



*Safety & Loss Prevention
Subject Group*

IChem^E

Newsletter

EDITORIAL:

Christmas is now upon us and those on your committee of the Safety and Loss Prevention Subject Group wish all our members a happy, prosperous and safe festive time. Then the New Year's eve party will be around the corner and as midnight approaches you will sing those words of Rabbie Burns!:

**"Should risk assessment be forgot
And never brought to mind**

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ENTRY INTO A CONFINED SPACE

Working in a confined space can be difficult and dangerous at the best of times, but imagine doing it daily for five years under water, in the dark, and wearing the kind of deepsea diver's outfit worn by that staunch entrant in the London Marathon this year. Such was the feat of one William Walker.

At the beginning of the last century a wall of Winchester Cathedral was found to be leaning outwards to a dangerous degree. The Cathedral foundations were on a peat bed subject to seasonal flooding and the 13th Century builders had used the trunks of beech trees to fill the gaps between the foundations and the peat, all subject to a compression estimated to be about 40 tons per square foot. In 1905 architects, engineers and builders all agreed that among other urgent remedies the walls should be underpinned down to the hard gravel beneath the peat, some 6 feet below the water level.

To achieve this the ground was opened up and a hole dug down to half-way through the peat. Enter, literally, William Walker, a qualified diver from Portsmouth Dockyard. In those days a diver's gear weighed nearly 200 lbs; each boot 20 lbs, lead weights on chest and back 40 lbs each, helmet 20 lbs and the suit itself over 30 lbs. Walker's task was to descend by ladder into the dug out depths and, first of all, to clear away the beech timber and peat, which process of course caused more water to flow into the space left.

Sacks of concrete were then lowered for Walker to set in place rather as if he was building a wall some 3 ft high with extra large bricks. On top of this "wall" concrete bricks were set in concrete up to the base of the foundations.

From 1906 to 1911 William Walker toiled away, laboriously underpinning his way around the flooded foundations of the Cathedral. In his heavy gear, he worked in total darkness and as this particular confined space was an ancient graveyard there was a risk of infection. It has been estimated that he personally manhandled into place 25,000 bags of concrete, some 115,000 concrete blocks and 900,000 bricks. Although other necessary work had to be carried out (re-grouting the stonework, inserting tie rods, etc.) it was undoubtedly Walker's heroic endeavours that ensured the safety of the Cathedral's fabric.

Those who work in confined spaces and feel their labours are under-valued may care to know that William Walker became a national folk hero. To mark the completion of the restoration works a Service of Thanksgiving was held in Winchester Cathedral in 1912, at which King George V insisted on shaking the hand of William Walker, who was later awarded the Royal Victorian Order for his labours. The Dean and Chapter of the Cathedral presented him with a suitably inscribed silver rose bowl, and in 1916 a memorial tablet to him was placed on the west wall. He died of flu in the 1918 epidemic, but as recently as 1964 a small bronze statue of him was placed on a pedestal close to the entrance to the Lady Chapel. Today, alas, such courageous devotion to the job in hand would barely rate a mention in the local rag!

John Bond

JACK AND JILL'S ACCIDENT

The Safety Inspector's great skill
Was focussed on poor Jack and Jill;
Surely a well
Would be down in the dell
And not on the top of a hill?

Our Inspector found out that the spill
Had happened because Jack and Jill
Sought at the topside
Deuterium oxide
Produced at the plant on the hill.

IP15 HAZARDOUS AREA CLASSIFICATION

The Institute of Petroleum's updated Hazardous Area Classification code IP15 was launched to a full house joint IP / S&LPSPG seminar at the Heath, Runcorn on 17th September. This revamp of the code is timely as it coincides with the DSEAR adoption of the ATEX Directive in the U.K..

Although IP15 is the most comprehensive and explicit of the area classification codes it has for sometime been acknowledged that the 1990 first edition has shortcomings. Most are rectified in the new second edition.

The morning session of the seminar was devoted to the authors describing their amendments and the HSE endorsing the new code for DSEAR application. The afternoon had one operator and two contractors reporting on their test application of the new code.

In the first edition all releases were assumed to be from a limited range of 'low pressure' systems. The outcome of its application to other than standard situations was of questionable validity and its application to systems operating at more than a few bar did not give meaningful results.

Spray and LPG releases were specifically excluded from code scope. Its gas buoyancy, 'hydrogen' and building ventilation assumptions were questionable.

The new code offers two approaches to the classification process. The first, as did the original code, permits the user to determine the zone boundaries for 'typical' low pressure systems according to a set of diagrams - the 'Direct Example' methodology. The second, the 'Point Source' approach, helps the user to identify all the potential leak sources and provides a series of look-up tables to enable the user to determine the zone extent for each leak source according to its individual characteristics. This second methodology employs a consequence approach for zone 0 and 1 extent determination and offers a risk based approach for zone 2 determination. The outcome is sound science based area classification acknowledging the specific circumstances of individual releases.

