



*Safety & Loss Prevention  
Subject Group*

**IChem<sup>E</sup>**

# Newsletter

## **EDITORIAL:**

The SIESO Seminar "The New Threats to Industry" on 22 May at New Scotland Yard is a timely opportunity to consider the developing threats to industry and commerce that have arisen in the past decade. The keynote speaker is to be Asst. Commissioner Special Operations David Veness CBE, QPM. This may not be safety matters but is certainly involved with Loss Prevention.

Loss Prevention Bulletin Index is now on the website [www.lpbindex.com](http://www.lpbindex.com)

In the last issue a small poem about some numbers was given:

$\phi$  was the Golden Ratio and has a value 1.618  
It was named after the Greek sculptor Phidias and was used in the design of the Parthenon.  $\pi$  was of course 3.142 and  $i$  was  $\sqrt{-1}$ . Hope you enjoyed it!

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## **SAFETY IN DESIGN PROJECT**

*PERHAPS NOT AS HARD AS ONE MIGHT THINK.  
SIMON TURNER*

The "2002 Safety in Design Project Prize" is sponsored by the S&LP Subject Group to promote excellence in the practical application of safety and loss prevention in the design project. The criteria required to enable an entry to qualify for the prize are clearly listed on the application form.

For note by potential entrants, the theme for the premier safety management event in Europe last year, HAZARDS XVI, was Learning Lessons from the Past. This theme is regarded by safety specialists to be one key safety management topic to be sustained for the future. Learning Lessons

from the past must form a key element of the safety input to the design project.

Advice to entrants:

**DO**

Read the entry form carefully before starting your design project. It will say what is required. Plan and integrate safety into your design project right from the start.

Concentrate on meeting the mandatory criteria. (Additional aspects of excellence in an entry will impress the judges and be credited accordingly, but the prize will only be considered to be awardable to entries which meet the mandatory criteria). Ensure the design project entry is complete, with a safety section in it.

Use sub-headers, in the safety section of the design project to clearly show how the entry specifically addresses each mandatory criterion. For example, include a sub-section on application of inherent safety and a section on applying lessons learnt from the past.

Hint - an excellent source of past accidents data appears in the *IChemE Accident Database*.

**DON'T**

Blindly duplicate aspects of what others did for safety in their design projects in previous years. Present large sections of information derived from references and course notes.

Ignore opportunities to apply lessons learnt from the past or opportunities to apply inherent safety into the design.

For 2002 entrants I wish you every success in your endeavours to win the prize.

***THE SAFETY CASE***

The Safety Inspector said "Please,  
Will somebody think up a wheeze  
So that I can acquire  
All the gen I require  
To comply with what COMAH decrees?"  
  
Let your Safety Inspector replace  
All his files with a good database;  
For there he can read  
More gen than he'll need  
And can look HSE in the face

***CORPORATE MANSLAUGHTER***

*THE FOLLOWING IS TAKEN FROM THE CORRS BRIEF PROVIDED BY CORRS CHAMBERS WESTGARTH LAWYERS AND DETAILS A BILL BEING INTRODUCED TO THE VICTORIAN PARLIAMENT, AUSTRALIA.*

On 22 November 2001 the Victorian Government introduced the Crimes (Workplace Deaths and Serious Injuries) Bill ("the Bill") into the Victorian Parliament. The Bill creates the new criminal offences of corporate manslaughter and negligently causing serious injury by a body corporate and is expected to come into operation in mid 2002.

***NEW OFFENCES***

**Corporate manslaughter** - a body corporate which by gross negligence kills an employee or worker is guilty of an indictable offence (section 13).

**Negligently causing serious injury** - a body corporate which by gross negligence causes serious injury to an employee or worker is guilty of an indictable offence (section 14).

These offences will be listed in a new subdivision to be inserted into the Crimes Act 1958.

The new offences are narrower in scope than the offences previously proposed in the draft Industrial Manslaughter Bill (released by the Victorian Government in October 2000). The new offences will now only apply in relation to the death of or serious injury to an "employee" in

the course of his or her employment, or a “worker” (including an independent contractor or an employee of a independent contractor) in the course of providing services to a body corporate.

These new offences will apply to bodies corporate in both the private and public sector section 12).

**ELEMENTS OF NEGLIGENCE**

The same principles apply to the new crime of corporate manslaughter as to the crime of negligently causing serious injury.

