

S & LP SG Newsletter

ISSUE 4

SPRING 1995

THOUGHTS FROM YOUR CHAIRMAN

Those of us who were around in the days when the Tory party conducted their affairs in private and with dignity may well recall the quaint procedure for selecting their leader. Their man (sorry Mrs T, their person) emerged as from a chrysalis following rounds of mysterious rites, modestly protesting unworthiness for such an honourable rôle.

It is something like that with the Safety and Loss Prevention Subject Group (S & LP SG). Even after more than ten years as a humble committee member, I am still somewhat bemused as to how I got pushed into the big chair at the end of the table.

However, nil desperandum as they say. The S & LP SG is one of the biggest and brightest of the Institution's Subject Groups and, more importantly for me, has a busy committee which keeps affairs

buzzing along with the minimum of intervention. It also provides the best value for money when putting over safety information through its seminars and workshops. Come and see for yourself: there's a list of activities included in this edition of the Newsletter.

I look forward to seeing you.

Gordon Atkinson
– S & LP SG Chairman.

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John Gillett, past chairman of the S&LP SG and organiser of the "Control of minor modifications" workshop, describes the event:

"CONTROL OF MINOR MODIFICATIONS"

10th November 1994 at Zeneca Pharmaceuticals, Alderley Edge

SUMMARY

42 delegates participated in the workshop which involved three paper presentations, an electronic decision-making session and group work on topics selected from a "Brainstorming" session. A full report will appear in the Loss Prevention Bulletin in 1995.

Robin Turney started with an overview of change control. He advocated a well managed control system to identify and assess hazards appropriate to the risk involved. He illustrated his points with case studies taken from the new IChemE package "Modifications: the management of change."

Peter Thomas gave a practical description of the Genzyme engineering modifications control system. He listed keywords for fitters and tradesmen to look for in work-orders to alert them to changes. The keywords were...Modify; Replace "a" by "b"; Alter; Add; Change; Remove.

Trevor Kletz closed the paper session with his views about minor modifications exemplified by case studies. He opined that a minor modification was "so cheap that it does not need sanction", but cautioned that, nevertheless, the consequences could be catastrophic.

Prior to the workshop, delegates had answered questionnaires on key issues affecting control of "Minor Modifications". The results were presented and then an

electronic voting session was run to check the results by a "live" question and answer session.

Delegates then "Brainstormed" a list of topics for study in five work groups and electronic voting was used to select one key topic for study by every work group. Each work group then selected its own preferred topic for study and these were presented and discussed prior to working on the key topic.

The work groups produced much useful information too voluminous to reproduce here, but the consensus conclusions about the key topic "How to assess minor modifications" were as follows:-

- Step 0. Activation of minor modification procedure by staff at the sharp end, from awareness training etc.
- Step 1. Assess the reason for change to see that it is valid.
- Step 2. A nominated individual, or group, identifies potential hazards using a checklist or list of guidewords.
- Step 3. If specific hazards identified are outside the individual/group experience, a suitable expert is involved.
- Step 4. Once the hazards have been identified, the team must decide if the risks involved still justify

the change. In some cases a full risk assessment may be required for this decision.

Step 5. The change is sanctioned by a nominated authorising signatory.

Step 6. The results of the procedure and the reasons for the final decision are formally documented.

Step 7. At a pre-arranged date, the change is audited.

Don Willats, S & LP SG Committee Member Writes:

PROCESS SIMULATOR TRAINING - A NEW APPROACH

A CASE award project sponsored by Courtaulds, and being carried out at the Department of Chemical Engineering, University of Bath, promises to lead the way to an exciting new approach to plant operator training.

Courtaulds expect plant operators to run processes between narrow 'tramlines' for long periods to achieve optimum quality and productivity. Occasionally something goes wrong, and they can then be faced with diagnosing the problem, and the appropriate corrective action, from an unfamiliar set of signals and alarms. (Three Mile Island was a classic case in the nuclear industry).

One approach to this problem is to provide training using a process simulator - rather like teaching pilots on a flight simulator. In the past this has been prohibitively expensive except in very critical applications like nuclear reactor control. The new approach

could make process simulator training viable for a much wider range of applications.

