

Chem^E

S&LPSSG

SAFETY & LOSS
PREVENTION
SUBJECT GROUP

Newsletter

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Welcome!

Welcome to the first, introductory, newsletter for the Safety and Loss Prevention Subject Group.

One of the most important aspects in safety is the communication of ideas, experience and knowledge to other people that have an interest or responsibility in the subject. This is one of the major aims of the Subject Group and this has actively been pursued in the past with Group meetings. This Newsletter has been launched in order to compliment the Group meetings by allowing members to share information with others in the Group.

The success of this Newsletter relies heavily on the members of the Subject Group - without your contributions there will not be sufficient material to keep it going. I would hope that this newsletter will provide a platform for you to share your experience with others. Information on incidents, near misses, new developments, courses, literature, etc. are all welcomed.

Nothing is too controversial to be printed here!

If anyone has anything that they would like to contribute to the newsletter then please write to the editor at the address on this page. With your input, the newsletter will be a successful addition to the activities of the Group.

It's up to you --- Get writing NOW!!

Gary Pilkington ---- Newsletter Editor

S&LPSG Meeting - 29th June 1993

PROCESS CONTROL AND RUNAWAY REACTIONS

The meeting, which was held at Courtauld's Research Centre, Coventry was well attended. Approximately 50 people were present to hear a number of speakers present various aspects of chemical reaction hazards and runaway reactions. A summary of each presentation is given below.

Hazard Assessment

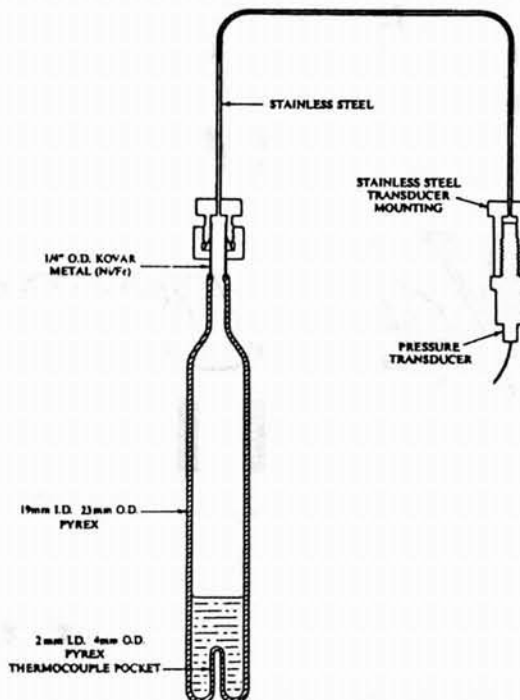
Richard Rogers of Zeneca reviewed incidents that have occurred and suggested that these would not have happened if a systematic approach had been used to analyse the potential reaction hazards. He outlined the hazard assessment procedure currently used in Zeneca, introducing the essential stages and how these fit into the HAZOP process.

Particularly important in the procedure is to consider the process at an early stage (lab or pilot scale), identify and determine the effect of potential maloperations and to cover all the process conditions that could be encountered.

Testing

Andrew Starkie of Chilworth Technology Ltd. followed on by describing a strategy for testing that would characterise the reaction hazards. Runaway onset temperatures, violence of decomposition, rate of gas evolution, etc, can all be assessed from laboratory scale tests. DSC, DTA and adiabatic calorimetry were all touched upon briefly.

He also discussed the problems that can be encountered in the test methods, particularly when scaling up results obtained in a small scale



Carius Tube (DTA) Test.

laboratory experiment to large scale plant.

This was a short and general overview to what is clearly a very complicated area.

Continuous Reactions

The previous speakers had concentrated on batch or semi-batch processes. Peter Southern then expanded the talk to include other plant situations, in particular continuous processes. In this section he discussed the factors for and against continuous processing, such as the accumulation of materials, aging effects, complexity of testing etc. A basic computer simulation program was also discussed that can be used to model some continuous systems.

This section generated much discussion from the audience and is clearly a controversial subject.

