IPSG
INTERNATIONAL PROCESS SAFETY GROUP

Sharing for Safety

1975 - 2010
A short history of the International Process Safety Group

Introduction

As the 12th chair of the International Process Safety Group, I found the story behind the IPSG's origins and its development over the last 35 years both illuminating and fascinating. As such, I am indebted to one of my predecessors in the role, Jim Hempseed, who graciously accepted the challenge of delving into the archives and piecing the story together. I trust you will agree that Jim has done a terrific job.

My first encounter with the IPSG was in Bristol, Pennsylvania in 2002. At that time I was largely unaware of the group's rich history. But today, I can say that my participation has been both a powerful and professionally enriching experience. I am proud of the fact that my company, BASF, was a founding supporter of the group and remains so to the present day.

It would be easy for the uninitiated reader to dismiss this small volume as a vanity project, since this is the story of a relatively small and close knit group of dedicated safety professionals. It's probably true to say that you really needed to be there in order to appreciate much of what is recounted in these pages. But on reflection, I'm comfortable with this because in the final analysis; process safety should always put people first and there is much truth in the statement attributed to our first chairman, Trevor Kletz, that "organizations have no memory". Through the open and frank discussions, which are a hallmark of the group, members have benefitted from retaining and more importantly, leveraging lessons learned to protect people and the environment.

So, the IPSG story dwells heavily on people and the relationships formed in the noble cause of sharing for safety over the years since the group's genesis as the International Study Group on Hydrocarbon Oxidation in 1976.

Many of those relationships endure to this day and there is ample scope for others to join the modern day equivalent of Ted Kantyka's 'Hydrocarbon Club'. If you are interested, you'll find the contact details on the back cover.

My thanks go out to each and every one who has contributed to this rich history.

Enjoy!

Dan Miller
IPSG Chairman

March 2011

Gang of Four: (Left to Right) IPSG Chairs, Dan Miller, Jim Currie, Larry Csengery and Jim Hempseed at IPSG 50 in London

In the beginning:

Learning the lessons from Flixborough

Shortly before 5pm on Saturday 1 June 1974 the peace of an early English summer afternoon was shattered by an explosion that signalled the worst peace time industrial accident in British history[1]. Twenty eight people were killed and a further thirty six were seriously injured in an explosion at a chemical site operated by Nypro (UK) Ltd. near Scunthorpe. The plant, which produced the raw materials for nylon production, was completely destroyed by the explosion. The disaster happened during the processing of cyclohexane when a temporary bypass assembly linking two of the plant's six reactors suddenly failed, allowing some of the highly flammable liquid to escape and form a vapour cloud up to 200m in diameter. The cloud then ignited to cause a blast equivalent to 15 Mt of TNT. Offsite consequences resulted in fifty three reported injuries and damage to property in the local area. The death toll would have been considerably greater if the explosion had occurred on a weekday when up to five hundred employees could have been on site. Flixborough went on to become a defining moment in process safety.

The Hydrocarbon Club

New major hazards legislation was to follow in the United Kingdom (CIMAH and then COMAH[2]), but this incident was also the trigger for an ICI engineer called Ted Kantyka to start an initiative that is still going strong nearly forty years later. Ted, who was Vice President of the Institution of Chemical Engineers (IChemE) at the time, contacted all the safety people who he knew were involved in hydrocarbon oxidation to see if they would be willing to exchange information to prevent such a terrible accident happening again. At the time this was a novel idea, especially as some of the companies were competitors and located in different countries. But Ted persevered and the first meeting of this "Hydrocarbon club" was held in London in April 1975.

No formal minutes survive from the first meeting, but three papers are preserved in the IPSG archives:

1. *The hazard of gas phase oxidation in liquid phase air oxidation processes* by J M Alexander
2. *Stress corrosion cracking of stainless steel in cyclohexane oxidation plants* by F Hearfield and T A Kantyka
3. *Some questions raised by Flixborough by* T A Kletz

The meeting was evidently a success because the attendees agreed to meet again later that year and to fund the 'club' by subscriptions from member companies. A membership fee was set at £300 per year and the IChemE agreed to administer the group, which was to be called the International Study Group on Hydrocarbon Oxidation (ISGHO). ICI's Trevor Kletz was elected as the group's first chairman.

The twenty three founding member companies were truly international:

Akzo n.v. (Netherlands)
BASF Aktiengesellschaft (Germany)
Berol Kemi AB (Sweden)
Celanese Corporation (USA)
DuPont de Nemors International SA (Switzerland)
DSM (Netherlands)
Dynamit Nobel Aktiengesellschaft (Germany)
Essochem Europe Inc. (Belgium)
ICI (UK)
Eastman Kodak Company (USA)
Laporte Industries Ltd (UK)
Mitsubishi Petrochemical Co. Ltd (Japan)
Mitsui Toatsu Chemicals Inc. (Japan)
Monsanto Company (USA)
NCB (Coal Products) Ltd (UK)
Nypro (UK) Ltd (UK)
Oxirane Corporation (USA)
Phenolchemie GmbH (Germany)
Rohm & Haas (UK) Ltd (UK)
Scientific Design Company Inc. (USA)
Shell Internationale Chemie Maatschappij B.V. (Netherlands)
Sumitomo Chemical Co. Ltd. (Japan)
Teijin Ltd (Japan)

[1] See http://www.hse.gov.uk/comah/sragtech/caseflixboroug74.htm for an accident summary published by the United Kingdom, Health & Safety Executive.
[2] See http://www.hse.gov.uk/comah/index.htm for an overview of the legislation.

Truly international: A first attempt at branding by the IPSG's forerunner the ISGHO

The group gathered for its second meeting in London during October 1975. Seven papers were presented covering a range of topics, but all connected in some way to the Flixborough incident. Topics addressed included explosion relief, control room design, formation of flammable atmospheres, hydrocarbon tank layout, safe design of hydrocarbon oxidation plant and pipe failures. Some of the speakers would go on to become leading lights in the fledgling group, notably Walt Howard of Monsanto, Scientific Design's Russ Hill and Frank Hearfield from ICI.

Seveso raises the stakes

The next meeting, which took place in June 1976 at Amsterdam in The Netherlands, was the first to be held outside of the UK. Only two papers are preserved in the archives. One on 'Stress corrosion cracking of stainless steel' by S Hijikata and another on 'Back up system of utilities in emergency' by T Uematsu. Barely a month later, a release of tetrachlorodibenzoparadioxin (TCCD) into the neighbourhood of a small chemical plant operated by the Icmesa chemical company[3] in northern Italy would have profound impact on the development of future major hazards legislation in Europe; the Seveso Directive[4].

The group returned to the UK for its fourth meeting in February 1977, with IChemE hosting at its Rugby premises. Trevor Kletz presented a paper on other fires and explosions on hydrocarbon oxidation plants and there were papers on improving software systems to reduce risk, emission of cumene, unconfined vapour cloud experiments and blast wave pressure calculations. The group was now starting to broaden its remit beyond the Flixborough incident. This became even more apparent at the fifth and sixth meetings in Heidelberg, Germany, and Charlotte, USA, respectively, although both meetings discussed papers by Nypro's C L Bell, which covered emergency planning and societal aspects related to the Flixborough incident and its aftermath.