The idea is to build on the growing use of software tools (such as Speedup from Aspen) which provide a realistic dynamic process model at reasonable cost. The ease of use of these tools is developing so rapidly that they are likely to become the normal route to plant design for the next generation of process engineers (PC versions are already in use). By grafting a front end interface on to such a model it can be used by operators and staff to learn how to respond to unfamiliar situations - and how to recover from them.

The project has reached the stage of a successful prototype - we now hope to take it forward to a fully developed package.

*If you are interested,
please contact Donald Willats
at Courtaulds (01203-582731).*

CORPORATE LIABILITY

- CURRENT STATUS

Some of you may remember the meeting on "Cost of Incidents," 1st December 1993, which the S & LP SG organised at Bowring, London. The Herald Families Association (HFA) were represented and stated that one of their aims was to pursue changes in the law which would allow easier prosecution of directors of companies which were responsible for deaths. The Law Commission has now issued a consultation document within the legal profession. New proposals include:

- 2 offence categories

Negligent manslaughter - requiring that the conduct of the accused falls seriously and significantly below what could reasonably have been demanded. (Maximum imprisonment -10 years)

Manslaughter by subjective recklessness - requiring that the accused was aware of the risk that death or serious injury would occur and that he/she unreasonably took that risk. (Maximum imprisonment - life).

- a special regime to apply to corporate liability for manslaughter not necessitating the indictment of individual directors - with heavy fines.
- a call for the creation of a *special deaths and major injury investigation unit of the HSE* with powers to liaise closely with the police.

It seems that steady pressure from the HFA, and others, is helping them achieve their aims.

SIMON TURNER
- S & LP SG SECRETARY

BRAIN TEASER

The "Brain Teaser" for this issue of the Newsletter was sent in by Trevor Kletz.

A PROBLEM ABOUT PRESSURES

A man had to export a liquid in drums to the tropics. He knew that vapour pressures over liquids increase with temperature and that liquids expand on heating. The extremes in temperature which the drums could experience were 0°C and 30°C. He asked his physical chemistry colleagues (without telling them why, and they, mistakenly, did not ask) to measure the vapour pressure of the liquid at 0°C, 15°C and 30°C and to measure the expansion of the liquid from 0°C to 30°C. The results came back:

Temperature/°C	0	15	30
Vapour pressure/psia	3	6	12
Expansion 0°C to 30°C	3%		

He therefore decided, to be on the safe side, that the drums would be filled to 90% of their volume to allow plenty of room for expansion, and that he would use drums with a bursting pressure of twice the vapour pressure of the liquid at the highest temperature it would experience, i.e $2 \times 12 = 24$ psia.

It was a cold day (0°C) when the drums were filled but he thought this had been allowed for in his margins of safety. He was very surprised to learn that all the drums had burst when the ship arrived in the tropics.

Explain why this happened.

As usual the best answer (Editor's decision final!) will earn its author free registration at an S & LP SG one day meeting of the prize winner's choice.

READERS MAY RECALL THE AUTUMN 1994 "BRAIN TEASER":

A man standing at the door of his house greets the postman coming up the road. "The product of the ages of my 3 daughters is 36 and the sum of their ages is the same as the number of the house opposite," he said. "Can you tell me their ages?"

The postman did some quick scribbling and then replied, "you have not given me enough information." The man considered for a moment and then said, "you are quite right: the eldest is a blond."

What are the daughters ages?

NB. Ages are to be expressed in integer values only.

Raymond Wells of Perth, Western Australia, provided the best solution: his answer was as follows:

The ages are 2, 2 and 9 which may be deduced as follows:

- Sets of 3 positive integer numbers that have a product of 36 are (1,1,36), (1,2,18), (1,3,12), (1,4,9), (1,6,6), (2,2,9), (2,3,6) and (3,3,4).
- Respectively, these have sums of 38, 21, 16, 14, 13, 13, 11, 10
- We do not know the number of the "house opposite." However, we may presume that the postman does. Now if that number was 38, 21,16,14,11 or 10, the postman would be able to give the correct answer without further information. However, he needs more information and hence the house number must be 13, as that number is the sum for two

of the possible age combinations. The ages must therefore be (1, 6, 6) or (2,2,9)

- We now come to the dubious bit. We have to assume that two daughters who are of the same number of years of age are in fact twins (this does not necessarily follow, as they could be half sisters for example). We also have to assume that there is no "elder" of a set of twins. Making these assumptions, we can conclude that the daughters are not aged (1,6,6), as there could then be no "eldest" of the three, which the father has stated there to be. Therefore the daughters are aged 2,2 and 9.

