but also stressed the importance of inspection for the "non-statutory" equipment.

Harry Moss, BP, reviewed some recent major accidents and then presented the 10 elements of the BP integrity management system, which will be implemented throughout the company by the end of 2008. He highlighted the importance of performance measurement and the use of proactive approach in Integrity Management.

Allen Ormond, ABB, gave an overview of the important elements of a plant integrity system, including systems and procedures, people competence and culture, inspection and maintenance and risk assessment. Allen also referred to the publicly available specification on asset management PAS 55.

Donald Payne of DNV presented his experiences from a large project in a refinery, which aimed to re-establish the pipework integrity status. The project included conducting NDT inspections, producing reports with the inspection results and evaluating the results with a GREEN-AMBER-RED classification scheme.

Francois Dupoirion and Paul De Bruyn, Total, gave an insight into the management of very

long service lives for equipment in petrochemical installations. This started a comparison of the operational design window versus the operational life cycle and continued with a review of the various plant aging phenomena, particularly Creep and High Temperature Hydrogen Attack and the techniques of controlling degradation such as tests and non-destructive examinations. Then the authors presented a review of the Total Petrochemicals loss causation model and the mechanical integrity organisation and networks.

Neil Henry, ABB, gave an informative presentation on predicting and managing age-related damage. This included recognising the signs of age related damage and the accelerating factors. The examples of a Titanium exchanger, a liquid separation machine and a tantalum reboiler have been used to illustrate the aging issues.

Barry Spafford, TWI, provided details of the types of repair that can be done in an aging plant (planned or unplanned, "cold" or "hot" or weld repairs), the codes/ standards and the various considerations before deciding to undertake a repair. The author highlighted the fact that a repair designed to comply with codes/ standards is not necessarily a safe repair.

Panos Topalis standing in for Afshin Motarjemi, DNV, gave a presentation on how to prolong the life of corroded assets using the DNV RP F101 "Fitness For Service Recommended Practice" for assessing single defects, interacting defects and complex shaped defects of corroded pipelines, subject to internal pressure loading and longitudinal compressive stresses. Two alternative approaches can be used for estimating the allowable pressure, the first one accounting for natural variance of material properties and other parameters, and the second one based on an Allowable Stress Design factor. The remaining life calculation determines if a change in the operating envelope will permit an extension of the equipment operating life.

There was also an open forum discussion at the end of the day, which gave the audience the opportunity to question the speakers on a number of topics.

One such discussion focused on how to justify a pipework integrity programme. The consensus

from the speakers and members of the audience was that the integrity programme could give an idea of what degradations were occurring. The incidents that occurred in the past, in the absence of such an integrity management programme was a strong argument in favour of the program. The integrity programme could also be used to remove any existing doubts about the reliability of the pipework.

Another topic of discussion was whether Risk Based Inspection (RBI) was a suitable method for identifying problems in aging plants. It was suggested that RBI would not be successful if it relied on bad or inadequate quality data. Speakers suggested that an improvement in data collection was the key to a reliable RBI. The HSE speaker mentioned that that some companies used RBI for the wrong reasons i.e. to reduce the scope of inspection. A member of the audience counter argued that it was acceptable to reduce inspections provided that the risk didn't increase.

It was agreed by most of the panel that RBI was useful as it provided a coherent process to manage inspection.

A member of the audience also mentioned that the implementation of non statutory inspections was more onerous than the statutory inspections. It was pointed out that a piece of equipment is still as likely to fail whether it is under statutory or non-statutory inspection.

There was also some discussion, as to how a company knew if the third party inspector was reliable or not. The panel suggested that it was important for the inspector, whether internal or external, to provide detailed feedback to the company on the equipment degradation and its remaining life.

For smaller companies, who do not have the necessary expertise and therefore contract out, it was considered important that they had confidence in the results received from their inspectors/ competent persons.

It was further agreed that a structured integrity management programme throughout a company could lead to better plant performance and better management of the aging plant.

