



*Safety & Loss Prevention
Subject Group*

IChem^E

Newsletter

EDITORIAL:

In this issue I suggest that there should be a Principle that accidents, once they have occurred, must not be wasted and the information that they provide should be shared. I give some cases where accidents were not wasted in areas other than safety. Readers are invited to send in other examples of accidents which were not wasted to the editor of your newsletter;
john.bond007@ntlworld.com

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HERBERT G LAWLEY

Bert Lawley, well known as one of the pioneers of hazard and operability studies (Hazop), died in March 2002 at the age of 74. He joined ICI as a research chemist and then moved to process investigation.

Hazop was developed in ICI Petrochemicals Division in 1963 in response to the needs of a specific design project. In the following years several people were made successively responsible for applying it to other projects. By the time Bert took up these duties about 1970 the process had become somewhat degraded. Bert restored its full rigour. He was a man who paid meticulous attention to detail - an essential feature in a Hazop team leader - and he also had the skill to insist that the teams took no short cuts.

In 1973 he presented a paper on Hazop at the AIChE Annual Loss Prevention Symposium (subsequently reprinted in *Chemical Engineering Progress*, Vol 70, No 4, April 1974, p 45). It aroused interest from the start and its detailed example of a Hazop has been quoted far more often than any other example. The paper also described quantitative risk assessment (QRA), another field in which Bert displayed his distinctive thoroughness. His papers on QRA are little masterpieces; each figure is justified in comprehensive detail.

Bert retired early from ICI in 1981, joined Shell for a few years and then developed a busy practice as consultant. He finally retired a few years ago.

If St. Paul's Cathedral is Christopher Wren's memorial, Bert's memorial is the acres of Hazop reports that fill the filing cabinets of every oil and chemical company.

Trevor Kletz 21 March 2002

**A NEW JOURNAL -
'CATASTROPHIC RISK'**

A new journal is to be published this summer aimed at global readership and deal with a range of issues:

- Hazard analysis
- Structural vulnerability and reconstruction
- Loss prevention and mitigation
- Disaster planning
- Mitigation and loss finance

The editor is Lee Coppack.

For more information contact:

Editorial +44 (0) 20 8318 0330

Email lee@coppack.co.uk

**JUNE 19TH MEETING OF THE
S&LP SUBJECT GROUP - ATEX
AND HOW IT WILL AFFECT YOU**

The meeting was held at the Runcorn Heath Conference Centre and was attended by over 30 delegates.

The Explosive Atmospheres (ATEX 137) Directive has become an important piece of legislation since it was introduced over 2 years ago. It is being implemented in the UK along with

the Chemical Agents Directive via the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR), which are expected to come into force in August 2002, although there is a transition period for some requirements until July 2003.

John Brazendale of HSE's Safety Policy Directorate opened the meeting with an overview of DSEAR, its likely impact on industry and its interface with the implementation of the requirements of ATEX 95, covering equipment and protective systems intended for use in potentially explosive atmospheres.

John also mentioned some of the old legislation that is being repealed with the implementation of DSEAR, such as the Highly Flammable and Liquefied Petroleum Gases Regs of 1972. In summary, DSEAR is intended to ensure that employees and members of the public are protected from fires and explosions and will require:

- explosion risks from the use of all Dangerous Substances to be identified
- application of safety measures to eliminate or reduce risks so far as is reasonably practicable
- provision of information, instruction and training to employees
- provision of systems and procedures for emergencies.

Safety expert, Bob Brown, subsequently described the requirements of ATEX in more detail, covering the items of equipment to which it applies, respective components, their assembly and installation. He explained the classification of equipment and the associated European Standards as well as the zoning of potentially explosive areas.

Pieter Zeeuwen of Chilworth Technology provided a summary of the lessons and experiences of ATEX compliance assessments conducted on a selection of companies. A common problem area identified in particular is

in the management of change. However risk assessments have not been fully documented, especially on older plant and the process of hazardous area classification generally needed more attention.

Gus Carroll, Yule Cato plc's Group SHE Manager, completed the formal presentations by describing a case study example of how one company has embarked upon complying with ATEX and indicating that it need not be the burden it might first appear. Most information and essential practices were already in place and the largest issue was that of workplace / equipment classification and certification. The key message from Gus was to build on what is already in place by cross referencing as much information as possible.

The seminar was ably chaired by Nick Berentzen, Head of Occupational Safety at the CIA. He took the opportunity to briefly present the CIA's concerns over the new Regulations and this served as a useful entree to the Workshop sessions in the afternoon. These gave participants the opportunity to consider what help and support would be needed from the Regulator as well as the implications for industry. Provision of timely training and guidance on the new Regulations was considered very important even though there were felt to be no major new implications for industry. Some elements of detail were identified as needing further clarification, for example what would constitute a "competent person" and what is really meant by "residual risk".

