

Gas, Vapour and Dust Explosions & Electrostatic Hazards Training Course

These two courses were first held in 2003. We invited Ian Pavey, Principal Electrostatic Specialist, Chilworth Technology, to conduct them again, on May 22 and 23, at the Singapore Polytechnic Graduates Guild. Ian did not disappoint.

Thirty-one participants from the oil, chemical process and pharmaceutical industries, and SCDF and JTC attended the course. We even had to turn away a few late comers. The two courses could be taken as a package or singly.

Ian explained how fire, explosion and chemical hazards in manufacturing processes could be systematically identified, evaluated and eliminated. The course provided an understanding of the technical issues as well as the "tools" of hazard assessment, incident prevention and plant protection. Demonstrations of electro-static

Wow! Sugar can cause quite a bang -- it will never be the same again

generation and dust explosions were held in class to drive the lessons home.

One particularly memorable demonstration involved the explosion of a sugar dust and air mixture. This explosion was set off by an electrical discharge. The bang was quite loud and would have woken up any student who was having a quiet nap. Actually I started wondering how Ian managed to bring in all his equipment in these super security sensitive times. When queried during tea break, he recalled that one of his colleagues was actually asked by airport security to do a demonstration.

Included in the training was a 20-minute video on Industrial Electrostatic Hazards



Ian Pavey in his element - talking about his favorite subjects



produced by IChemE. It was really good. Towards the end of the course, Ian shared actual incidents encountered by Chilworth Technology engineers in the areas of gas, vapour and dust explosions and electrostatic hazards. He took pains to highlight the methods of avoiding explosions involving different types of flammable atmospheres and what measures could be taken to control and mitigate the effects of an explosion.

Able support was provided by Ms Penny Pan from our Secretariat. As good Singaporeans we appreciated the refreshments at tea-time and the buffet lunch. Attendees took advantage of these breaks to mingle and network. As everyone knows, networking is a real bonus at these training sessions.

Attendees received 14 SDU's for the 2-day course. For Registered Safety Officers, these would go towards their re-registration.

Summing up – the training courses were a success. For those who missed out this time, please register quickly when they return. They will be better.

By Jacob Soh



Participants all raring to start



PRESIDENT'S MESSAGE

The Occupational Safety and Health (OSH) profession in Singapore is likely to be undergoing some fundamental changes in the next several years as work is in progress to develop national competency standards and a qualification framework for workplace safety and health professionals by the Workforce Development Agency (WDA) within the Ministry of Manpower. A draft framework and several competency standards for the OSH profession have been developed and comments from the various stakeholders – employers/companies, academic institutions, professional bodies and practitioners – are being sought. Members will recall that our Secretariat circulated several drafts for their comments. If you have not reviewed them yet, I would recommend that you do so. Your comments are valuable.

The competency of OSH professionals has been discussed for some time already. There are many articles on this subject in professional journals published by bodies such as the American Association of Safety Engineers. Academic institutions in Europe and USA have also published on this subject. Many large US based multi-national corporations, as elsewhere, have gone through a phase of assessing their OSH (or "EHS" as the environment is also part of the OSH professional's responsibilities) management systems. They have examined issues like professional, technical and leadership competencies for an OSH/EHS professional to discharge his/her responsibilities and to stay current in the profession.

Why the fuss over OSH professional competencies these days? While the professionals are becoming more qualified through specialized academic education and training, the old paradigm is still well and kicking. OSH professionals have to constantly fight the battle of demonstrating that they are adding value to the bottom line. Do companies, especially the small and medium sized ones, with tight operating budgets and thin margins, truly believe in OSH as an integral part of their businesses? And that the money spent, with no tangible returns, makes good business sense? In organizations without a strong OSH culture, professionals, even the senior OSH staff like vice presidents, directors and managers, are finding it tough to prove to the board of directors or senior managers that OSH work add value to their businesses. Justifying capital expenditure to fund the implementation of engineering controls to mitigate workplace hazards and risks, often face the challenge of meeting very basic financial metrics such as return on investment (ROI).

The road to a robust safety culture in a company will be long and twisting. New regulatory requirements such as those in WSHA will be a stimulus. Safety is now truly a line management responsibility and not just that of the Safety Department or Safety Officer. A mindset change is slowly taking place.

The new OSH professional would, in addition to his/her technical competencies, need the following:

"Cognitive Competencies" focus on helping the OSH professional figure out what's causing a problem and what to do about it. They include technical expertise, analytical thinking, conceptual thinking and information seeking.

"Interpersonal Competencies" provide an OSH professional with the skills to reach out to the appropriate individuals in the organization to obtain agreement on what the problem is and subsequently commit to identifying, developing and implementing solutions to the problem. Senior management these days expect everyone in the organization, who hold critical positions, to be part of the solution as opposed to being part of the problem. We often hear "complaints" from senior management that certain professionals (including OSH professionals) do not offer solutions to problems.