The meetings, which continue to this day, had become essential forums for sharing important information between operating companies with the laudable aim of improving standards in process safety for all. In many cases, participants hear details of incidents, experiments, techniques and designs long before they surface in the public realm. The fear of potential litigation, particularly in the USA, is often viewed as a hurdle to companies who wish to exchange information on process safety incidents. At the same time, fear of disclosing commercially sensitive information to competitors has been an ongoing concern. However, over the years, successive technical secretaries have exercised great discretion and caution, thereby permitting the development of mutual trust and a powerful instinct to share information in pursuit of the greater good. In Heidelberg Trevor Kletz, in his final meeting as chairman, tabled a paper examining the challenges associated with the circulation of information both within and between organisations. Walt Howard of Monsanto was elected as the group's second chairman whilst ICI's Frank Hearfield continued in the role of technical secretary.

Kletz on inherent safety

The Charlotte meeting in March 1978 saw Trevor Kletz present a paper entitled 'What you don't have can't leak'. This would lead to many articles and a book on inherent safety by Kletz and in later years the IPSG sponsored the production of a training package dealing specifically with inherent safe design; but some of those who were present in Germany recall that this was the first time that the concept had been aired in a professional forum. Kletz went on to formally publish the paper in the journal Chemistry and Industry three months later.

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[3] See http://www.hse.gov.uk/comah/sragtech/caseseveso76.htm for an accident summary published by the United Kingdom, Health & Safety Executive.

[4] See http://ec.europa.eu/environment/seveso/index.htm for an overview of the legislation.

The seventh meeting took place at the Excelsior hotel near London's Heathrow airport in September 1978. This proved an ideal location from a travel perspective given the international composition of the group. Reports on the activities of other groups were now a feature of the agenda. Participants heard contributions from IChemE's Loss Prevention Panel, The European Federation of Chemical Engineering's Working Party on Safety and the American Institute of Chemical Engineers' Design Institute for Emergency Relief Systems. ISGHO had become firmly established as a credible body on the international process safety scene initiating and participating in many productive debates. For the first time, the group considered setting up small working parties on key topics and a project looking at the effectiveness of oxygen sensors and analyzers was started. The minutes record that Shell's P L Classen and K E Scanlon of ICI were keen contributors at the meeting presenting two papers each.

BASF start a trend

BASF hosted the eighth meeting in Frankfurt, Germany during June 1979. The meeting coincided with the triennial ACHEMA trade fair which included a major focus on process safety that year. This was to be Walt Howard's last meeting in the chair. Roy Hughes from Rohm and Haas was duly elected to succeed Walt, and Monsanto's Stan Skinner assumed the role of technical secretary following the untimely death of Frank Hearfield. Stan would be the first participant to serve both as technical secretary and chairman during his time with the group. The Frankfurt gathering was the first to be formally hosted by a member company, but within six years this would become the norm. ISGHO member companies quickly came to consider it an honour and a priviledge to stage the meeting on their premises and healthy competition developed. Representatives of BASF's senior management addressed the group demonstrating a high level commitment to process safety and a visit to the Ludwigshaven site featured in the programme. Both activities became standing features of subsequent meetings.

During the meeting, Akzo's Rien vis van Heemst presented a paper on new developments in the Netherlands where a requirement for risk analysis studies was taking shape. The concept of societal risk curves and acceptability targets was new at that time and may have come as something of an eye opener for member companies operating outside the Netherlands. Trevor Kletz presented a paper simply entitled 'Why do pipes fail?' Meanwhile, Stan Skinner was focusing on acoustic emission testing. Working groups were subsequently set up to explore both topics in more detail.

Hancock's hour

In 1979, IChemE had appointed Bernard Hancock - 'Bernie' to American delegates - to manage its Loss Prevention Bulletin and related process safety work programmes. It had seemed entirely logical to assign Bernard to administer ISGHO's activities and the rather grand title, 'International Coordinator' was agreed upon. This turned out to be a real turning point. Bernard's flair for organisation and desire to grow the group came to the fore and soon many more companies would join and benefit from membership. Many past participants are on record as saying that it was Bernard's personal enthusiasm for the group that persuaded them to get involved in the first place. Bernard was adept at ensuring that everything ran smoothly, not just for the technical agenda, but also the fledgling accompanying partner programme, which had started informally but soon developed into a compelling reason for attendance.

The 1980's: Expansion, growth and a new name

Roy Hughes chaired the next six meetings with Bernard Hancock in support. The group met in Holland, Switzerland, England, Belgium, California and Spain. Essochem's Charlie Soloman had been elected to take the chair at the Madrid meeting but sadly he died shortly before the meeting convened. ISGHO meetings were now following a familiar format with an opening session devoted to business matters and reports, followed by papers from members on hot process safety topics or incident case studies. Papers on emerging new tools, including process hazard analysis and fault trees, were presented alongside contributions on more established topics such as pressure testing, explosion venting and safety auditing. At the start of every meeting the chairman would remind participants that confidentiality was one of the strengths of the group. Nonetheless, the founding principle of frank and open discussion continued and the powerful process of sharing for safety between international colleagues went from strength to strength. Frequently, the meetings were being timetabled to coincide with other notable international process safety conferences including the AIChE's Loss Prevention Conference in Anaheim in June 1982. This move had the impact of reducing costs, increasing participation and opening up opportunities for invited guest contributors. Dr Ken Palmer of the UK's Fire Research Station was a typical example; Palmer addressed the 11th meeting in Chester, UK sharing his considerable expertise on fire and explosion problems with hydrocarbons.

The bell tolls for thee

In Basle, Bernard Hancock made an inherent safety decision which remains a hallmark of the group's gatherings. As he put it in an interview with The Chemical Engineer magazine in 1995, "The chairman kept taking a glass and hitting it with a spoon to call the meeting to order. I was afraid there would soon be a trail of broken glass across Europe, so I went out and bought a Swiss cowbell for him to use." Bernard would later purchase a lot more bells of various types following a decision to present each retiring chairman and technical secretary with one upon their departure.

Tony Cox of Shell, Dick Schwab of the Allied Corporation and Monsanto's Stan Skinner were keen contributors during this period of meetings. Members were now comfortable in sharing information informally, including design standards - Exxon shared their standard on thermal relief of pipelines - and case studies. Those who participated in working groups were able to determine best industry practices, usually with help from experts in the field, or from within their own companies.