## **THE CORPORATE MANSLAUGHTER AND CORPORATE HOMICIDE ACT 2007**

This act will come into force on 6 April 2008. The only exception is that extension of the offence to deaths in custody will take effect at a later date: the Government will keep implementation under review.

The new offence will not create individual liability (directors and managers can be held to account through existing health and safety laws and the common law of manslaughter).

The Ministry of Justice will issue further guidance for organisations affected by the Act, this Autumn

## **LEADING HEALTH AND SAFETY AT WORK - LEADERSHIP ACTIONS FOR DIRECTORS AND BOARD MEMBERS**

With the launch of the new Leadership Actions for Directors and Board Members web site, a new Leadership leaflet is published. See the site <http://www.hsenews.com/2007/11/08/leading-health-and-safety-at-work-free-leaflet/>

## **LANDUSE PLANNING**

The HSE has now published the results of its consultation on landuse planning that will shape its future policy on advice given to Local Planning Authorities when they consider planning applications close to large scale petrol storage facilities.

<http://www.hsenews.com/2007/12/06/land-use-planning-consultation-outcome/>

Following the explosion and fire at Buncefield Oil Storage Depot on 11 December 2005 and the consequent Buncefield Major Incident Investigation. The emerging findings from the investigation enabled HSE to review its policy for giving land use planning advice around this and other similar sites.

<http://www.hsenews.com/2007/12/05/land-use-planning-advice-large-scale-petrol-storage/>

## **100 LARGEST LOSSES IN THE PETROCHEMICAL INDUSTRY.**

The 20<sup>th</sup> edition to the year February 2003 is available on the following web site [www.marshriskconsulting.com/Load/article\\_452602.pdf](http://www.marshriskconsulting.com/Load/article_452602.pdf)

## **CULTURE SHOCK! FROM MARTIN GOOSE**

For the first time, the Parliamentary draftsmen have introduced the concept of "corporate culture": a concept "borrowed" from Australia where it first appeared in the Criminal Code Act 1995. Section 8(3) of the Act provides that, when assessing whether there has been a gross breach of a relevant duty of care, the jury may also consider "the extent to which the evidence shows that there were attitudes, policies, systems or accepted practices within the organisation that were likely to have encouraged any such failure as is mentioned in subsection (2), or to have produced tolerance of it." This highlights the need for rigorous enforcement of health and safety policies, and for effective compliance procedures.

## **MONITORING RISKS - PEOPLE, PLANT AND PROCESS**

The London Branch and the S&LP Subject Group held a joint meeting on the 21 November at Portland Place. Speakers from two major hazards industries were invited to see how they managed the risks involved in their industries. David Wright of the Civil Aviation Industry outlined the work that was being done in the civil aviation field on large body aircraft. Data was collected not only for the Black box recorder but also to monitor the whole flight. This included monitoring the operations of the crew, the equipment/air frame and the flight conditions. The data is analysed after each flight by software and any operations outside the Standard Operating Procedure can be identified and acted upon as appropriate. By monitoring the operations carried out by the crew, any operational irregularities that foreshadow incidents can be identified and acted upon at an early stage. Irregularities by crew members is discussed with the pilot's union and appropriate action, usually retraining carried out. This monitoring system is combined with a Just Culture approach and a complete sharing of information by all companies. The result has been a considerable improvement in flight safety as a result of knowing the exact level of risk for all of the hazards identified for the flight. The Civil Aviation Authority has been at the forefront in developing this approach.

Niel Farley of Springfield Fuels Ltd gave an account of their approach to human factors in a nuclear fuel operation. He said that humans were fallible but a lot of their errors were predictable. Organisations affected behaviour and by understanding how mistakes occur we can learn lessons from past accidents prevent them occurring again. Leadership was very important as people watch you all the time and see any weaknesses. Safe behaviour results from good leadership and awareness of the operation.