A body corporate will be liable where:

- it owed a duty of care to the deceased or seriously injured person (section 14A(3)); and
- The common law principles for establishing whether a duty of care exists in a particular situation continue to apply. In the case of the duty owed to employees, a general duty to take care of the safety of employees during the course of their work is imposed on the body corporate. The Occupational Health and Safety Act also imposes a statutory duty of care upon employers to provide and maintain safe working environments for employees and contractors.
- it breached the standard of care (sections 14B(1) and (2)); and

The standard of care imposed on the body corporate is “the standard of care that a reasonable body corporate would exercise in the circumstances”.

- the breach amounted to gross negligence. The conduct (including omissions) of an employee, agent or senior officer of a body corporate “acting within the actual scope of their employment, or within their actual authority, must be attributed to the body corporate.”

A court may look at the conduct (which includes acts or omissions) of one, some or all of the employees, agents or officers of the body corporate, viewed in aggregate. The court will then balance what the body corporate did, and what a reasonable body corporate would have done in the same circumstances. For the body corporate to be guilty of gross negligence, the prosecution must prove gross negligence beyond reasonable doubt. Mere negligence is not enough. The court needs to find that there has been “such

a great falling short of the standard of care that a reasonable body corporate would exercise in the circumstances”...that “the conduct merits criminal punishment” (section 14B(1) and (2)).

Gross negligence of a body corporate may be evidenced by the failure of a body corporate to;

- adequately manage, control or supervise the conduct of its employees, agents or senior officers;
- engage an appropriate contractor;
- provide adequate systems for conveying relevant information to relevant persons in the body corporate;
- remedy dangerous situations; or
- comply with notices (eg prohibition notices).

**SENIOR OFFICER OFFENCES**

The Bill also introduces new criminal offences applying to senior officers of a body corporate.

“Senior officer” has the same meaning as “officer” in relation to a corporation in the Corporations Act. This includes:

- a director or secretary of a corporation;
- a person who makes or participates in decision making which affects the whole or a substantial part of the business of a corporation; and
- a person in accordance with whose directions or instructions the directors of the corporation are accustomed to act.

“Senior officer” does not include a senior officer who acts as such without any fee, gain or reward (section 14C(4)).

This definition clearly includes directors and senior managers and may include lower level or line managers who are involved in decision-making processes which affect the whole or a substantial part of the business of a body corporate.

For a Senior Officer to be guilty of an indictable offence:

- The Body Corporate must be proved to have committed the offence.
- The senior officer must have been organisationally responsible for the conduct or part of the conduct involved in commission of the offence by the body corporate.
- The senior officer must have contributed

*materially* in performing or failing to perform his or her organisational responsibilities to the commission of the offence by the body corporate.

- The senior officer must have *known* that there was a substantial risk that the body corporate would engage in conduct that involved high risk of death or serious injury to a person.
- Having regard to the circumstances known to the senior officer, it was unjustifiable for the senior officer to allow the substantial risk to exist.

A senior officer will only be guilty of an offence if he or she has actual knowledge of the risk of death or serious injury to an employee or worker of the body corporate and his or her acts or omissions **materially contributed** to commission of the offence by the body corporate.

A senior officer may be prosecuted for an offence, regardless of whether the body corporate has been prosecuted or convicted of the relevant offence (section 14C(5)). Accordingly, a senior officer may be prosecuted even if the relevant body corporate is subject to administration or liquidation.

**PENALTIES**

**BODY CORPORATE**

- Fines

The maximum penalties for a body corporate will be:

- corporate manslaughter: a fine of \$5 million.
- negligently causing serious injury: a fine of \$2 million.

**OTHER**

In addition to or in lieu of fines, a court may impose one or more of the following orders:

- an adverse publicity order - whereby the body corporate must publicise the offence, the consequences of the offence and the penalties imposed for the offence;
- a specific notification order - to notify specified persons regarding the offence, the consequences of the offence and the penalties imposed for the offence;

- a work order - to carry out a specific project for public benefit.

If the body corporate fails to comply with an order, the court may authorise the Victorian WorkCover Authority (“VWA”) to carry out the order and publicise the failure of the body corporate to carry out the order. The VWA can then recover its costs from the body corporate.

**SENIOR OFFICERS**

The maximum penalties for senior officers will be:

- corporate manslaughter: 5 years imprisonment and a fine of \$180,000.
- negligently causing serious injury: 2 years imprisonment and a fine of \$120,000.