Teun van Hoek of DSM took the chair at the meeting in Harrogate, England, in September 1983 but in view of his imminent retirement from industry, he announced his intention to step down after the next meeting in Lyon, France. The Harrogate meeting preceded the 4th International Symposium on Loss Prevention. Several past chairmen were in attendance, including Walt Howard, Roy Hughes and Trevor Kletz who had taken a professorial chair at Loughborough University in England. Ted Kantyka, now working as an independent consultant, returned for an afternoon session along with Jack Burgoyne. The UK's Health and Safety Executive was represented by A F Roberts. Walt Howard gave an illuminating paper on the 1976 Seveso incident entitled 'Seveso: cause and prevention'. The Seveso incident was characterized by a toxic release following the rupture of a bursting disc, the episode had nothing to do with hydrocarbon oxidation whatsoever.

What's in a name?

At the Lyon meeting in France during April 1984, a consensus emerged that the group had unwittingly, but perhaps usefully, widened its remit and corporate membership beyond what some individuals had originally termed a 'hydrocarbon club'. Stan Skinner put the matter succinctly, 'We have just as many hazards and challenges in non hydrocarbon oxidation plant...', a sub group was duly formed to examine the group's terms of reference and report back with options for the way forward.

Basle 1980: Walt Howard (Centre) and Stan Skinner (Left) enjoy a little down time

Bob Mill became the fifth chairman at the next meeting when Exxon hosted the group in Houston, Texas in March 1985. The meeting proved to be extremely significant in the group's history in that a change of name was agreed. From this point onward, the group would be known as the International Process Safety Group (IPSG) and new terms of reference were discussed in detail. The following objectives of the IPSG were proposed:

1. To consider major hazards common to the process industry.
1. To exchange information on preventing accidents on a confidential basis.
2. To set up specialist working parties.
3. To discuss and issue guidance on specific process safety topics.
4. To keep members up to date on government and public attitudes towards safety in member's countries.

There was much debate around possible conflicts of interest and it was agreed to exclude from membership organisations with regulatory connections. However, other potential conflicts that might inhibit contributions to the technical discussions that are an essential part of the group meetings were identified. It was proposed that any member with such a conflict of interest should declare it and withdraw from the deliberations. It was also suggested that limits should be placed on the numbers of companies in membership and various qualifying criteria were mooted. Stan Skinner and Bernard Hancock agreed to reflect on the discussions and, with support from Alan Duxbury from ICI, Shell's Tony Cox and Albrecht Wallis of BASF, terms of reference would be finalised for approval at the next meeting.

Focus on key topics

Another decision was reached in Houston, namely that for future meetings a specific topic should be selected as a core theme for a substantial part of the agenda. A brainstorm session generated sixteen possible themes including piping failures, runaway reactions and risk analysis. Not all of the suggestions went on to become themes at future meetings.

One can only speculate at the conclusions that the group might have reached on some of the discarded suggestions, which included possible uses for the US nuclear weapon test site in Nevada.

The next meeting took place at Den Haag in the Netherlands, with Shell, DSM and Akzo jointly hosting the meeting. Shell's Tony Cox was the group's new technical secretary. The DSM host reminded the members that DSM still stood for 'Dutch State Mines' and he was proud to report that they had the best safety record in the world with zero accidents at their mines. This tongue in cheek observation was not lost on the delegates present. A hand was raised and the question posed, 'How many mines do you operate in the Netherlands?' Back came the deadpan reply, 'We have no mines in the Netherlands.' The meeting saw the formal endorsement of the change of name to International Process Safety Group. It was also the first meeting for Jim Hempseed, a young chemical engineer and process safety expert from Air Products. Jim, who would later go on to become first Technical Secretary and then Group Chairman, remarked, 'I was rather surprised when my company asked me to represent them at the ISGHO because I knew little about hydrocarbon oxidation processes; but once the meeting was underway, I immediately came to see the benefit of taking part and the name change was very timely in that it provided a far better description of the group's raison d'être.'

The IPSG met next in Cannes, France during September 1986. The meeting, which preceded the International Loss Prevention Symposium, focused on the topic of toxic gas releases with case studies and papers on quantification, health hazards from acute inhalatory exposure and mitigation of the effects of chlorine spills from storage. Gene Lee from Air Products gave a presentation on gas dispersion models. IPSG presentations are traditionally practical in nature; however, Lee's contribution is still recalled as the most mathematical paper ever presented in an IPSG setting. Legend has it that delegates were subjected to more than fifty equations. But suitably fired up by the experience, IPSG representatives had a major impact on the subsequent symposium, dominating questions from the floor and putting many speakers on the spot – perhaps giving a snapshot of the rigorous discussion that takes place in an IPSG meeting. Bob Mill retired as chairman at the end of the Cannes meeting to be succeeded by Monsanto's Stan Skinner. Bob is fondly recalled by many as an excellent chairman who kept the group focused on the topic at hand, controlling discussions with seemingly effortless tact.

After Bhopal

The 20th IPSG meeting was held in Oslo in May 1987 and hosted by Norsk Hydro. Host company representative, Bjorn Roer, presented two thought provoking case studies on ammonia plant incidents and a range of topics from safer plant layout, to hydrogen pipeline failure were discussed. Rien vis van Heemst of Akzo presented details of 'Safeti', a new computer software tool under development by DNV, which was being used for third party risk assessments. Safeti would later be adopted by many IPSG member companies. The Oslo meeting is also remembered for the weather. Despite taking place in late spring, attendees awoke on the first morning to find it had snowed. The evening walk to the restaurant proved a chilly experience, especially for delegates from warmer climates who had arrived armed only with light summer clothes. Much leg pulling on the importance of cold weather risk assessment ensued. This was the first meeting for Union Carbide, who had initially been invited to join in 1985. Union Carbide's membership had proved problematic due to legal issues following the methyl isocyanate release at Bhopal, India in 1984[5]. This was the world's worst industrial accident resulting in the deaths of nearly 4000 people. Although a presentation on the incident was never recorded in the minutes, IPSG members did learn details of the investigation and discussed probable causes with the Union Carbide delegates at this meeting.

[5] See http://www.hse.gov.uk/comah/sragtech/caseuncarbide84.htm for an accident summary published by the United Kingdom, Health & Safety Executive.

tce Excellence Awards 1997: (Left to Right) Malcolm Preston, Jim Hempseed, Simon Jones and Henrik Christiansen

Mr. Belt and Braces: Trevor Kletz (Right) with Bernard Hancock (Left) and Henrik Christiansen (Centre)

Allentown 1996: Bob Mill (Right) makes a welcome return with Rien vis van Heemst (Centre) and Henrik Christiansen (Left)

After a break of six years, the meeting returned to the UK in 1987 where delegates were hosted by ICI in Chester. Richard Towndrow of ICI reported that the pipe failures working group was putting the finishing touches to a video training package funded by advance orders from member companies. It was agreed that this would be called 'Safer Piping – Awareness training for the process industry'. This was a first for the IPSG and the product was later launched at a safety symposium in London in 1988. IChemE published the package and retained copyright except for specific materials donated by member companies. Prior to the meeting a group of member companies had met to discuss practical experiences of using the new DNV Safeti tool. This interchange between users and potential users highlighted some of the shortcomings and limitations of the software. This proved a useful exchange and further deliberations took place prior to the next formal IPSG meeting.