"Intrapersonal Competencies" are about personal effectiveness and maturity that are internal traits that permit an individual to be successful. These traits are self-control, perceptual objectivity, perseverance and achievement orientation.

In a nutshell, our OSH profession needs to move with the fast changing times in order to maintain and improve its position as an integral and indispensable part of any business.

EDITORIAL

We are now into the third quarter of 2007 and the economy is going better than anyone expected. Everywhere we go we see evidence of this. Shopping malls are packed and construction projects are at a frenzy. The industries that we serve are busy too and everyone is hard at work. This is very good for everyone concerned. But in all this good news, there is a dark side. Our safety performance has not been up to scratch. This is not only in the construction industry where accidents happen all too often, but also in our industries that have been held up as exemplars of good safety performance. What this means is that we have to be extra alert in this period where production is at a premium and people are under pressure to keep plants up and running. It is therefore appropriate that we present a book review about API 753 -- A Recommended Practice (RP) for the Management of Hazards Associated with Location of Process Plant Portable Buildings. This practice arose out of new data that has become available and as a result of the tragedy at the BP Refinery at Texas City. We are reminded again about the hazards that arise during turn-arounds, start-ups and non-routine operations. These thoughts should be in our minds during this time when events seem to be happening at break-neck speed.

We ran a successful training course in May on Gas, Vapor and Dust Explosions and Electrostatic Hazards. This 2-day program was actually two courses held back to back. Participants had a choice of attending one or both of the courses. Ian Pavay, from Chilworth Technology, came back to conduct the courses after a break of four years. Ian also gave a technical talk on a number of case studies while he was here. Attendees at the two events certainly got their money's worth.

This leads to the subject of professional development and training. Dennis Tay and Praveen Arora are members of our Technical Sub-committee and they welcome ideas and suggestions on your professional development and training. Keep your ideas flowing in. Or better still, volunteer to join this technical sub-committee.

Members would have received our announcements about the workshop on How to Implement BBS. We hope you have responded positively to this opportunity to share and learn from Seow Min Fook.

Later on in the year, we propose to hold a course on Accident Investigation. This would be a joint initiative with the Singapore Branch of the Institution of Chemical Engineers. Members will remember that we had a joint activity with them for our very successful Job Safety Analysis courses.

At present we have a joint working committee with the Institution of Engineers Singapore (IES) to explore possibilities for collaboration on training and related activities such as conferences. Dennis Tay and Praveen Arora are our representatives. We believe that collaboration with other like-minded professional institutions is a good way to optimize scarce resources.

Members may be wondering what happened to our ever popular Members Night. Well, you will be pleased to know that Sam Tsen has taken on the task of organizing this year's event. It will have a Malay theme. Sam will be looking for volunteers to join his organizing committee. So what are you waiting for?

In June we held our Annual General Meeting. Since this is an in-between year, we did not have an election for the Executive Committee. According to the constitution, we elected a new Honorary Treasurer and two Honorary Auditors. For more details, see the story about our 16th AGM. Members will be happy to know that we ended the 2006/7 financial year with a small surplus.

On this note, HAPPY READING.

Welcome - We extend a warm welcome to:

►► EASTMAN AND EASTMAN CHEMICAL SINGAPORE

Eastman Chemical is a global company with sites and offices in 23 countries around the world. Founded in 1920 and headquartered in Kingsport, Tennessee, Eastman is a FORTUNE 500 company with 2006 sales of \$7.5 billion and approximately 11,000 employees. Eastman manufactures and markets chemicals, fibers and polymers worldwide. Eastman provides key differentiated coatings, adhesives and specialty plastics products. It is the world's largest producer of PET polymers for packaging and a major supplier of cellulose acetate fibers.

Approximately 100 people are employed at Eastman's Singapore site. The facility has been in production since late 1998, and is one of the pioneer plants established on Jurong Island. Within one year of production, Eastman Chemical Singapore achieved ISO 9000 certification and upgraded to the new ISO version in 2003. The Singapore site produces chemicals sold primarily for use in resins, coatings and the vinyl compounding markets.



Beaming Eastman employees with their 2006 Responsible Care Award

Eastman Chemical Singapore is committed to health and safety. Since 2000, the site has received several recognition awards for safety performance from the Ministry of Manpower. It was also presented the Family Friendly Employer Merit Award from the President of Singapore. It has a very active Health & Wellness committee. Eastman has also received recognition awards in the H.E.A.L.T.H category from the Ministry of Health, for 2004 & 2005.

The Singapore site's Leadership Team participates in several Sakra Island committees and in other Jurong Island community events. The site's General Manager is an active member of the Singapore Chemical Industry Council (SCIC) and is currently one of the Directors of the SCIC Board.