Cont'd

Reactor Venting

After lunch Jasbir Singh discussed the problems that can be encountered when applying simple venting to process vessels in order to safely release the pressure generated in a runaway reaction. Problems such as two phase flow (gas and liquid together?) were discussed, as was the difficulty in predicting their occurrence. The DIERS vent sizing package was introduced as a solution to the specification of relief vents.

The discussion was then extended to consider the relieved products. The problems associated with the specification and use of dump tanks was also discussed.

HSE View

Janet Etchells of the Health and Safety Executive closed the meeting with a review of the current position of the HSE. In summary, the hazards/risk must be properly assessed and reduced to a tolerable level, any safety system installed must work when it is required to do so, and the systems should be properly maintained. Risk assessment and risk management play an important role in safety of chemical processes. Examples of incidents where this had not been done were discussed.

Useful literature references and the current position of research in the reactor venting field were also given.

Overall the presentation was well received and most of the audience found the day both useful and interesting. Thanks to Robert Thornton of Courtaulds for arranging the facilities and organising an excellent lunch!

Gary Pilkington

Book Review

Chemical Reaction Hazards

'Chemical Reaction Hazards' was produced by an IChemE working party from across industry, academia and consultancy, and edited by John Barton (HSE) and Richard Rogers (Zeneca).

This book is an essential primer for anyone working with batch chemical reactions. It covers the life cycle of process development relating to reaction hazards of batch chemical processes, but does not cover toxic or environmental hazards assessment.

The book is easy to read and contains many useful diagrams and examples, with 130 references for further reading. Content are arranged in a logical order of the process development, from process assessment and definition, through reaction hazards evaluation to the specification of a basis for safe operation, ending with maintenance and operating procedures.

The explanations of the chemical principles and physical chemical apparatus used are clear and up-to-date. Unlike many of the books on the subject written solely by chemists, it contains useful process engineering information on venting, heat transfer, and quantitative hazard assessment using fault trees. It also touches on the control of process modifications and emergency measures.

Published by the IChemE (ISBN 0 85295 284 8), it is very good value at £25.

John Gillett

Have you read a good book recently (Hitchhikers Guide to the Galaxy excluded!)? If so, a small review for inclusion in the Newsletter would be appreciated.

FUTURE MEETINGS

Risks in Heavy Lifting Operations (or Brute Force and Competence!)

Chemical Engineers often find themselves in Project Management positions, with responsibilities for construction or demolition projects involving the lifting of heavy process vessels and equipment.

Whilst failures in heavy lifting operations are rare, the consequences in terms of both equipment damage and consequential losses can be catastrophic! This meeting will provide an insight into both practical aspects and an analytical approach to risk assessment.

The meeting will be held in Aldwych House at Foster Wheeler Energy, Reading on Thursday 16 September.

Those interested in attending should contact:

Simon Turner
Foster Wheeler Energy
Station Road
Reading
Tel: 0734 396048
Fax: 0734 396333

The Cost of Major Incidents

- 1st December 1993.

To be held at Bowring Buildings, London.

See the IChemE diary for further details.

Accident Investigation

- February 1992.

Inherent Safety

- May 1993

Details to be announced - Watch this space!!

COMPETITION

Here's a chance for all you scientists and engineers to show your artistic abilities!

Get your pencils, paintbrushes, canvases and computer design packages out and give them a dust down. What we would like you to do is design the front page format of the Newsletter (and the inside pages if you think they are that bad). The design should contain a suitable logo for the Subject Group.

The winner will be awarded a book of their choice from the IChemE up to a value of £25.

NOTICEBOARD

Health & Safety Curriculum Project

The Education Liaison Unit of the IChemE, who have developed a number of resources for use in schools, are involved with the Health & Safety Curriculum Project - a project to encourage the development of an Health and Safety curriculum at secondary school level.

They would like to invite a member of the Subject Group to join a small advisory group that will put forward views on how the curriculum should be shaped.

Further details from Sue Fortunka, Professional Development Manager at the IChemE.

Safety and Management Award

The Chemical Engineer are to launch a Safety & Management award, the first award being made in 1994. It will be open to project teams, rather than individuals, nationally and internationally.

They are currently looking for nominations and for organisations willing to provide sponsorship. Further details from Steve Billington or Gerry Woolf at the IChemE.