CCPS and EPSC

The next meeting was staged in Seville, Spain, during September 1988 with Ertisa SA acting as hosts. Thirty two companies were now in membership and IPSG was fast approaching its self imposed limit of thirty six. A proposed pan-European safety centre received a lukewarm response from IPSG members who questioned the need and justification for another safety organisation. The Centre for Chemical Process Safety (CCPS) had been formed by AIChE in 1985 following the Bhopal catastrophe and the potential for duplication and conflict between the two bodies was the subject of hot debate. Four years later, the European Process Safety Centre (EPSC) officially came into being and it is interesting to note that when the centre was eventually formed in March 1992, many IPSG member companies featured in the roll call of initial sponsors. Moreover, key IPSG members including ICI's Alan Duxbury, Air Products' Jim Hempseed, Henrik Christiansen from Borealis and Rien vis van Heemst of Akzo made up half of EPSC's first management board. In addition, Fons Timmermans, who by that time had retired from DSM was EPSC's first Head of Centre and the indomitable Bernard Hancock became EPSC's manager.

The Seville meeting was most memorable for the excellent hospitality of the hosts Ertisa SA who also organised probably the best partner programme at any IPSG meeting to date. Typical of the generosity of the hosts was a gift to the partners of a replica of Christopher Columbus' ship the Santa Maria. The technical meeting was equally rewarding with good presentations and participation on the main two topics – storage facilities for chemical and petroleum products, and the implementation of the post Seveso European directive. Tony Cox, who was retiring from Shell, stood down as Technical Secretary at the end of the meeting and Jim Hempseed of Air Products accepted a nomination to succeed him in the role.

IPSG returned to North America and Houston for its next meeting in April 1989, which was hosted by Exxon and co-located with the CCPS spring meeting. Several presentations on storage tanks built on the stimulus from the Seville meeting, a presentation from Stan Skinner looking at the design of weak seam roofs was particularly memorable.

The final meeting of the 1980's took place in Germany in October 1989, hosted by BASF at Bad Durkheim. BASF were proud to be founder members of the group and the meeting was opened by Dr. Detlev Dibbern a BASF main board member who expressed his fulsome support for IPSG and its mission.

The 1990's: IPSG expands beyond Europe and North America

By 1990, IPSG was a firmly established and well respected forum, albeit an anonymous one beyond process safety circles. The group had reached its maximum membership of thirty-six companies and an application to join from the German pharmaceutical company Merck was put on a waiting list. Bernard Hancock was charged with advising companies that were not playing an active part in the group of the situation and gentle reminders were issued. The 25th meeting in Lyon, France, saw presentations on two topics, expert systems and warehousing. Jim Hempseed used a slot to describe the over-reaction of the media and even the Irish parliament to a small leak of dimethlcyclohexamine in a Dublin warehouse. One reporter had even posed the question, 'Is this Ireland's Bhopal?' Fortunately it wasn't and no one had been injured, but the episode highlighted the importance of managing the media reporting of safety incidents. Ten short case studies were presented; the success of this format resulted in its adoption at future gatherings. Stan Skinner stood down at the end of this meeting and Dow's Jos Gremen was elected the new chairman.

Managing for safety

The success of the 'Safer Piping' training package stimulated a new project on process safety management, an issue frequently identified as a fundamental cause of failures. Bernd Frohlich of Exxon led a working group charged with the idea of a developing a video script, complete with real case studies and a model procedure for getting things right. The creativity of Bernd's working group, which wrote the script, hired an actor and directed filming on location at various IPSG member company sites was another example of the sharing for safety principle made real, with different individuals coming together to produce a safety training package. The end product, simply called 'Managing for safety' was published by IChemE in 1991. In the foreword it states, "The organisations involved with IPSG recognised their responsibility to share and exchange information on process safety with other companies outside the group and agreed to fund the production of a video and slide training package under the auspices of the IChemE so that major lessons to prevent management failures could be promoted worldwide".

The Lyon meeting, was hosted by Rhône Poulenc. It was now the norm for meetings to be opened by a board member of the host company, this function was fulfilled by Rhône Poulenc's Gérard Vuillard. Bernard's letter to recalcitrant members had resulted in one company withdrawing thus Merck were finally admitted into membership. However, healthy interest in IPSG continued unabated and Procter and Gamble took their place on the waiting list. It was decided that the group was now of sufficient size to justify a full three day meeting with half a day devoted to business matters, half a day for a site visit and two days of technical sessions. This format proved very robust and has endured to the present day. The site visit was a little different on this occasion however, with delegates touring a French nuclear power plant. A technical session on explosions proved most interesting with the work of the Christian Michelson Institute presented by two guest speakers Dr J R Bakke and Dr F Alfert. Bernd Frohlich then presented a study by Exxon using the CMI calculation methods for the design and improved layout of a polyethylene plant. The session ended with another guest speaker, D M Johnson from British Gas. Johnson described their experiments and calculations on vapour cloud explosions and BLEVEs. This interaction typified one of the main attractions of IPSG meetings, a technical subject of particular interest to members discussed in detail from theory to practical application with expert guest speakers as well as meaningful contributions from members based on their own experiences.

The 26th meeting was held at Brugge, Belgium in March 1991 and hosted by Monsanto. In response to the mood of the times it was agreed that IPSG needed a logo and members were asked to submit ideas. The technical sessions covered the application of the now completed 'Managing for safety' training package and

also took a detailed look at electrostatic hazards with a guest speaker from Chilworth Technology providing an external viewpoint. Odo Klais of Hoechst was a keen contributor to meetings during this period and Brugge proved no exception where he presented three separate case studies.

IPSG expands further

The next meeting was the first to be held in Canada, and was hosted by Novacor Chemical in the industrial town of Sarnia, Ontario. This represented a change from some of the more glamorous locations chosen by previous host companies but attendance was unaffected with 33 members participating. A 'murder mystery' evening dinner provided alternative focus for the participant's incident investigation skills and site visits to local chemical sites proved convenient. A vote was taken on increasing the number of member companies from thirty-six to forty was carried nem con. The meeting also agreed to create a searchable database of the nearly two hundred papers presented at ISGHO and IPSG meetings to date. Abstracts were to be written and approved by the author or member company before being adding to the database. One Jim gave way to another as Jim Hempseed stepped down from the role of Technical Secretary to be replaced by another Jim, in this case ICI's Jim Hawksley.

The 28th meeting in April 1992 was the first to be held in Italy, at Taormina on the island of Sicily, with Enichem S.p.A. acting as hosts. It was well attended with 42 delegates present. The retirements of long standing members Stan Skinner from Monsanto, Stan Schecter from Rohm and Haas, Volker Gierth from BASF, ICI's Alan Duxbury and BP's Peter Campbell were announced and served to illustrate the changing membership over time. Nonetheless, their successors would continue to nurture and develop the IPSG spirit. After a lengthy wait, the new terms of reference now permitted Proctor and Gamble to join the group. Inherent Safety was proposed as the topic for the next video training package and Dow's Richard Gowland volunteered to lead on the initiative.