Eastman Chemical Singapore (ECSPL) actively supports Responsible Care and received four awards during the SCIC 2006 Annual Dinner. They were,

Gold Awards

- Employee Health & Safety
- Pollution Prevention

Achievement Awards

- Process Safety
- Community Awareness & Emergency Response

Eastman Chemical Singapore is represented by Dennis Tay in our society.

►► HORIZON TERMINALS

Horizon Singapore Terminals Pte Ltd (HSTPL), located at the Banyan Straits on Jurong Island, turned operational on October 20, 2006, when it received its first tanker. The oil storage terminal at Singapore's Jurong Island is currently operating at about 950,000 cbm capacity. Expansion plans have been announced for an additional 260,000 cbm of capacity to be brought on stream in the last quarter of 2008. This will bring the total capacity of HSTPL to more than 1.2M cbm.

This move takes HSTPL a step closer to realizing its ambition of being one of the leading terminalling service providers in the region.

HSTPL is a joint venture between Horizon Terminals Limited of the United Arab Emirates and four partners – Kuwait's Independent Petroleum Group, South Korea's SK Energy Asia Private Limited, Holland's Martank B.V. and United Arab Emirates's Boreh International.

Horizon's representative in SLP is Muhammad Noh.



We look forward to meeting and interacting with representatives from these two companies. We have no doubt that they will not only gain some new knowledge and insights, they will also contribute their share to the sum of SHE knowledge in Singapore.

Technical Talk on

"Fire & Explosion – Incidents, Causes, Lessons"

A large and appreciative gathering of 32 members, corporate nominees and guests turned out for the technical talk by Ian Pavey, Principal Electrostatics Specialist at Chilworth Technology Ltd on 22nd May 2007.

Why do explosions happen?

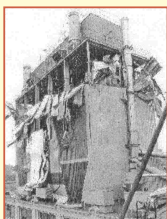
The talk covered four pertinent and important causes, namely:

- Ignorance – e.g. 'it worked perfectly fine at a smaller scale'.
- "Minor improvements" – e.g. 'it was a trivial change, it shouldn't have made any difference'.
- Maintenance – e.g. 'we only did it once'.
- Complacency – e.g. 'we have done it like this for 20 years'.

The speaker drew on his wealth of experience in industry and consultancy by presenting several interesting case studies of actual fires and explosions and the outcomes of the incident investigations. The incidents ranged from charge generation during toluene charging into a batch vessel, to explosive decomposition during vacuum discharge from a vacuum dryer, dust explosion caused by poor maintenance of an outlet valve from a fluidized bed dryer, and dust explosion caused by spark discharge in a spray drying and vibratory fluidized bed operation.

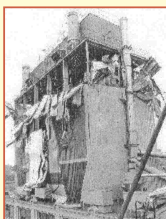
Each incident was comprehensively outlined in terms of the Operation, and the Incident Investigation (Flammable atmosphere? Ignition sources – which are possible, likely, most likely?). Based on the case studies, the speaker detailed several useful Lessons (e.g. Ensure you do understand the hazards associated with the materials you are handling, Ensure change control system is in place such that even the effects of "minor" changes are properly assessed. Protective and safety-critical equipment, even passive units, must be properly maintained) and Recommendations for future safe operation (e.g. Only use suitable electrical equipment in vicinity, Earth all conductive components, Do not disable the suppression system, the primary basis for safety!).

INVESTIGATION



Flammable Atmosphere?
Ignition Sources
- Which are impossible?
- Which are possible?
- Which are likely?
- Which could have ignited the flammable atmosphere
Conclude which are most likely / likely / possible
Recommendations for future safe operation

WHY DO EXPLOSIONS HAPPEN?



Ignorance
Minor improvements
Maintenance
Complacency

FAMOUS LAST WORDS

"We only did it once"

"It was a trivial change - it shouldn't have made any difference"

"We have done it like this for 20 years"

"It worked perfectly fine at a smaller scale"



Overall, the talk was excellent and highly relevant for our SLP audience. We were left with much to take away, especially a strong cautionary message that ignorance, seemingly minor process changes, maintenance and creeping complacency have all contributed to serious fires and explosions, and will continue to do so unless the safety and loss prevention community remain well-trained, fully aware and alert to the risks in our industry.

The evening ended on a convivial note with a buffet dinner, and an opportunity to catch up with friends old and new.

By Reginald Tan

Editorial note: The speaker has agreed that attendees at the talk may get a copy of his slides on request to SLP's Secretariat.

16th Annual General Meeting

Would you believe it?