For most participants the seminar served as a useful means of getting to know the new legislation better. It also served as a useful opportunity for HSE to hear and respond to particular concerns. All in all, a worthwhile day, well-spent!

Allen Ormond

IP 15 - HAZARDOUS AREA CLASSIFICATION

IP MODEL CODE OF SAFE PRACTICE PART 15

Part 15 of the Institute of Petroleum Model Code of Safe Practice has long been an internationally accepted code for the classification of hazardous areas. While the new edition follows the basic layout of the original code, it contains some fundamental changes in the methodologies and technology used. The background to this additional work is available in separately published reports.

Specific changes include:

- A broadening of the scope to include all flammable fluids and installations handling flammable fluids.
- Provision of a basis of the hazard radii given.
- An optional flexible approach to determine hazard radii based on risk
- Recognition of the effect of system pressure on the extent of the hazard radius
- Specific reference to LPG and installations handling LPG

The new Code retains a section dedicated to "Direct Examples" but the section on specific point source releases has been substantially revised and now includes a "Risk-Based Approach" allowing the user to calculate specific hazard radii for actual process conditions and a Company's risk strategy.

A report on the Risk-Based Approach has been issued separately but the relevant parts of the process have been included in the Code as an Annex. Further work supporting the calculation methodology was also carried out and particularly reviews the effect of aerosol formation on the

flammability of release of materials normally handled below their flash points. Results of this work are also included in the Code but again it is available as a separate report. A basis for determining when gas streams containing Hydrogen should be treated as Hydrogen is supported by research.

With the benefit of the above Works the new Code provides a supportable basis and flexible methodology for the User to determine hazard radii for specific site and process conditions. The new code is due to be launched in September and a seminar will take Delegates through the changes and application of the new methodologies.

The IChemE in conjunction with the Institute of Petroleum have organised a meeting on this important subject at the Health Conference Centre, Runcorn on the 17th September 2002. Contact Andrea Fulton at the IP, telephone 020 7467 7106.

John Bond

***ANOTHER ACCIDENT
I WILL NEVER FORGETT***

I was seventeen at the time and in the sixth form at school. I read somewhere that if some ether (that is, diethyl ether) is put on the palm of the hand and set alight, it will not cause any injury as the ether is so volatile that it forms a cushion of vapour between the liquid and the hand. (The boiling point of ether is 36°C.)

With the agreement of the physics master I tried this out and it worked. He asked me to demonstrate it to some of the lower forms. The

first two demonstrations went well but the next one did not. In each case I had filled the sink on the demonstration bench with water so that I could quench the flames in it if anything went wrong. In the last demonstration some of the ether dripped between my fingers onto the surface of the water and caught fire, burning the back of my left hand. By the end of the afternoon it was covered by large blisters. On the way home I called to see an uncle who was a doctor. He drained the blisters and covered them with sticking plasters.

The next day the headmaster noticed the plasters and asked what had happened. I invented some yarn, I forget what, as I did not want to get the physics master into trouble.

What did I learn from this? That instructions for carrying out a job may not tell you all you need to know.

Trevor Kletz

***THE PRINCIPLE OF NOT
WASTING AN ACCIDENT***

An accident is a waste of people, of material, of equipment and of money but the lessons learnt would not be wasted if the information is shared. Many have suggested that this information should be available to all to learn the lessons from it. The first person to suggest this has to be Count Morozzo who investigated a dust explosion that occurred in Turin in 1785. The final words in his report were:

“... it is therefore of great importance that these facts should be universally known, that public utility may reap from them every possible advantage.”

Others have expressed the same view. After a fire at a theatre in England in 1887, when 188

people were killed, the investigating officer's report concluded:

"The saddest part of this matter is that no lesson of any kind has been taught by the event, as everyone who has studied the subject either theoretically or practically knew beyond any possibility of a doubt what the whole action of the fire and smoke would be under such circumstances, and moreover, the lessons and warning of recent years had prepared all concerned for the terrible catastrophe precisely as it actually occurred."

Trevor Kletz has also shown this to be the case and has stated the reason:

"It might seem to an outsider that industrial accidents occur because we do not know how to prevent them. In fact they occur because we do not use the knowledge that is available. Organisations do not learn from the past or, rather, individuals learn but they leave the organisation, taking their knowledge with them, and the organisation as a whole forgets."

It seems to me that there should be a Principle that an accident once it has occurred must not be wasted.