In February 1993 the group travelled to Geneva for a meeting hosted by DuPont. Courtaulds were the latest member company and concern was expressed that room should be left to extend the membership into under represented regions including eastern Europe and the Asia Pacific. An IPSG logo based on a sketch by Jim Hempseed and outsourced by Peter Hughes of Novacor to a professional graphic design artist was accepted by the group. The design is still used today. A fine bottle of red wine was the prize for these endeavours and this was gratefully consumed in a ski chalet at Megeve where some members had tagged a ski break onto the end of the meeting. This type of extended social interaction amongst the representatives of member companies provides a clear illustration of the personal friendships that were becoming a defining characteristic of IPSG membership. Brian Fullam of the UK Health and Safety Executive was the guest contributor in Geneva and he gave a frank review of the Seveso Directive and proposed revisions. This provided a good opportunity for members, not only to hear at first hand what was being changed, but also to comment on the implementation of the legislation.

Out of the shadows

The 30th meeting in September 1993 was held in conjunction with the CCPS meeting in San Francisco. IPSG held an open workshop on process safety management with contributions from several members and a showcasing of the 'Managing Safety' training package. This move marked the beginning of the IPSG leaving the shadows and gaining recognition as a leading contributor in the safety field. This was followed up at the next meeting by a process safety day to show examples of best practice to the Polish chemical industry, which was beginning to grapple with the need to meet international standards in process safety following the fall of the Iron Curtain. The use of syndicate sessions had been agreed in Geneva as a way to improve the technical meeting structure. The first topic to be address within this new format was the challenge of finding appropriate success metrics for process safety reporting. Presentations by Ian Scott of DuPont and Bernd Frohlich of Exxon on their respective companies'

differing approaches catalysed a lively discussion. San Francisco saw Jos Gremen's last meeting as chairman and the election of Air Products' Jim Hempseed, the 8th, and youngest, chairman to date.

Polish industry seminar

Zaklady hosted the next meeting in Krakow, the first in Poland, which followed the successful seminar for representatives from the Polish chemical industry. The minutes record that the exchange of ideas proved a worthwhile experience for all who participated and the same could be said of the tour of the salt mines that followed the meeting. Zaklady's Edward Luzny, a regular attendee, later reported good feedback from his industry colleagues and requested similar meetings. A membership application from the Warsaw Technical Institute was declined due to the group's terms of reference which confine membership to manufacturing companies only. Industrial gas company BOC met these criteria and were subsequently admitted into membership. Structured feedback was solicited from participants for the first time in Poland, the findings revealed that IPSG's first meeting in Eastern Europe was considered a great success.

The first of two meetings in 1995 was hosted by Hoechst AG in their own hotel in Frankfurt, Germany. Christian Jochum and Odo Klais represented the German arm of the company and were keen contributors to the meetings. A technical session on separation distances proved stimulating with Martin Elliott of BOC describing quantitative methods for estimating safe distances between equipment to mitigate likely incidents, which had been proposed by the European Industrial Gases Association (EIGA). This risk-based approach was seen in particular contrast to the minimum standards approach favoured in Germany and some other countries. Several papers were presented on the topic in a session facilitated by Ken Lodge from ICI.

DSM hosted the next meeting in Maastricht, Holland with Henrik Christiansen of Statoil taking over as Technical Secretary. The chairman made a grand reference to the Maastricht treaty signed in 1992 at the dinner; brandishing an impressively large book before the diners. On closer inspection, the faux leather volume turned out to be a copy of the Dutch telephone directory! Three more companies had applied for membership, but only Chemko from Slovakia were admitted on this occasion. The dilemma facing members was that if the meeting grew too large, many of the benefits of taking part would be lost. In order to address this challenge it was agreed that forfeiture of membership would occur if a company did not send a representative to three consecutive meetings. All participants were being encouraged to contribute five minute incident case studies to the meetings. This feature of IPSG meetings has also continued, although fifteen minute studies are more commonplace in the modern era.

Project funding secured

Air Products hosted the 34th meeting at their global headquarters in Allentown, USA. Gene Lee and Jim Hempseed had represented Air Products since their company had joined IPSG in 1985, a continuity that was somewhat unusual for member companies. During the meeting, changes in financial management driven by revisions to UK charity law were discussed. The revisions brought about better control of revenue from member subscriptions and improved transparency around administration charges. These new measures also resulted in a very important change. In future, IPSG projects would be funded from the group's accumulated surplus rather than by requesting additional donations from member companies, which had previously been the case. In addition, the arrangement whereby IPSG members could benefit from a significant discount on the purchase of training packages was agreed. The Allentown meeting saw a record eighteen case studies presented and a session on programmable electronic systems spawned yet another working group.

The ambulance down in the valley

Retired chairmen are occasionally invited to join the traditional IPSG dinner on the last night of the meeting and 1996 was no exception with Bob Mill returning to meet old and new colleagues. When pressed for a speech, he rose to the occasion by reciting from memory Joseph Malins poem, 'The ambulance down in the valley, written in 1895':

The ambulance down in the valley

'Twas a dangerous cliff, as they freely confessed,
Though to walk near its crest was so pleasant,'
But over its terrible edge there had slipped
A duke, and full many a peasant.

The people said something would have to be done,
But their projects did not at all tally.
Some said "Put a fence 'round the edge of the cliff,"
Some, "An ambulance down in the valley."

The lament of the crowd was profound and was loud,
As their tears overflowed with their pity;
But the cry for the ambulance carried the day
As it spread through the neighbouring city.

A collection was made, to accumulate aid,
And the dwellers in highway and alley
Gave dollars or cents - not to furnish a fence –
But an ambulance down in the valley.

"For the cliff is all right if you're careful," they said;
"And, if folks ever slip and are dropping.
It isn't the slipping that hurts them so much
As the shock down below - when they're stopping."

So for years (we have heard), as these mishaps occurred
Quick forth would the rescuers sally,
To pick up the victims who fell from the cliff,
With the ambulance down in the valley.

Said one, to his pleas, "It's a marvel to me
That you'd give so much greater attention
To repairing results than to curing the cause;
You had much better aim at prevention.

For the mischief, of course, should be stopped at its source;
Come, neighbours and friends, let us rally,
It is far better sense to rely on a fence
Than an ambulance down in the valley."

"He is wrong in his head," the majority said;
"He would end all our earnest endeavour.
He's a man who would shirk this responsible work,
But we will support it forever.

Aren't we picking up all, just as fast as they fall,
And giving them care liberally?
A superfluous fence is of no consequence,
If the ambulance works in the valley."

The story looks queer as we've written it here,
But things oft occur that are stranger.
More humane, we assert, than to succour the hurt
Is the plan of removing the danger.

The best possible course is to safeguard the source
By attending to things rationally.
Yes, build up the fence and let us dispense
With the ambulance down in the valley.