### **BUNCEFIELD**

16 August 2007 – Buncefield Major Incident Investigation Board published the report from the Explosion Mechanism Advisory Group <http://www.buncefieldinvestigation.gov.uk/press/news.htm>

Another Buncefield item

<<http://www.hseneews.com/2007/09/21/buncefield-investigation-board-response-to-consultation/>>

### **EFCE EXCELLENCE AWARD IN PROCESS SAFETY**

The European Federation of Chemical Engineering has announced a triennial award to recognise an outstanding PhD thesis (or possibly a paper) published in the period November 2006 to 31 October 2009.

Academics may like to consider if any of their students may be contenders.

The award is presented primarily to researchers or engineers at the beginning of their career, who have made excellent contributions to safety in the Process Industries. Nominations can be submitted by PhD supervisors at a PhD-awarding institution in an EFCE member country. Members of a national or regional member association of EFCE. Self-nominations are excluded. No more than one nomination can be submitted by the same person. The nominated PhD Thesis or publication must address a topic relevant to the field of Process Safety.

The nominated PhD Thesis or publication must have been published during the three calendar years preceding the closing date for nominations. The nominated PhD Thesis must have been completed and published and the PhD degree examined and awarded.

The closing date is 31 October 2009.

The first EFCE Excellence Award in Process Safety search will be presented at 13th Loss Prevention Symposium 2010.

For further details see:

<http://www.efce.info/EFCE+Awards/Excellence+Award+in+Process+Safety.html>

### **BREThERICK'S HANDBOOK OF REACTIVE CHEMICAL HAZARDS, 7TH EDITION (2007).**

This indispensable source of safety data is now available online to members of the IChemE (you will need to log in with your membership and pin number) in the Knovel library via the new IChemE website <http://cms.icheme.org/>. It lists combinations which have been reported to give unpleasant results up to and including deaths. From a legal point of view, if a dangerous combination is reported in readily available open literature then companies may reasonably be expected to know this, and ignorance will be no excuse. The book is searchable, so why not try it out on your next project?

If you are not aware, other online complete texts include Perry's Chemical Engineers' Handbook (7th ed.) and many of the Guidelines from the (US) Center for Chemical Process Safety.

### **CORRESPONDENCE**

None received

### **ARTICLES IN THE NEXT ISSUE OF THE LOSS PREVENTION BULLETIN**

The Loss Prevention Bulletin publishes safety articles and accident case studies in the process and chemical industry. Many of the articles are provided for anonymous publication and are therefore not available through other sources.

Issue 199, February 2008

### **HUMAN FACTORS: SPECIAL ISSUE**

- Human error — mistakes remembered 1
- Identification of process safety risks at newly acquired facilities
- Handling downsizing in the process industries — experiences from the Swedish process industries
- Integrating human factors, safety management systems and wider organizational issues: a functional model

- Safety culture: ‘Black art’ or ‘Paradigm shift’?
- Towards the integration of human factors root causes
- Bulletin briefing
- Events

For further information on the Loss Prevention Bulletin, or to purchase articles online, please visit [www.icheme.org/lpb](http://www.icheme.org/lpb)

**ARTICLES IN THE NEXT ISSUE OF  
*PROCESS SAFETY & ENVIRONMENTAL  
PROTECTION***

IChemE’s bi-monthly journal *Process Safety and Environmental Protection* covers all aspects of safety of industrial processes and the protection of the environment. The articles published, which are all peer reviewed, report research from around the world. *Process Safety and Environmental Protection* is the official journal of the European Federation of Chemical Engineering: Part B.