**BREACH OF EMPLOYER’S DUTY UNDER THE OCCUPATIONAL HEALTH AND SAFETY ACT**

Where an employer has breached its duty under section 21 of the Occupational Health and Safety Act to provide and maintain a safe working environment for employees and contractors, an employer may now be subject to a maximum penalty of \$600,000 (up from \$250,000) (where the employer is a body corporate) or \$120,000 (up from \$50,000) and/or up to 12 months’ imprisonment (where the employer is an individual person).

If the body corporate has breached section 21 with the consent, connivance or due to the wilful neglect of an officer of a body corporate, the officer may be subject to a maximum penalty of \$120,000 or 12 months’ imprisonment. Where an employer obstructs or threatens a WorkSafe inspector, or fails to comply with a prohibition notice issued by a WorkSafe inspector, or discriminates against an employee health and safety representative, the employer may be fined up to \$750,000 (up from \$250,000) (where the employer is a body corporate) or \$150,000 (up from \$50,000) (where the employer is an individual person).

**IMPLICATIONS FOR EMPLOYERS**

Whilst the Bill will not impose any new duties on employers in relation to occupational health and safety, it will impose harsh penalties on

employers who are found by a court to have negligently caused the death or serious injury of an employee or worker.

The Bill will significantly alter the current position at common law in relation to corporate manslaughter. Currently, under the common law, for a body corporate to be guilty of manslaughter it must be proved that the person or persons who represent the "directing mind" and will of the body corporate committed gross negligence. Under the Bill the court will look at the conduct of the body corporate as a whole, rather than only the conduct of the persons who are the "directing mind and will" of the body corporate.

To minimise their risk of liability bodies corporate need to:

- address all the issues given as examples of negligence in section 14B(6) of the Bill;
- review all of their practices and procedures;
- review their training of employees and managers;
- conduct effective risk assessments in relation to all work activities, plant and equipment;
- conduct comprehensive "due diligence" assessments in relation to their occupational

health and safety systems and procedures and the systems and procedures implemented by their contractors and subcontractors.

To minimise their risk of liability senior officers need to:

- ensure that risks to the health and safety of employees and workers are reduced as far as is practicable;
- conduct corporate decision making with regard to occupational health and safety issues;
- ensure that effective risk assessments are conducted in relation to all work activities, plant and equipment;
- ensure they do not materially contribute through act or omission to an offence of corporate manslaughter or negligently causing serious injury.

For any further information please contact:

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### ***AN ACCIDENT I WILL NEVER FORGET - TREVOR KLETZ***

As a young plant manager I was involved in an accident that brought my responsibilities for safety home to me. A member of the Research Department wanted to carry out some measurements on a caustic soda line by fitting a contraption made from wires and a rubber bung onto a branch on the line. The foreman and I thought it looked too weak to withstand the pressure but the research worker assured us that it had been used safely before. I agreed to let him go ahead but the foreman and I decided to watch from a safe distance. The contraption leaked and sprayed caustic soda over the pumphouse. Unfortunately it also sprayed a labourer who had entered just before the experiment started and who, like the postman in one of G K Chesterton's Father Brown stories, we had not noticed. The ambulance was called and he was rushed off to

the Medical Centre and washed down. An hour later he returned to his job, seemingly none the worse, but later developed an allergic reaction and was off work for a few days. My boss wrote the report on the incident and attached all the blame on the research worker who, he said, should have known what pressure his equipment would withstand. Nevertheless as the manager responsible for everything on the plant I felt morally responsible. I realised I should have asked the researcher what pressure his contraption could withstand and if it had been tested at that or a higher pressure.

An extract from *By Accident - A Life Preventing them in Industry*, available from the publisher (pva@dircon.co.uk) or from IChemE (booksales@icheme.org.uk) price £14.95 plus £1.95 p&p).

***THE RESPONSE OF CONCRETE TO  
FIRE EVENTS IN PETROLEUM AND  
PETROCHEMICAL PROCESSING  
PLANTS***

This work results from an initiative by Cafco and Isolatak International. The project has received interest from industry fire safety specialists worldwide.

The project was initiated in April 2001 to urgently investigate the behaviour of concrete fireproofing' in hydrocarbon fire events.

Part1, collect, catalogue and critically appraise the current state of knowledge in the subject area  
Part2, Prepare a report. The report is intended for use by engineers or others with specialist responsibility for safety against fires and explosions in the regulation, design, construction, operation and insurance of petrochemical facilities. The report should be expert and authoritative.