Joseph Malins (1895)

At a stroke, Bob had cleverly managed to illustrate a key fundamental of process safety that was clearly well understood in the 19th century. His moving contribution brought home to the assembled gathering of international process safety specialists the continuing need to argue tirelessly for the right decisions to be reached when tackling safety challenges. The ambulance down in the valley is sometimes dubbed 'the IPSG poem'.

Belt and braces approach

The 35th meeting was held in February 1997 at Kenilworth, UK, hosted by Courtaulds at their training centre. Bernard Hancock had retired from the IChemE a month earlier but was given a warm reception and presented with a gift in recognition of the many years of support that he had provided to IPSG. His successor on the IChemE staff team was Simon Jones. Simon had previously worked on the IPSG inherent safety video and brought a youthful enthusiasm to his new role. Later that year he would join Jim Hempseed and Henrik Christiansen to receive an award on behalf of IPSG for his work on the training package. The guest speaker at Kenilworth was Keith Cassidy from the UK's Health and Safety Executive. He presented an paper intriguingly titled, 'Some risks in risk management'. The different styles of prescriptive legislation in the USA versus the non-prescriptive approach adopted in the UK was a major talking point. Members broke into syndicate sessions on the topic of auditing to confirm the quality of process hazards analysis (PHA). Trevor Kletz made a welcome return joining the group once again to give a paper on the cost effectiveness of safety. At the meeting dinner he was introduced by the Chairman as Mr 'Belt and braces' and eagle eyed observers were reassured to note that Trevor was indeed wearing both.

Jim Hempseed's final meeting as chairman was at Stenungsund, the centre of Sweden's petrochemical industry. The meeting, which was hosted by Borealis took place in October 1997. It would also be his last meeting with the group. The financial report indicated that IPSG had now amassed a surplus exceeding £18,000, providing a strong cash base for the development of further training materials. In the years ahead this figure would grown considerably. Exxon's Bernd Frohlich succeeded to the chair as Jim headed for fresh pastures.

Remembering 'Bernie'

Dow Chemical hosted the next meeting in May 1998 at their Terneuzen site in the Netherlands. Terneuzen is one of Western Europe's major chemical parks with several IPSG member companies operating plants at the site. The gathering provided a firsthand opportunity to learn about the third party risk criteria that would be applied in 2000 as part of the Dutch government's implementation of the Seveso 2 directive. Greg Keeports of Rohm and Haas and Richard Gowland of Dow gave papers on their inherent SHE projects. The main focus of the meeting was an examination of effective systems for communicating incidents and investigation findings. Participants were also treated to the usual batch of case studies, which once again ranged from seemly trivial but highly relevant episodes to sobering accounts of near catastrophes. IPSG members were saddened to hear of the death of Bernard Hancock. Bernard had passed away just a month earlier. Several IPSG representatives had attended his funeral.

The 38th meeting retuned to Houston, USA, in March 1999 for a gathering co-hosted by Shell and Exxon at the impressive building known as One Shell Plaza. Henrik Christiansen had completed his stint as technical secretary and passed the pencil to Rien vis van Heemst of Akzo Nobel. Shell's Larry Csengery presented on their risk based decision-making methodology and there were papers and discussion on the topic of 'Expensive standards versus risk based design decisions'. Human factors in process safety was also a hot topic and this was carried over to the next meeting, which was hosted by BOC in England at Lincoln. Bernd Frohlich, Larry Csengery and John Susil of Celanese presented on 'Improving human performance for safe guarding process hazards' and the subsequent syndicate session highlighted a wide variation in the application of human factor techniques amongst member companies.

New millennium new challenges

The 40th meeting broke new ground as the IPSG travelled to the Middle East for the first time. The meeting was hosted by Oil Refineries Israel and a new member company, the Dead Sea Bromine Group who hosted the site visit. Prior to the meeting, a seminar with Israeli industry similar to the previous successful event in Poland was arranged at the Ben Gurion University of the Negev in Beer Sheva. Henrik Christiansen recalls the security arrangements: "I remember when we turned up there; the first person I encountered was a young lady with a machine pistol. She stuck the gun in my chest and asked me to explain what I was doing there! Let's just say the security was tight. The meeting was well covered and there were several army officers present." The social programme was different too with a memorable dinner on the floor of a Bedouin tent being one of the highlights. Process safety auditing was the main technical topic with useful feedback from the syndicate groups.

Web development

The subsequent meeting was held at Cologne, Germany in March 2001. Administrative matters were now in the hands of the IChemE's Eb Adeyeri who had taken over the role following the departure of Simon Jones. Prior to his leaving, Simon had commissioned the first IPSG website with the aim of facilitating better networking between meetings and on-line access to past papers. Membership had fallen from a peak of 41 to 36 as a result of mergers and consolidation within the chemical and process industries coupled with the withdrawal of some companies who were finding it difficult to send delegates to meetings. Nonetheless, IPSG's balance sheet remained healthy with funds exceeding £60,000. Shell's Hans Koen and Jan Windhorst of Nova Chemicals were prominent contributors during this time and Cologne saw a stimulating series of papers looking at the 'Economics of scale'. Delegates present acknowledged that as plants were growing larger, the need for additional risk assessment was growing too. Rien vis van Heemst stood down at the end of meeting with Unni Samdal of Norsk Hydro becoming the group's first female technical secretary. Bernd Frohlich's last meeting as chairman was in Bristol, USA, in March 2002, a meeting jointly hosted by Rohm & Haas and Akzo Nobel. Bernd was warmly thanked for his work and commitment to the IPSG during his time in the chair and Larry Csengery of Shell was elected to succeed him. Three topics were discussed at the meeting with several presentations on each: risk analysis and assessment, process safety measurement and learning lessons from incidents.

Unni calls for clarity

Shell Global Solutions' Larry Csengery welcomed members to the next meeting in Berre, France, which was co-hosted by Shell and Basell. The group had agreed to revise the 'Inherent Safety' training package and a review panel was established with an allocated budget of £20,000. The technical discussion featured several papers looking at Layers of Protection Analysis (LOPA) and Safety Integrity Levels (SIL). To say that Jan Windhorst of Novachem highlighted a lack of robustness in many instrumented systems, would certainly be an understatement. Jan's dry humour and deadpan observations were one of the highlights of the group interaction during this period and delegates would hang on his every word in anticipation of the – sometimes calamitous – punch line. But at the same time, many examples of good practice were shared. It was during this period that the Technical Secretary, Unni Nord Samdall started the practice of appending the technical minutes with a lengthy table of acronyms encountered during the meeting. The appendix was accompanied with a gentle plea to avoid acronym overload in the interest of maintaining effective communication between delegates of many different nationalities.