"He never let an accident be wasted." Landscape painter Turner said this about a fellow artist who was much given to experimenting with colours, materials, etc., often with an unexpectedly bizarre outcome. Turner was, of course, referring to the results of an accident, but when you come to think about it the accident itself need not be wasted. Learning lessons from it to prevent a repetition is an obvious example. Lower down the scale, an accident can always serve as a for instance in staff training. It might even turn out to be an exception that proves a rule!

I came across (accidentally!) a dictionary entry about Banting, the fellow who discovered insulin. My dictionary says "... the production of insulin

originated from a wrongly conceived, badly conducted, and incorrectly interpreted series of experiments. None the less the discovery was a complex and drastic event which revolutionised the treatment of diabetes, and he was awarded a Nobel Prize for medicine in 1923." Banting actually shared the prize money with others but the information from the accident was shared with the public and not wasted.

John Bond

SODOM & GOMORRAH

When Sodom was merged with Gomorrah
To the Safety Inspector's great horror,
The management there
Felt no duty of care
But sinned without thought for tomorrow.

With Sodom-Gomorrah aflame
The Inspector knew just who to blame;
His report made the rounds
And provided the grounds
For a corporate manslaughter claim.

REVIEW OF A NEW DATABASE

A new database has been established by Iility Engineering of Tampere, Finland. This new database deals with accidents that are reported in the media and is called Hazards Intelligence - Hint. It is available in hard copy or on the web site

www.saunalahti.fi/ility/HInt1.htm

Hint is published fortnightly by email and monthly in printed form. It covers accidents in oil, gas, petroleum products, fuel transport & storage, chemicals processing, chemicals users, chemicals transport, Utilities, Power, Mining, Metals, Fireworks and Entertainment, Food, Passenger Transport, General Public, Environment, Crime, Other.

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**ANSWERS
TO
CROSSWORD
PUZZLE
No. 10**

NEWS BRIEF

Twelve girls, dressed in the style of pop group Atomic Kitten, were banned from a school in Carterton, Oxfordshire, because the headmaster said their flared trousers were dangerous and could cause them to trip over.