***PASSIVE FIRE PROTECTION OF STRUCTURES &  
VESSELS SUPPORTS WITH CONCRETE***

**Background**

Fire protection of structures and equipment in petrochemical processing plants using *normal concrete as a protective layer around the steel sections* has been a common practice for many years but it is very difficult to find any fire resistance test reports or reports of performance in actual fires to justify its use as a fire protective method.

We know that there is some fire resistance test data available for the construction industry where the test sections have been exposed to the normal standard ISO 834 type 'Cellulosic' fire condition. We have not, however, been able to find much test data where exposure to the more severe events such as the 'hydrocarbon' type fire (e.g. GASAFE) 'jet/torch' fire or overpressure conditions has occurred i.e. fire conditions more

typical of those that can occur in a refinery.

Mandoval carried out some fire tests on steel sections protected with cast in place concrete and exposed to a hydrocarbons 'pool' fire. We found that explosive spalling of the concrete could occur. There is also a lot of data on the internet to confirm that there is a high risk of explosive spalling of concrete when exposed to natural fire conditions in the construction and tunnel industries. The highest risk of explosive spalling of the concrete appears to be where dense, high strength and/or low vapour permeability concrete has been used.

The reason that we are contacting you is to ask whether you have or know of any experience or test results to confirm that concrete can spall explosively when exposed to a fire condition. We would greatly appreciate any comments that you could make on the subject and also any suggestions as to where I might be able to obtain such information.

Eddie Walker  
Industrial Market Manager  
Cafco International  
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www.cafcointl.com

**PROCESS SAFETY AND ENVIRONMENTAL PROTECTION**

**TRANSACTIONS OF THE INSTITUTION OF CHEMICAL ENGINEERS PART B**

The world's leading chemical engineering safety and environmental journal

**CALL FOR PAPERS ON RISK MANAGEMENT**

From 2003 each issue of 'Process Safety and Environmental Protection' will address a special topic area. The first special issue, in January 2003, is dedicated to *Risk Management*. The subject editor is Dr Mike Brown (Serco Assurance, Culham, UK, e-mail [mike.brown@sercoassurance.com](mailto:mike.brown@sercoassurance.com)).

Papers are invited in all aspects of risk management, particularly hazard identification and quantification, risk assessment and mitigation. Both theoretical papers and practical applications are welcomed.

*Deadline for receipt of submissions: 1 June 2002.*

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**NEWS BRIEF**

**COUNCIL IN COPYCAT ACCIDENT ESCAPES £10 MILLION FINE**

When Judge Jonathan Crabtree, sitting in Doncaster Crown Court, heard how a contract electrician died from a massive electric shock in an incident in the offices of Doncaster Metropolitan Borough Council which mirrored a similar fatality five years previously, he told the council that, had they been a commercial firm with £10 million a year profit, he would have fixed their fine at that sum. They were fined £400,000.

**MAN LOSES LIMBS IN GIANT MIXER.**

A man had his arms and a leg ripped off when a large mechanical mixer for tile adhesive started

up while he was inside.  
Guardian 14 February 2002.

**WHEN WRITING OPERATING INSTRUCTIONS THINK THE IMPOSSIBLE!!!**

- On the bottle-top of a flavoured milk drink "After opening keep upright"
- On a New Zealand insect spray. "This product not tested on animals"
- On a child's Superman costume "Wearing of this garment does not enable you to fly"
- On a Tiramisu dessert and printed on the bottom of the box. "Do not turn upside down"

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**CALL FOR PAPERS**

**“HAZARDS XVII - PROCESS SAFETY - FULFILLING OUR RESPONSIBILITIES”**

**ICHEME NW BRANCH SYMPOSIUM  
25 - 27 MARCH 2003 UMIST, MANCHESTER, UK**

If the process industry is to survive and prosper in the 21 st century it must adapt to changing social attitudes to risk, both to people and the environment. This is being reflected in the increasing amount of legislation being introduced to control risks and to hold to account those responsible for creating them. Courts are exacting increasing penalties for breaches of health, safety and environmental legislation. No longer is safety the preserve of the safety officer. Together we are all responsible - management, individuals, society and the regulator.

Hazards XVII is the latest in the series of symposia run by the Institution of Chemical Engineers NW Branch since 1960. These have provided a forum for the discussion of new research and technical developments into ways to control risks in the process industries thus helping to meet increasing expectations of risk control.