7th World Congress

Founder members BASF hosted the meeting once again in October 2003. On this occasion delegates travelled to their Ludwigshafen site in Germany. The meeting agreed to sponsor six delegates to the 7th World Congress of Chemical Engineering, which

was scheduled to take place in Glasgow in 2005. This represented an exciting new development for the group in that the IPSG members would attend a public conference and present papers on behalf of the group for the first time. Process Safety Management was the dominant topic in Ludwigshafen with notable presentations by the immediate past chairman Bernd Frohlich, the current chairman Larry Csengery, and future chairmen Jim Currie of BOC and BASF's Dan Miller. The subject of reactive chemical hazards also featured strongly in the discussions and Greg Keeports from Rohm and Haas used the occasion to promote new CCPS guidance on the subject.

Public profile increases

The 45th meeting was held in Calgary in the Canadian province of Alberta during June 2004 with Novachem stepping up to the plate as hosts. Whilst being a major centre of activity for oil and gas interests, Calgary itself is some distance from process engineering activity. Delegates were spared the inconvenience of a two hour flight to Fort McMurray and the Athabasca Tar Sands and were instead content to listen to Jan Windhorst's tall stories from the wild frontier and wonder at Larry Csengery's photo collection from the site. Shortly before the meeting convened, Eb Adeyeri, had opted to leave IChemE in pursuit of a new career in public relations. His stand-in, IChemE's Head of External Relations, Andy Furlong, was on hand to provide temporary administrative support to the group. That temporary cover continues to this day, although Andy has delegated much of the organisational responsibility to the IChemE's conference manager, Rosemary Cragg. The meeting was once again dominated by discussions on Process Safety Management with a record 11 papers on the topic being contributed by member companies. Dr. David Edwards of Loughborough University in the UK was on hand to participate in a syndicate session on inherent safety. The deliberations from this group provided new material for a new IPSG sponsored training package. The group also agreed to produce a corporate brochure in a further move to increase its visibility within the global process safety community.

The next meeting in Vienna, Austria, took place shortly after the Texas City refinery accident in March 2005 with Borealis hosting at their Schwechat polyolefin facility. This was Larry Csengery's final meeting in the chair ahead of his retirement from Shell. BOC's Jim Currie was elected to succeed him. Mark Preston from BP was present to give an early and sobering account of the events at Texas City two months earlier where an explosion caused by a catastrophic sequence of process safety errors had resulted in 15 deaths and 170 injuries[6]. Various proposals for corrective action were discussed. Risk management was the main topic of the meeting which saw a vivid presentation from Borealis' Bart Aerts that will long be remembered as, 'one bolt from disaster'.

Beyond Texas City

A year then passed before the group met for the forty seventh time near Valencia, Spain in May 2006. The meeting was hosted by the Ube Corporation, which had acquired the caprolactam production facility previously operated by Proquimed at Castellon. This had been the longest interval between meetings since the group's formation in 1975. However, in the interim, IPSG had staged a successful showcase at the 7th World Congress of Chemical Engineering in Glasgow a move that had prompted Huntsman Petrochemicals applying to join the group. Process Safety Management was once again the hot topic, with numerous papers on the subject, including three from Novachem's indefatigable Jan Windhorst. The close of the meeting saw Unni Nord-Samdal hand over the technical secretary's laptop to Natalie Salter from Shell Global Solutions. However, in addition to a very high standard of technical discussion and a hands on site visit, delegates and their accompanying partners will long remember the al fresco reception hosted by Ube in late evening shade of a crumbling villa surrounded by orange groves with a regional industry minister in attendance.

[6] See http://www.csb.gov/assets/document/CSBFinalReportBP.pdf for the investigation report published by the U.S. Chemical Safety and Hazard Investigation Board

San Francisco 2007: All smiles with Jim Currie and Natalie Salter (front row centre) once ladder risk assessments had been dealt with

A shaky moment

Shell Global Solutions hosted the 48th meeting in San Francisco, USA, during February 2007. The primary technical topic was Process Safety Incidents and Corporate Culture and following a visit to Shell's Martinez oil refinery, the meeting also saw an extensive debate on differing organisational approaches to occupied buildings and facility siting. The group photograph taken on the staircase of the Fairmont Hotel fails to reveal a moment of high drama when the photographer, complete with a Hollywood style flunky in tow, attempted to mount a decrepit wooden stepladder in high heels. Her attempt to get the perfect shot, in full view of 20 safety experts from around the world was not well received – clearly the words 'risk assessment' did not feature in the photographer's lexicon.

Jim Currie's final meeting as chairman came in November 2007. The meeting was hosted by BP in the peaceful surroundings of Frimley Hall near Camberley in the UK and unsurprisingly, the main topic was an examination of the report by the BP US Refineries Independent Safety Review Panel[7], dubbed 'The Baker Review'. Mike Broadribb, BP's lead investigator on the Texas City investigation, joined the meeting to give a detailed report on the incident and the changes that had been implemented at BP thereafter. Broadribb took questions for over an hour in a session that provided a searing insight into the contributing factors behind one of the worst process safety incidents of recent times.

The meeting concluded with the election of BASF's Dan Miller as the IPSG's twelfth chairman. Dan and Natalie immediately set to work on the planning of the group's fiftieth meeting, which took place in central London barely a stone's throw from where it had all begun 32 years earlier.

No fewer than three past chairmen were in attendance for a busy meeting in September 2008, which took the opportunity to review a selection of technical presentations from the first ten years of the group's existence. The project, which came to be known as 'opening the vault' heralded another new development in the IPSG story, as the current generation of IPSG representatives considered options for sharing lessons learned with a wider public audience.

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[7] See http://bit.ly/f6SnBg for the 'Baker Report'

Sharing for safety – the last word

After the 50th meeting, the global economic downturn hit the process industries hard prompting serious restrictions to travel budgets. No meetings were held in 2009 as a result. Conditions improved in 2010 and the group agreed to meet in April 2010 with Akzo Nobel hosting at Arnhem in the Netherlands. Yet just 48 hours before the meeting was due to start, an Icelandic volcano erupted causing major travel disruption and the 51st meeting fell foul of this natural hazard.

Two smaller workshop sessions were arranged in Amsterdam and Houston in early 2010 to compensate for the cancellation.

However, with meetings in the calendar for 2011 and 2012, IPSG is still going strong. And it is appropriate that the final words in this story should go so some of the IPSG's long serving members and former chairmen. First, Bernd Frohlich who said:

"I was a member of the International Process Safety Group for nearly twenty years. It was by far the best membership that my company sponsored. It wasn't just the professional quality of the meetings; it was also about friendship and sharing common passion and beliefs. Part of the glue that held the group together was the participation of partners who shared in the cultural events that were a feature of almost all IPSG meetings. Jim Hempseed was my predecessor in the chair. This was lucky for me. I inherited an attractive meeting format, well prepared topics, good break-out sessions and a useful feedback process. The finances were in good shape and a clearly structured relationship with IChemE and the host companies without whose support, the group could not function."