The results of the test applications clearly demonstrated the benefits of the new code application. One demonstrated that the extent of the zone 2 area around a refinery HP pump set needed to be increased whilst those around various LP pumps could be safely reduced. Another suggested that the configuration of the zone 1 areas associated with a highly flammables drum filling operation required substantial adjustment.

The contractors cautioned that their test application of the new code suggested that, although application of point source approach might reduce equipment costs, it would increase engineering costs. It demands the involvement higher calibre personnel and, by implication, it requires zone extent reverification during the detailed engineering phase of a project.

The seminar finished with a lively debate during which the HSE made it clear that, although it does not regard the application of the new code as a substitute for major hazard assessment (the code does not acknowledge 'catastrophic'

releases), it does anticipate its adoption by the operators of all top tier COMAH sites.

There was general agreement that although the new IP15 still does not specifically address a number of situations, for example LNG handling and LPG spills onto water, it represents a significant step forward in the cause of safe industry practice.

AN INTERESTING READ

"Women and children last -The loss of the steam ship Artic" by Alexander Crosby Brown.

My browsing in second hand bookshops resulted in the purchase of this book. The title attracted me but it turned out to be an interesting read. The 2,794 ton "Artic" was the third of a group of four passenger steamships in the Collins Line and was considered the finest and fastest vessel in the American merchant fleet. It was launched in January 1850, cost \$700,000 and competed with the Cunard Line for the trans-Atlantic trade. The "Artic" was designed to be the latest word in comfort and dependability and in 1852 set the record for the New York to Liverpool crossing of 9 days, 17 hours and 12 minutes. The ship was built chiefly of oak and pitch pine with reinforcement from a lattice work of iron rods. Paddle boxes were fitted either side and were driven by two side-lever beam engines of 1,000 horsepower powered by steam.

The "Artic" left Liverpool on the 20th September 1854 with a passenger list of 281 and a crew of 153. The ship progressed and by the 27th September it had gained the longitude of the Grand Banks off Newfoundland noted for its treacherous mists. Look outs were posted and full speed was maintained but the ship was not provided with the new-fangled steam whistles. At a quarter past twelve there was a devastating shout "There's a steamer ahead!" but the inevitable collision occurred. The Captain

assumed that there was little damage to his ship and lowered a lifeboat to search for survivors of the other ship which he considered had been mortally damaged. On further inspection the Captain found that his ship was leaking and was in serious shape. Efforts to seal the hole in the ships side proved unsuccessful and the ship listed further. The other ship and the lifeboat were lost in the mist. It was not long before the water entering the ship reached the furnaces and extinguished them losing steam power for the pumps and beam engines.

The ship was equipped with the latest lifesaving equipment available consisting of 6 lifeboats (the minimum required by law for vessels half her size) and many canister and life preservers. The capacity of each lifeboat was 30 at the most. One lifeboat was already lost with crew members looking for the other ship. The second lifeboat to be launched was rushed by male passengers and crew men and was never seen again. The third lifeboat capsized as it was being lowered. The other lifeboats were launched and many of the crew jumped into them some boats being upended.

The Captain was prepared to go down with his ship but when the ship disappeared a large piece of wood from the paddle housings came up next to him and he clung to it.

Without any communications the fate of the ship was not realised until the expected date of arrival at New York had passed. Ships were sent to investigate, some survivors were found and one lifeboat made land in Newfoundland. Only 24 male passengers and 61 crew survived the disaster. The Captain was picked up at sea on his piece of wood.

The loss of all the women and children on the "Arctic" was noted at the time and compared with the loss of the troop ship "Birkenhead" two years previously where all of the women and children were loaded into the few lifeboats and saved. The men on the ship were last seen to be standing to attention in ranks on the deck as the ship went

down. It was not until 1956 with the sinking of the Andrea Doria that the first lifeboats reaching shore all contained only crew men.

The criticism of the "Arctic" crew was widespread but the other ship in the collision survived due to it being designed with water tight compartments.

The most important improvements to come out of this disaster was the charting of separate lanes for East to West and West to East shipping.

DIRECTORS AND ENGINEERS RESPONSIBILITIES FOR SAFETY.

S&LP SG MEETING 5TH DECEMBER.