Below are the papers featured in January 2008 issue, Volume 86, Number B1:

- Hydrous ferric oxide as an adsorbent in water treatment: Part 1. Preparation and physical characterization  
M. Streat, K. Hellgardt and N.L.R. Newton
- Hydrous ferric oxide as an adsorbent in water treatment: Part 2. Adsorption studies  
M. Streat, K. Hellgardt and N.L.R. Newton
- Hydrous ferric oxide as an adsorbent in water treatment: Part 3: Batch and mini-column

adsorption of arsenic, phosphorus, fluorine and cadmium ions

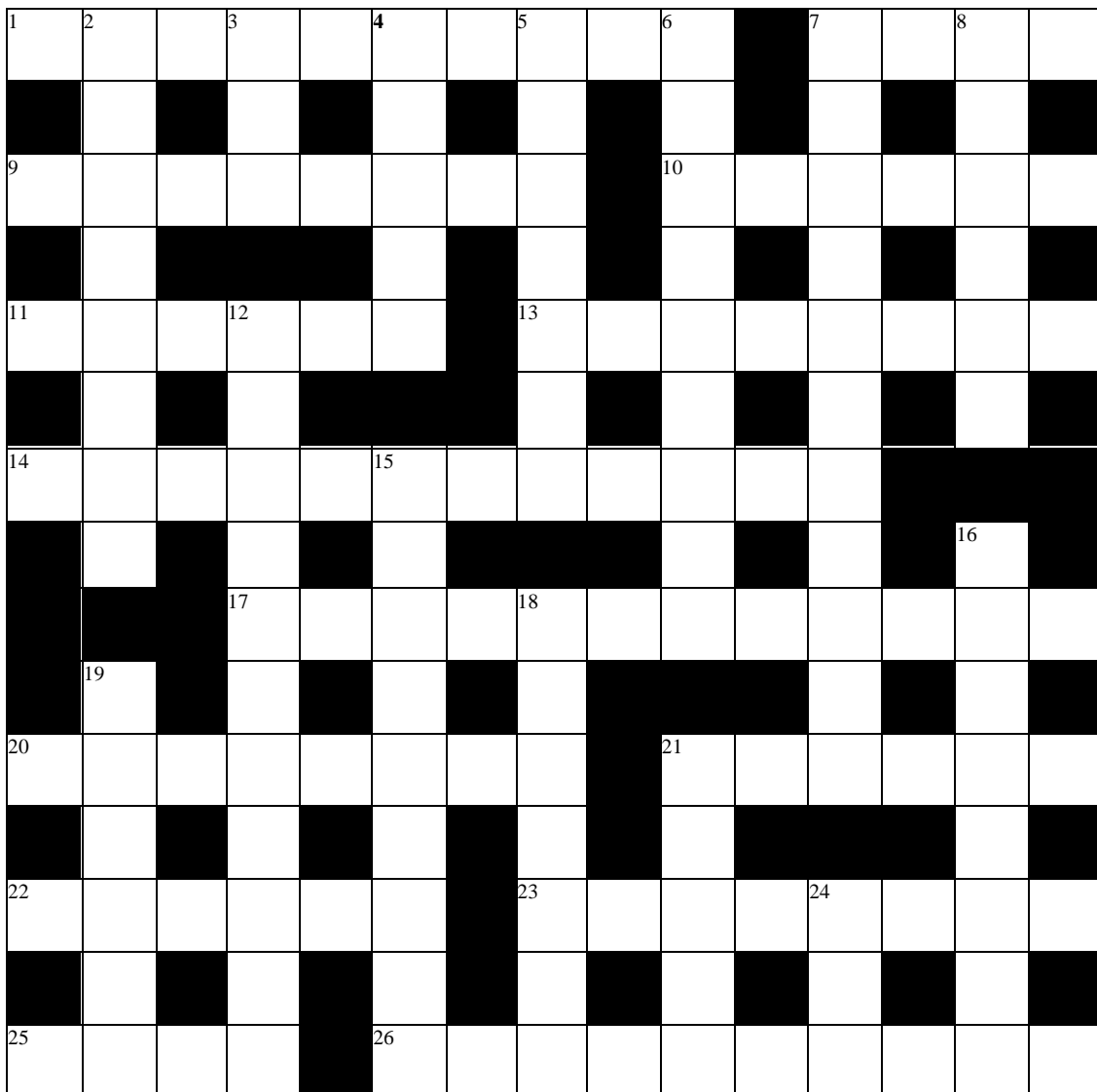
M. Streat, K. Hellgardt and N.L.R. Newton