SLP is now into its seventeenth year and we still have many of our founder members on board. In fact, some of our founder members are in our present Executive Committee. Talk about continuity. We have this in abundance. One could rightfully ask if this is too much of a good thing. The Executive Committee is aware of the weakness of always having the same people in leadership positions and it has taken steps to introduce new blood. In the present committee, we have Sam Tsen, Teng Chong Seng, Dennis Tay, Gregory Poi and Praveen Arora who are of the newer generation. This is not a bad achievement.

Since this is an in-between year, we did not conduct any elections except to elect a new Honorary Treasurer and two new Honorary Auditors. Praveen Arora was elected to replace Teng Chong Seng as Honorary Treasurer. Khoo Boo Cheong and Hor Nam Chook were elected as Honorary Auditors. They replaced Michael Yan and Ngiam Bo Han. Thank you Chong Seng, Michael and Bo Han.

As mentioned elsewhere, SLP achieved a small surplus for the financial year April 2006 to March 2007. As was previously the case, this was due to our training courses. For 2006/7, we had an additional source of income. Several Executive Committee members took turns to conduct an Incident Investigation course for the Singapore Environment Institute (SEI).

Our investments continue to do well. We enjoyed good capital gains as well as being paid dividends of about 5 % on our original investment. In line with our objective of being long-term investors in relatively safe investments, we intend to hold on to our investments.

The Executive Committee for the year 2007/8 is as follows:

President	:	Ong See Hee
Vice President	:	Tay Cheng Pheng
Hon. Secretary	:	Ngiam Tong Yuen
Hon. Treasurer	:	Praveen Arora
Committee Members	:	Dennis Tay
		Gregory Poi
		Jacob Soh
		Lam Kit Wing
		Reginald Tan
		Sam Tsen
		Teng Chong Seng

To share the workload, members are asked to volunteer for our sub-committees – Technical and Training, Membership and Communications/Newsletter.

Our President, Ong See Hee, informed members about the medical condition of Richard Gillis, our Immediate Past President, who had recently undergone brain surgery. See Hee wished Richard well on behalf of himself and SLP.

Following the meeting, the members present enjoyed a customary dinner and took advantage of the occasion to catch-up with each other.

The AGM was held on June 4 at the Singapore Polytechnic Graduates Guild.

By Ngiam Tong Yuen

Book Review ---- New API Recommended Practice on Portable Building Siting

In June 2007, the American Petroleum Institute (API) issued a new recommended practice that provides guidance for reducing the risk to personnel located in portable buildings from hazards due to explosions, fires and toxic releases.

The **Recommended Practice (RP) 753- Management of Hazards Associated with Location of Process Plant Portable Buildings** was developed in response to new data and information about the use of trailers at refineries, including information gained from the investigation of the Texas City refinery tragedy.

There are four objectives for RP 753:

1. Provide guidance on the safe placement of portable buildings
2. Minimize the presence of personnel in refinery process areas
3. Minimize the use of occupied portable buildings in refinery and process areas
4. Construct and install these buildings or trailers to better protect occupants.

As mentioned above, this new recommended practice provides guidance for reducing the risk to personnel located in portable buildings from hazards due to explosions, fires and toxic releases.

Guidance is provided based on the following principles:

- Locate personnel away from covered process areas consistent with safe and effective operations.
- Minimize the use of occupied portable buildings in close proximity to covered process areas.
- Manage the occupancy of portable buildings, especially during periods of increased risk including unit start-up or planned shut-down operations.
- Design, construct, install, and maintain occupied portable buildings to protect occupants against potential hazards.
- Manage the use of portable buildings as an integral part of the design, construction, maintenance and operations of a facility.

Copies of API RP 753, First Edition, may be purchased for US \$125.00 each.

For more information on API RP 753, please visit

www.api.org/cat

or

<http://www.api.org/Publications/new/rp-753.cfm>

By Tay Cheng Pheng

CHANGE FORM

Keeping members' particulars current is a challenge for our Secretariat. This is important for administrative reasons, the most important of which is communications. The cooperation of members is therefore sought in keeping their particulars current. Whenever there is a change, please e-mail our Secretariat --- Penny Pan, E-mail Address: secretariat@slp.org.sg

And supply the following information:

Name:

Grade of Membership or Corporate Nominee:

Name of Employer (if applicable):

Position title (if applicable):

E-mail address:

Postal address:

Tel. (Home):

Tel. (Office):

Mobile:

Please **highlight** the change/s.

For Corporate nominees, please inform the Secretariat whenever you have ceased to be the nominee or if a new person has been named as a nominee. Please supply the particulars of the new nominee.

Thanks for your cooperation.

Ngiam Tong Yuen
Hon. Secretary

WE WANT TO HEAR FROM YOU

The SLP Newsletter is circulated among members and other like-minded organizations. We are always seeking to improve the quality of this publication.

We welcome contributions of interesting news that cover loss prevention in the oil, chemical and process industries.

Please send your contribution or any queries to:

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