(You will note from Raymond Wells' address that attending a S & LP SG one day meeting free of registration charge is not a very attractive prize! We are trying to identify a mutually acceptable alternative. Ed).

Meeting report:

HIGH INTEGRITY TRIP SYSTEMS :

18 JANUARY 1995,

FOSTER WHEELER, READING

Registrations quickly reached the maximum capacity for this one day meeting. The attendance total was 50 but a further 20 people enquired after the response deadline and just could not be accepted (Moral : apply early both to ensure a place and also to help meeting organisers adapt meeting format to demand, Ed).

A technical review of the meeting will appear in a future Loss Prevention Bulletin. In addition, an information pack resulting from this seminar should now be

available from the IChemE Library and Information Service at Rugby (Tel : 01788 - 578214).

Oversubscription of Subject Group meetings is becoming more common, no matter where the venue. Does this suggest a more enlightened approach to release of resources by accountants for safety related activities?

Simon Turner
S & LP SG Secretary

QUOTATIONS

“Shall we call in the experts or foul it up ourselves?”
(Banner in the room of a chemical works used by the YTS)

“This horse has diabetes”
Laboratory report on a sample of water from the swimming pool of a London Club, sent for analysis after complaints by members.

“This place is a death trap”
(Union spokesman, on the headquarters of the HSE during renovations, when the staff went on strike because the building was “unsafe”.)

“The chapter of accidents is the longest chapter in the book”
John Wilkes (1727 - 1797)

“Have more strings to thy bow than one; it is safe riding at two anchors.”
John Lyly, Euphues, (1579)

From a selection passed to the Editor by John Bond, S & LP SG member

SCHEDULE OF MEETINGS/COURSES IN THE SAFETY AREA

Topic/Title	Date/ Duration	Venue	Contact Person/ Phone No:
User guide to process safety legislation - the HSE view. (conference)	1/3/95, 1 day	Stretton	Bill Orrell, 0928 722505
Major hazards and emergency planning (course)	6/3/95, 4 days	Sheffield	Tony Watkins 01788 578214
COSHH in action (course)	9/3/95, 1 day	Derby	Katrina Williamson, 01332 677066
Emergency Planning (conference)	23/3/95, 1 day	Dublin	Andy Rayner 01-661 5111
Applied hazard and operability study (course) S & LP SG	27/3/95, 3 days	Leeds	Pip Garside 01765 605241
Safety Auditing (conference)	29/3/95, 1 day	Northwich	John Gillett, 01625 514206
Electrostatic 95	2/4/95, 4 days	York	Institute of Physics 0171 235 6111
Dust Explosion Hazards (course)	4/4/95, 1 day	Harrogate	
Industrial Electrostatic Hazards (course)	5/4/95, 1 day	Harrogate	
Classification of potentially explosive areas (course)	6/4/95, 1 day	Harrogate	IChemE 01788 578214
Chemical Reaction Hazards (course)	7/4/95, 1 day	Harrogate	
The identification and assessment of hazards by HAZOP and HAZAN (course)	24/4/95, 5 days	Manchester	Brian Tyler, 0161 200 4546
A practical approach to HACCP (course)	25/4/95, 2 days	Leatherhead	Juliette May, 01372 376761
Major hazards and emergency planning (conference)	5/95, 5 days	-	Dr A Reeves, 0925 838372
Hazard assessment using the Mond index (course)	3/5/95, 1 day	London	IChemE 01788 578214