- Investigation of sorption capacity of pumice for SO<sub>2</sub> capture  
Bahtiyar Ozturk and Yilmaz Yildirim
- The kinetic parameters and safe operating conditions of nitroglycerine manufacture in the CSTR of Biazzi process  
Kai-Tai Lu, Kuo-Ming Luo, Tsao-Fa Yeh and Peng-Chu Lin
- The S2S training and assessment tool for unexpected reactors: Structure and knowledge base  
Diederik Nico Marcel Marie Weve, Jaime Sales and Rosa Nomen
- Real-time fault diagnosis using knowledge-based expert system  
Cen Nan, Faisal Khan and M. Tariq Iqbal

To view abstracts of these articles free of charge, and to purchase individual articles online, visit [www.icheme.org/journals](http://www.icheme.org/journals) and follow the ‘view online’ links.

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## CROSSWORD PUZZLE No. 25



### ACROSS

1. German physicist who blew hot and cold in the general scale of things. (10)
7. Floppy kind of filing system. (4)
9. Cohesive. (8)
10. Rash garden plant to provoke you. (6)
11. Confuse and break up a swirling motion. (6)
13. Formerly a user of twenty, he now looks closely into things. (8)
14. Return metal to capital before old Scots nobleman can make a chemical. (12)
17. 21 Newspaper feature for whisky connoisseur needing to separate his liquids. (12 , 6)
20. Sir Humphrey's guiding light. (4, 4)
21. See 17.
23. Fireproof dishes sound like padded gloves. (8)
25. Girl, we hear, is inherited. (4)
26. Doers elect dodgy conductors. (10)

## **DOWN**

2. Fragrant like a gypsy with a twitch. (8)
3. Repentant shrub. (3)
4. Row back from endless lesions. (5)
5. Singular weather cannot be further reduced. (7)
6. A VAT on oil is wrong and pointless. (2, 2, 5)
7. Amend litter recycling - its harmful. (11)
8. I left a warrior to make a fusible alloy. (6)
12. English physicist behind bars - electromagnetic ones. (7, 4) Boggy methane. (5, 3)
15. Deal with things in a ham-fisted way. (9)
16. Come about German car buying and selling? (8)
18. Little devil, if given a vein of ore, will burst. (7)
19. Harm caused by honoured lady holding some silver. (6)
21. Part of article attaching ropes, etc. (5)
24. U.N. agency doctor. (3)

## **Answers to Crossword Puzzle No. 24 in Issue 35**

### **Across**

1. Cacodylic
6. Digit
9. Laminar
10. Vaporizer
11. Acetone
12. Iceberg
18. Destroy
20. Hard hat
22. Saccharin
23. Dieting
24. Laths
25. Grease gun

### **Down**

1. Colorant
2. Complete
3. .Dynamo
4. Larvae
5. Cropping
6. Disraeli
7. Guzzle
8. Tour
14. Marsh gas
15. Layering
16. Inhaling
17. Nitrogen
19. Socket
20. Handle
21. Rivets
22. Seal

## DIARY OF SAFETY EVENTS

GROUP	TITLE OF MEETING	PLACE AND CONTACT	DATE
S&LPSG and North Teesside Branch	Occupied Buildings - Compliance on Major Accident Hazard Sites - A View from Industry	Durham Evening Meeting 6pm Gemma Jones IChemE 01788578214	27 February 2008
NW Branch IChemE	HAZARDS XX and Workshops	Manchester Conference Centre Mike Adams Tel: 01539-732845 Email: mikeadams@rawgreen .fsworld.co.uk	14-17 April 2008
Future Programmes of the S&LP SG	Warehouse storage LNG Safety Process Safety performance Indicator Tank fires Management of Alarms and Trips Buncefield in a Management context LPG Model Code of Practice Dust explosions University Teachers meeting French regulations post Toulouse		June 2008  Sept/Nov

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