The aim of this symposium is to bring together international experts and practitioners in both process safety and environmental protection to present and discuss their work. The symposium will seek to raise awareness of these issues and provide information about new and recent legislation in these fields.

Papers are invited in all relevant areas including the following topics:

New legislation, including the ATEX directives.

Experiences in preparing and reviewing safety reports.

Measuring corporate safety performance.

Management of the safety culture.

Corporate manslaughter.

Safety across the supply chain.

Human factors issues / Development of a learning culture.

New developments in process safety and environmental protection.

Inherently safer design.

Case studies and incident investigations.

(Please note:- if your synopsis is accepted, your draft paper should be written during July/August 2002. It will then be refereed during the period end August to end October, and, if successful, your final paper will be required for publication during the end October/mid December period. As a presenter you will be entitled to free entry to the symposium on the day of presentation, and a 25% discount on all other days you attend. You will also be a guest at the Symposium Dinner.) Synopses of papers are needed by 24 th May 2002 to :-

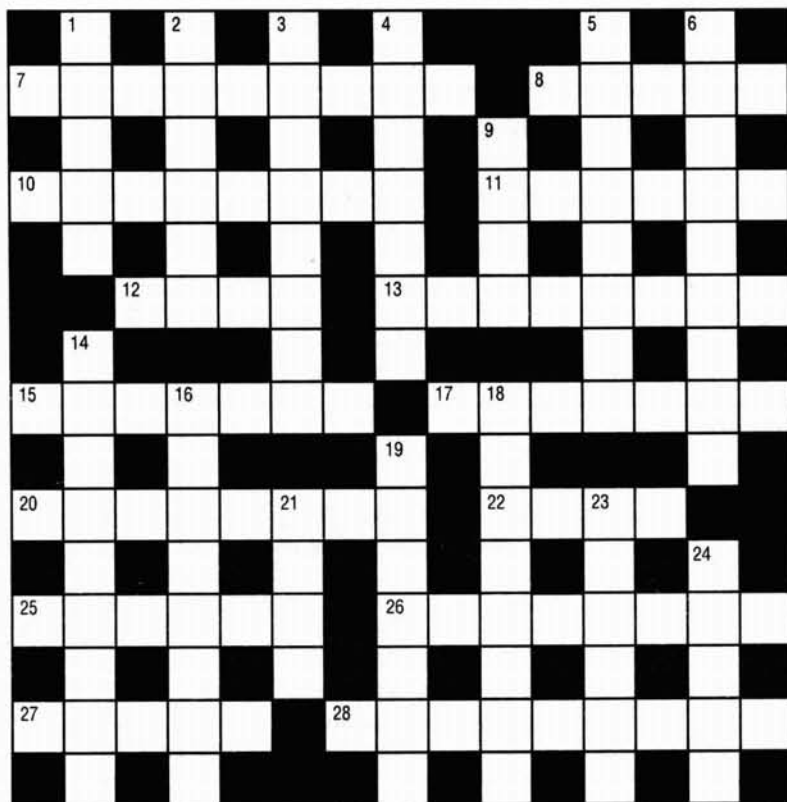
Mike Adams, Rawgreen, New Hutton, Kendal, Cumbria, LA8 0AS

Tel/Fax 44-(0)-1539-732845

E-mail [mike.j.adams@talk21.com](mailto:mike.j.adams@talk21.com)



**CROSSWORD PUZZLE No. 10**



**ACROSS**

- 7. Passed away with inner calm, essentially purified. (9)
- 8. A measure of Austen's hero (5)
- 10. Calls about endless delay - they are transparent (8)
- 11. Taps in the output? Quite the reverse. (6)
- 12,13. If a saw cut leaked badly, then employ a temporary measure. (3, 1, 4,4 )
- 15. Non-drinker pated company with sailor and became a dyer. (7)
- 17. Be economical with mercy (7)
- 20. Sacked a Member for being a danger to miners. (8)
- 22. Headstrong eruption. (4)
- 25. Dead accurate description of 21. (4, 2)
- 26. Gamble at no cost - it's quite safe. (4-4)
- 27. Fracture at snooker. (5)
- 28. Dangerous place had pet rat on the loose.(5-4)