Brian Harris started the meeting off by describing his experiences when there were two fatalities at an explosives site. He was a Managing Director of the company. He immediately visited the site and headed up the enquiry. His immediate problems were to make the site safe and visit the bereaved families. The HSE and police were involved in the investigation and he was questioned under caution. The questions asked required detailed answers to show the manner in which safety was controlled on the site. He was not charged but the experience of being questioned in detail made him realise the importance of not just having a safe system but being able to show that he controlled a safe system of working

David Berghman of the Centre for Corporate Accountability outlined sections 7 and 37 of the Health and Safety at Work Act which could be used to prosecute senior managers and directors of companies. He expected a new protocol on manslaughter to be published in January.

Rolf Clayton detailed the duty of care required of engineers.

Gerard Forlin, a barrister, warned that management systems must be put in order now as new legislation will come in about 10 months time. Already there was a realisation that prosecuting the bottom person on the rung, the operator or driver, was not correct. When the underlying cause and the system failures were analysed, it was realised that more senior managers were sometimes responsible for the accident. There were up to 80 cases pending. Management must design systems to protect the operation and personnel. They must be certain that they are effective and audited. He warned that there was a lot of pressure from Groups of relatives of victims for the prosecution of directors and senior managers. These pressure groups would not go away and what is also not realised is that there is an Election Manifesto commitment to bringing in appropriate legislation

On sentencing he warned that companies had got away with low fines. In future it may well be one years' profit and with the naming and shaming lists being published, the insurance costs will rise. Fines will be based not on what actually happens but what could possibly happen. Consequently risk assessments must be beefed up and risks identified. He warned that advisors and consultants were also to be targeted.

Aidan Hayes of BP gave an account of the work that is currently being done in the company to improve safety. With 117,000 employees world-wide, using 500,000 contractors and 15 million customers per day, the company viewed safety at the highest level. Health, safety and environment were core values along with Ethical Conduct, Employees, Relationships and Control and Finance. Getting HSE right involved Leadership and Accountability, Risk Assessment and Management, People Training and Behaviours, Working with Contractors and Others, Facilities design and Construction, Operations and Maintenance, Managing Change, Information and Documentation, Customers and Products, Communities and Stakeholders, Crisis and Emergency Management, Incident Analysis

and Prevention, and Assessment Assurance and Improvement.

All in all a very good meeting at the fine Foster Wheeler facilities.

QUOTES FROM "THE DARWIN AWARDS II"

"Genius may have its limitations but stupidity is not thus handicapped."

"Stupidity is a sexually transmitted disease."

"A fool and his life are soon parted."

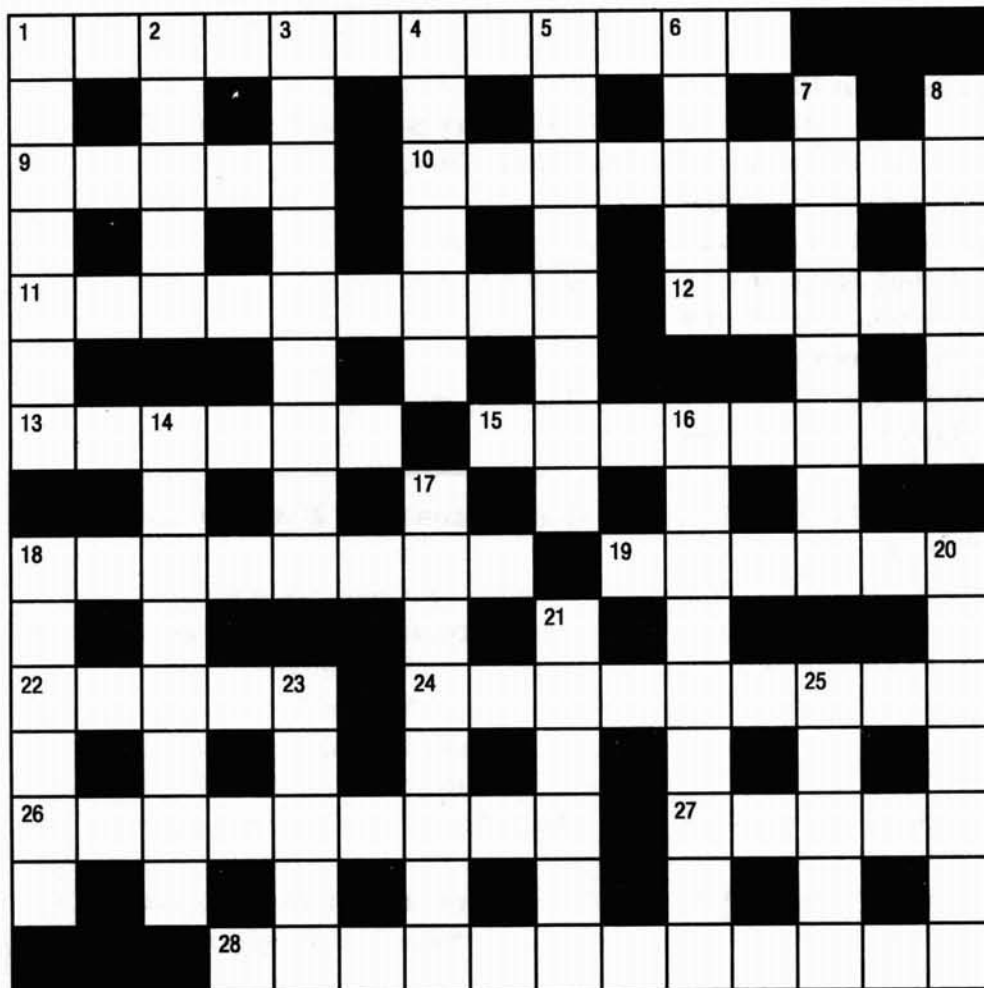
"Its not the fall that kills you, it's the sudden deceleration."