Stan Skinner offered the following remarks:

"During my tenure I helped to get the name changed to the International Process Safety Group. Whilst my company did operate hydrocarbon oxidation processes, we had many others that gave us problems and this was reflected in the industry in general. My spells as technical secretary and chairman were made much easier by the support of the late Bernard Hancock. He did the administrations exceedingly well and contributed a great deal to the success of the group.

I would list the main benefits of the group as follows:

1. **An opportunity to calibrate my company against others and see whether we were missing possible improvements.**

2. **The way in which it can create expert sub-groups to study specific topics with membership not restricted to those attending the main meetings. This has generated a wealth of useful publications and training products.**

3. **The opportunity to discuss and share experiences that were seldom broadcast more widely.**

4. **The ability to exchange and challenge internal engineering standards and guidelines.**

And finally Larry Csengery who took the opportunity to reprise the remarks that he had first made in the IPSG corporate brochure in 2005:

"I firmly believe that there are men and women alive today as a result of the improved safety practices that have been developed following the frank discussions that have taken place within IPSG meetings."

ISGHO and IPSG –

The First Fifty Meetings

Meeting	Date	Venue	Host	Chairman	Secretary
IPSG 01	April 1975	London, UK			
IPSG 02	October 1975	London, UK		Trevor Kletz	Frank Hearfield
IPSG 03	June 1976	Amsterdam, The Netherlands		Trevor Kletz	Frank Hearfield
IPSG 04	February 1977	Rugby, UK		Trevor Kletz	Frank Hearfield
IPSG 05	September 1977	Heidelberg, Germany		Trevor Kletz	Frank Hearfield
IPSG 06	March 1978	Charlotte, USA		Walt Howard	Frank Hearfield
IPSG 07	September 1978	London, UK		Walt Howard	Frank Hearfield
IPSG 08	June, 1979	Frankfurt, Germany	BASF	Walt Howard	Stan Skinner
IPSG 09	February 1980	Amsterdam, The Netherlands		Roy Hughes	Stan Skinner
IPSG 10	September 1980	Basle, Switzerland		Roy Hughes	Stan Skinner
IPSG 11	May 1981	Chester, UK		Roy Hughes	Stan Skinner
IPSG 12	November 1981	Brussels, Belgium		Roy Hughes	Stan Skinner
IPSG 13	June 1982	Anaheim, USA		Roy Hughes	Stan Skinner
IPSG 14	March 1983	Madrid, Spain		Roy Hughes	Stan Skinner
IPSG 15	September 1983	Harrogate, UK		Tuen van Hoek	Stan Skinner
IPSG 16	April 1984	Lyon, France		Tuen van Hoek	Stan Skinner
IPSG 17	March 1985	Houston, USA	Exxon	Bob Mill	Stan Skinner
IPSG 18	November 1985	Den Hag, The Netherlands	Akzo and DSM and Shell	Bob Mill	Tony Cox
IPSG 19	September 1986	Cannes, France		Bob Mill	Tony Cox
IPSG 20	May 1987	Oslo, Norway	Norsk Hydro	Stan Skinner	Tony Cox
IPSG 21	December 1987	Chester, UK	ICI	Stan Skinner	Tony Cox
IPSG 22	September 1988	Seville, Spain	Ertisa	Stan Skinner	Tony Cox
IPSG 23	April 1989	Houston, USA	Exxon	Stan Skinner	Jim Hempseed
IPSG 24	October 1989	Bad Durkheim, Germany	BASF	Stan Skinner	Jim Hempseed
IPSG 25	June 1990	Lyon, France	Rhone Poulenc	Jos Gremen	Jim Hempseed

Meeting	Date	Venue	Host	Chairman	Secretary
IPSG 26	March 1991	Brugge, Belgium	Dow Europe and Monsanto	Jos Gremen	Jim Hempseed
IPSG 27	October 1991	Sarnia, Canada	Novacor Chemicals	Jos Gremen	Jim Hempseed
IPSG 28	May 1992	Taormina, Italy	Enichem	Jos Gremen	Jim Hawksley
IPSG 29	February 1993	Geneva, Switzerland	Du Pont	Jos Gremen	Jim Hawksley
IPSG 30	September 1993	San Francisco, USA		Jos Gremen	Jim Hawksley
IPSG 31	May 1994	Krakow, Poland	Zaklady	Jim Hempseed	Jim Hawksley
IPSG 32	March 1995	Frankfurt, Germany	Hoechst	Jim Hempseed	Jim Hawksley
IPSG 33	October 1995	Maastricht, The Netherlands	DSM	Jim Hempseed	Henrik Christiansen
IPSG 34	June 1996	Allentown, USA	Air Products	Jim Hempseed	Henrik Christiansen
IPSG 35	February 1997	Kenilworth, UK	Courtaulds	Jim Hempseed	Henrik Christiansen
IPSG 36	October 1997	Stenungsund, Sweden	Borealis	Jim Hempseed	Henrik Christiansen
IPSG 37	May 1998	Terneuzen, The Netherlands	Dow	Bernd Frohlich	Henrik Christiansen
IPSG 38	March 1999	Houston, USA	Shell and Exxon	Bernd Frohlich	Rien vis van Heemst
IPSG 39	October 1999	Lincoln, UK	BOC	Bernd Frohlich	Rien vis van Heemst
IPSG 40	June 2000	Be'er Sheva, Israel	Oil Refineries Israel	Bernd Frohlich	Rien vis van Heemst
IPSG 41	March 2001	Cologne, Germany		Bernd Frohlich	Rien vis van Heemst
IPSG 42	March 2002	Bristol PA, USA	Rohm & Haas and Akzo Nobel	Bernd Frohlich	Unni Samdal
IPSG 43	November 2002	Berre, France	Shell and Basell	Larry Csengery	Unni Samdal
IPSG 44	October, 2003	Ludwigshafen, Germany	BASF	Larry Csengery	Unni Samdal
IPSG 45	June 2004	Calgary, Canada	NovaChem	Larry Csengery	Unni Samdal
IPSG 46	May 2005	Vienna, Austria	Borealis	Larry Csengery	Unni Samdal
IPSG 47	May 2006	Castellon, Spain	UBE Corporation	Jim Currie	Unni Samdal
IPSG 48	February, 2007	San Francisco, USA	Shell	Jim Currie	Natalie Salter
IPSG 49	November 2007	Surrey, UK	BP	Jim Currie	Natalie Salter
IPSG 50	September 2008	London, UK		Dan Miller	Natalie Salter

IPSG member companies 2010

Air Products
Akzo Nobel
BASF
Borealis Polymers
BP Chemicals
Clariant
ConnocoPhillips
DSM
Dow Chemical
Exxon Mobil Chemical
Linde Group
LyondellBasell
Nova Chemicals
Procter & Gamble
Repsol
Israel Chemicals Group
SABIC (UK)
Shell Global Solutions
Statoil Hydro
Sumitomo Chemical
Teva Pharmaceutical Industries
UBE
Yara International

Operating companies committed to improving their process safety are invited to join IPSG.

For details on how to join, or for more information about membership contact:

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Show your commitment to process safety by joining IPSG today