SCHEDULE OF MEETINGS/COURSES IN THE SAFETY AREA

Topic/Title	Date/ Duration	Venue	Contact Person/ Phone No:
Safety management and loss prevention (course)	8/5/95, 4 days	Sheffield	Tony Watkins 01788 578214
Production, processing and emergency systems in oil and gas plants (course)	15/5/95, 5 days	Aberdeen	Tony Watkins 01788 578214
Computer control-safe practice in the process industries (course)	22/5/95, 4 days	Sheffield	Tony Watkins 01788 578214
Safety training (conference) S & LP SG	23/5/95, 1 day	Coventry	Don Willats 01203 582731
8th EFCE Symposium on Loss Prevention and safety promotion in the process industries (conference)	6/6/95, 3 days	Antwerp, Belgium	Ir E C De Rademaker + 3 216 0996
Accident investigation (course)	21/6/95, 2 days	Derby	Katrina Williamson 01332 677066
HAZOP study and its management (course)	26/6/95, 3 days	Leeds	Tony Watkins 01788 578214
Runaway reactions and Emergency Relief systems (conference)	2/8/95	Boston	Gail Kendrick 212 752 3297
Loss prevention in the oil and gas industry (conference)	11/9/95, 3 days	Aberdeen	Mrs C Cox 01234 750422
Major hazards onshore & offshore (conference)	24/10/95, 3 days	Manchester	Roger Mason 01257 265235
Prevention, preparedness and response to major industrial accidents and environmental releases	31/10/95, 5 days	Toronto, Canada	Major Industrial accidents Council of Canada 613 232 4435
Computers and safety (course) S & LP SG	11/95 ?	?	John Bond, 0143 8717253
HAZOP workshop S & LP SG	?	?	Simon Turner 01734 396048
IChemE Research Event 1996	2/4/96	Leeds	Anne Lomax 01788 578214

RECENT BOOKS AND PUBLICATIONS

Developing effective safety systems,

Ian G Wallace, IChemE, December 1994, 180 pages, £29, ISBN 0 85295 3585

What went wrong (3rd Edn),

Trevor Kletz, Gulf Publishing Co., November 1994, £36, ISBN 0 88415 0275

Guidelines for:

*Implementing Process Safety Management Systems **

CCPS of AIChE, 1994, 219 pages, \$ 175, ISBN 0 8169 0590 8

*Engineering Design for Process Safety **

CCPS of AIChE, 1993, 573 pages, \$195, ISBN 0 8169 0565 7

*Preventing Human Error in Process Safety **

CCPS of AIChE, Sept 1994, 380 pages, ISBN 0 8169 0461 8

*Evaluating the Consequences of Vapour Cloud Explosions,
Flash Fires and BLEVES **

CCPS of AIChE, Sept 1994, 387 pages, ISBN 0 8169 0474

* Contact IChemE book sales (0178 578214) who are European agents for AIChE publications

Safety Management Systems, European Process Safety Centre,

pub IChemE, Oct 1994, 52 pages, £28, ISBN 0 85295 356 9

Modifications : the management of change.

IChemE training package £300, ISBN 1 898945 24-1

Hazardous Chemicals Handbook,

PA Carson, C J Mumford, Butterworth-Heinemann Ltd, 1994, 378 pages, £25,
ISBN 0 7506 0278 3

BACK PAGE COMMENT

In the late 1960s I was working for one of the UK's largest chemical companies. I well remember a colleague telling me that if ever you were appointed to the "Safety Section" then you could be sure that your career progression had reached its natural zenith.

Happily those days are past and concerns over safety for workers and local neighbourhoods etc., are now widely viewed as an integral and key component of a well managed company.

The trouble now is that safety and the environment have become so topical and important in influencing the manner in which business decisions are taken and companies are run that there is a plethora of courses, meetings, conferences, books, training packages, etc., being offered to those in the process industries.

When assembling the information which should go into this Newsletters' "Schedule of meetings/courses in the safety area" and "Recent books and publications" sections I was struck by the enormous variation in prices of these.

Many commercial concerns have jumped on the bandwagon and are offering safety training, the primary purpose of which is to generate a very large profit for themselves rather than to disseminate information.

At the other end of the extreme is the S & LP SG : our meetings are priced to break even. Organisers donate their time, and speakers are seldom paid any honorarium. Don't be fooled into thinking that expensive meetings or courses are necessarily the best.

Beware also of the equipment manufacturer who sometimes, unbeknown to attendees, sponsors a major conference and then limits presentations to those which relate to their own particular line of equipment.

These junkets can be lavish, and even free, but you don't get 'owt for nowt' and a myopic view of the subject matter under consideration is a likely outcome.

Simon Waldram