"Learn from the mistakes of others, you won't live long enough to make them all yourself."

"Forget the adage about learning from your mistakes, it's safer and more entertaining to learn from the mistakes of others."

NEWS BRIEFS

The operating instructions for an Isis submersible pump - used, for example, at the bottom of a pond advise "Please leave this instruction booklet with the pump as it contains maintenance and safety instructions." *New Scientist.*



**CROSSWORD
PUZZLE
No. 12**

CROSSWORD PUZZLE No. 12

ACROSS

- 1. New university doctor transforms shellfish into crystalline forms. (12)
- 9. Go wrong with sticky stuff. (5)
- 10. What a rum course to cook - it's toxic. (9)
- 11. Old enemy nourished himself on a reducing agent. (9)
- 12. A poem or a swelling for the conductor. (5)
- 13. Organic compound about a public holiday. (6)
- 15. Sound American currency includes ten of them found at bottom of vessel. (8)
- 18. They won't help you with this puzzle. (8)
- 19. River Limpopo is on alert because of deadly substance it contains. (6)
- 22. The Spanish surround your old radical. (5)
- 24. Ham round about and respond unsuitability. (4-5)
- 26. Deserter in hiding said to be taking in water. (9)
- 27. Snappy sort of curtailed particle. (5)
- 28. Lethal to little creature the chemical company only partly curtailed. (12)

CROSSWORD PUZZLE No. 12

DOWN

1. Fairy expresses surprise when closest to the earth. (7)
2. Used to heal a serious complaint - it's all there. (5)
3. A man's gene manipulated to serve heavy industry. (9)
4. Drive home, for instance, renowned Scottish chemist. (6)
5. Raced around lair having used 3. in the process. (8)
6. Island to the south produces breathing apparatus. (5)
7. After a brief moment disrupted sermon on certain molecules. (8)
8. O.K. as transmitted. (6)
14. Chemical with reversed skin. (8)
16. Having some properties is nothing to Capricorn, for example. (9)
17. Poisonous alkaloid from a protein. (8)
18. Understand the slow boil. (6)
20. It's no laughing matter without oxide. (7)
21. Heavy object heard at Christmastime. (6)
23. Old king first needs to get some know-how. (5)
25. Steer clear of a vacuum. (5)

C	A	P	S	I	Z	E	D		C	U	R	I	U	M	
A		Y		N		S		G		N		D		A	
¹⁹ L	Y	R	I	C		¹⁵ S	T	A	B	I	L	I	T	Y	
A		O		U		E		S		V		O		D	
M	E	M	B	R	A	N	E	S		¹⁶ E	X	T	R	A	
I		A				C		E		R				Y	
¹⁷ T	E	N	S	¹⁵ I	L	E		¹⁸ R	A	S	H	¹⁶ E	R		
Y		I		N						A		X		¹⁶ G	
	¹⁴ S	A	F	E	T	²⁰ Y		¹⁴ C	U	L	T	U	R	E	
²³ G			B		E			A				D		N	
²¹ O	F	F	E	R		²⁵ A	U	T	O	²⁵ C	L	A	V	E	
G		L		I		S		S		R		T		R	
²² G	U	A	R	A	N	T	E	E		²³ E	V	I	T	A	
L		M		T		Y		Y		E		O		T	
²⁴ E	L	E	V	E	N			³⁰ R	E	S	P	O	N	S	E

**ANSWERS
TO
CROSSWORD
PUZZLE
No. 11**

DIARY OF SAFETY EVENTS

GROUP	TITLE OF MEETING	PLACE & CONTACT	DATE
North-West Branch	Hazods XVII	UMIST Manchester	24-27 March 2003
PRISM	Understanding the Safety Behaviours That Create Better Business Cultures	Manchester	20-21 February 2003