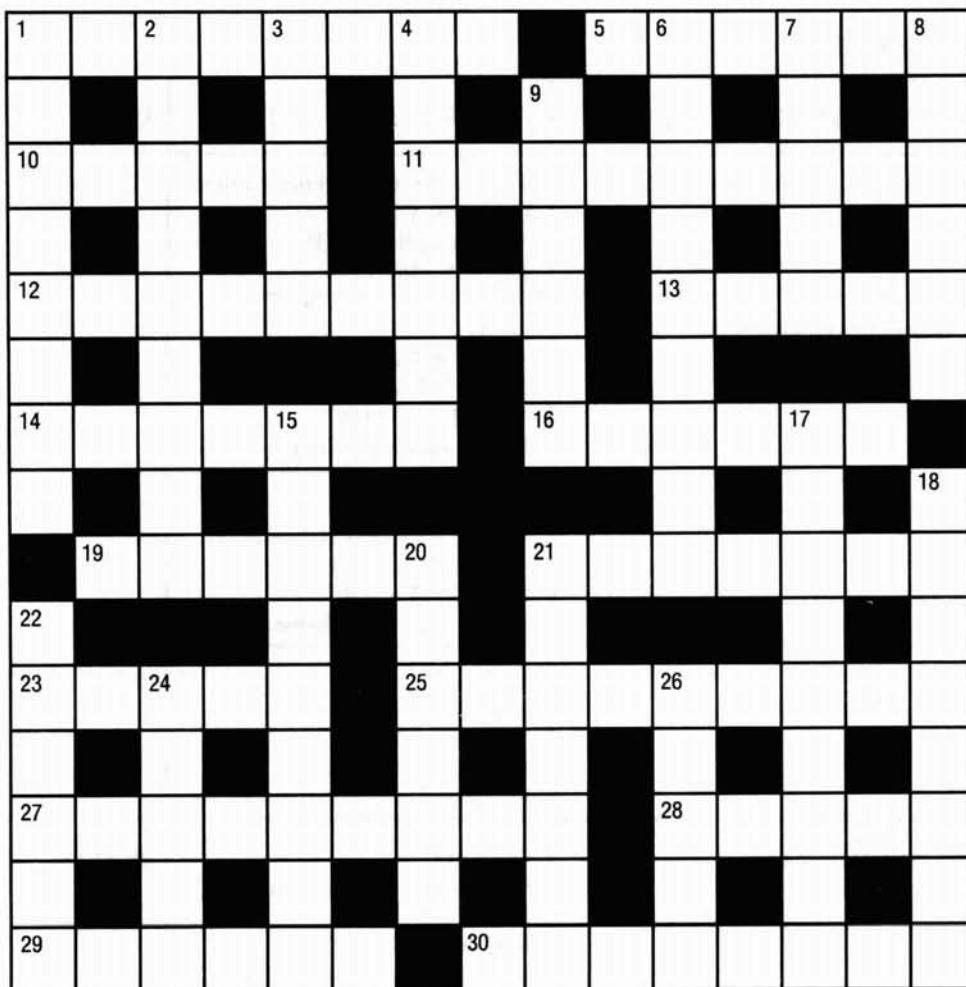
Metro, 7.5.02

CROSSWORD PUZZLE No. 11

DOWN

1. Even endless calm and friendship can lead to disaster. (8)
2. Burning ambition of 7.? (9)
3. Bring upon oneself a fashionable dog. (5)
4. Substance found in some delicatessen cereals. (7)
6. Sort coupling available to all. (9)
7. Only he would trifle with a naked 24. (5)
8. French call for help. (6)
9. Naturally never stops talking about a borehole. (6)
15. The exuberance of his own verbosity can do this to a drunkard. (9)
17. Sweating perhaps in a tuxedo. (9)
18. Inheritance tax to produce electricity? (8)
20. Said to be too wise about the Orient in a ferment. (6)
21. Tom's contribution to road safety. (4, 3)
22. Protection for a one-eyed hand. (6)
24. Former girlfriend is old (and probably dangerous). (5)
26. Slow movement of unlikable chap. (5)

**CROSSWORD
PUZZLE
No. 11**



CROSSWORD PUZZLE No. 11

ACROSS

- 1. Common Agricultural Policy stiffened but overturned. (8)
- 5. Named after Marie and Pierre? Elementary! (6)
- 10. Originator of Russian alphabet turned to poetry. (5)
- 11. Takes a good man with know-how to produce equilibrium. (9)
- 12. Middle Eastern doctor-artist points to skinny coverings. (9)
- 13. A run or walk-on player. (5)
- 14. Numbers I and the French can stretch. (7)
- 16. More foolhardy at breakfast. (6)
- 19, 21 A no-risk milieu for bringing on trouble-free plants. (6, 7)
- 23. More off than on? (5)
- 25. Just the thing for high pressure tactics in industry. (9)
- 27. Assure a mix of age and nature. (9)
- 28. Inevitably included musical wife of a President. (5)
- 29. Team made up by the Spanish before nightfall. (11)
- 30. Press one in order to get a reaction. (8)

DIARY OF SAFETY EVENTS

GROUP	TITLE OF MEETING	PLACE & CONTACT	DATE
IChemE	Hazardous Area Classification IP 15	The Health Conference Centre Runcorn, UK Andrea Fulton at IP Tel: 020 7467 7106	17 Sept '02
IChemE	Applied Hazard & Operability Study	Leeds Sophie Wilson at IChemE Tel: 01788 578214 Fax: 01788 534407 Email: swilson@icheme.org.uk	23-25Sept '02
IChemE	Introduction to HAZAN	Sheffield Sophie Wilson at IChemE Tel: 01788 578214 Fax: 01788 534407 Email: swilson@icheme.org.uk	30 Sept- 3 Oct '02
IChemE	HAZOP Study for Team Leaders & Team Members	Manchester Sophie Wilson at IChemE Tel: 01788 578214 Fax: 01788 534407 Email: swilson@icheme.org.uk	22-25 Oct '02
IChemE	Design for Safe Handling of Industrial Chemicals	Sheffield Sophie Wilson at IChemE Tel: 01788 578214 Fax: 01788 534407 Email: swilson@icheme.org.uk	28-31 Oct '02
S&LP Subject Group/SIESO	Emergency Planning & Crisis Management	Jane Varnum-Wilson at IChemE Tel: 01788 578214	2 Day Event Oct-Early Nov '02
IChemE	Hazards in Process Plant Design & Operation	Sheffield Sophie Wilson at IChemE Tel: 01788 578214 Fax: 01788 534407 Email: swilson@icheme.org.uk	18-20 Nov '02
S&LP Subject Group	Director's and Engineer's Responsibility for Safety. An important meeting on the proposed regulations on Corporate Accountability	Shinfield Park, Reading Jane Varnum-Wilson at IChemE jvarnum-wilson@ichem.org.uk John Bond 01252 641907	5 Dec '02
IChemE	Process Plant Reliability & Maintainability	Sheffield Sophie Wilson at IChemE Tel: 01788 578214 Fax: 01788 534407 Email: swilson@icheme.org.uk	9-12 Dec '02