**Down**

- 1. Vital ingredient of the Gunpowder Plot. (5)
- 2. Saint has a little sister with no circulation. (6)
- 3. Stick around silver molecule rupture. (8)
- 4. Just the place for a spider. (7)
- 5. Workforce opposed to feminism. (8)
- 6. Lacey teen fashion is a real gas! (9)
- 9. Some liquid is chemically a record. (4)
- 14. Columns found in Soho? (9)
- 16. Lifeless sort of fuel. (5, 3)
- 18. Compassion includes alternative old style permeability. (8)
- 19. Box with half-German distributor for gas. (7)
- 21. On the face of it, just a youthful blemish. (4)
- 23. It's no accident. (6)
- 24. Painter of French hydrogen, for example. (5)

**ANSWERS TO No. 9 CROSSWORD PUZZLE**

1	W	A	S	T	E	W	A	T	E	R	P	I	P	E	S
	A		L	L	X		N		U		L		I		
9	D	E	U	T	E	R	I	U	M		10	R	O	U	S
	D		G		C		S		E		G		M		M
11	I	N	S	I	T	U			12	A	S	S	E	M	B
	N						R			H				A	N
13	G	A	L	L	O	N			15	T	E	R	M	I	T
			A				D		R		D		A		E
18	S	I	N	T	E	R	E	D			19	M	I	S	S
	P		D						S			N			T
21	I	N	S	A	F	E	T	Y			23	A	S	T	24
	R		L						25	T		E		O	R
26	I	C	I	N	G				27	A	C	I	D	W	A
	T		D							H		I		F	E
28	S	M	E	L	T	I	N	G	F	U	R	N	A	C	E

**DIARY OF SAFETY EVENTS**

GROUP	TITLE OF MEETING	PLACE AND CONTACT	DATE
	Safety Critical Projects Management - Course	York Dr Jonathan Moffett 01904-432788 mander@cs.york.ac.uk	1 April 2002
IChemE	Dust Explosion Hazards: Prevention & Protection	Leeds Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	8 April 2002
IChemE	Industrial Electrostatic Hazards: Assessment & Control of Ignition Risks	Leeds Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	9 April 2002
IChemE	Classification of Hazardous Areas	Leeds Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	10 April 2002
IChemE	Chemical Hazard Assessment & the Prevention of Runaway Reactions	Leeds Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	11 April 2002
IChemE	Applied Hazard & Operability Study	Leeds Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	15-17 April 2002
IChemE	Process Safety Management & Loss Prevention	Sheffield Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	15-18 April 2002
IChemE	Computer Control: Safe Practise	Sheffield Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	13-16 May 2002
The London & Home Counties Branch of SIESO	"The New Threats to Industry - Terrorism Militant Protest Groups, Anthrax & Threats to Transport and the Environment" a One Day Seminar	New Scotland Yard London Contact: David Moses david.moses@hertsc.gov.uk Tel:01992-555960 for e.programme & application form. Non Members £75	Wednesday 22 May 2002

IChemE	Safety Critical Systems - Course	Oxford Maureen York 01865-283521 maureen.york@comlab.ox.ac.uk	27 May 2002
S&LP Subject Group	Oil Spill Response Unit Southampton	Jane Varnum-Wilson IChemE 01788-578214	June 2002
S&LP Subject Group	ATEX	Syngenta, Huddersfield Jane Varnum-Wilson IchemE 01788-578214	11 or 12 June 2002
IChemE	HAZOP Study & Its Management	Leeds Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	17-18 June 2002
IChemE	Applied Hazard & Operability Study	Leeds Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	23-25 Sept 2002
IChemE	Introduction to HAZAN	Sheffield Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	30 Sept- 3 Oct 2002
IChemE	HAZOP Study for Team Leaders & Team Members	Manchester Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	22-25 Oct 2002
IChemE	Design for Safe Handling of Industrial Chemicals	Sheffield Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	28-31 Oct 2002
S&LP Subject Group/SIESO	Emergency Planning and Crisis Management	Jane Varnum-Wilson IChemE 01788-578214	2 day event Oct/ early Nov
IChemE	Hazards in Process Plant Design & Operation	Sheffield Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	18-21 Nov 2002
S&LP Subject Group	Professional Liability/Corporate Killing	London John Bond 01252-641907	Late Nov/ early Dec
IChemE	Process Plant Reliability & Maintainability	Sheffield Sophie Wilson at Tel: 01788 578214 Fax: 01788 534407 swilson@icheme.org.uk	9-12 Dec 2002

