

# CHEM DIGEST

A quarterly publication by the Singapore Chemical Industry Council Limited

MCI (P) 030/12/2014

+ SCIC Annual Year End  
Cocktail and Networking  
Reception

+ SCIC Events in 2014

+ 18<sup>th</sup> Singapore  
International Bunkering  
Conference (SIBCON)

**SCIC**  
SINGAPORE CHEMICAL  
INDUSTRY COUNCIL

ISSUE No. 4  
OCT-DEC 2014



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Singapore Chemical Industry Council Limited

# SCIC Annual Year End Cocktail and Networking Reception 2014



SCIC organised its annual cocktail and networking reception on 7 November 2014 to thank its members and industry partners for their continuous support during the year.

In his welcome speech, SCIC Chairman Dr Tay Kin Bee, highlighted some of the accomplishments by SCIC:

- A total of about 55 events including conferences, workshops, seminars, and networking sessions were organised.
- Ongoing continuous efforts to address advocacy issues for members with the relevant regulatory authorities.
- Outstanding performance by SDO@SCIC with their work targets exceeded for 3 years running.

On behalf of the Board, Dr Tay thanked all industry representatives for their hard work and contributions in the various SCIC committees as well as to their companies for their continuous support by allowing their staff to be involved in these committees. He also expressed his thanks to the government agencies for their continuous support and close working relationship with SCIC.



Dr Tay also shared some key exciting highlights in coming 2015 with members:

- Milestone achievement of 25 years of Responsible Care in Singapore
- SDO@SCIC will be launching the technical reference on bunker mass flow metering which potentially could be the first in the world standard.
- Preparing to host the Asia Petrochemical Industry Conference (APIC) which will be held in Singapore in 2016.

In closing, Dr Tay expressed his appreciation to the SCIC Board of Directors for their leadership roles and to the SCIC secretariat team for the fantastic job done.

The reception was held at Resort World Sentosa Equarius Hotel and was attended by member companies' representatives as well as representatives from the various statutory agencies.

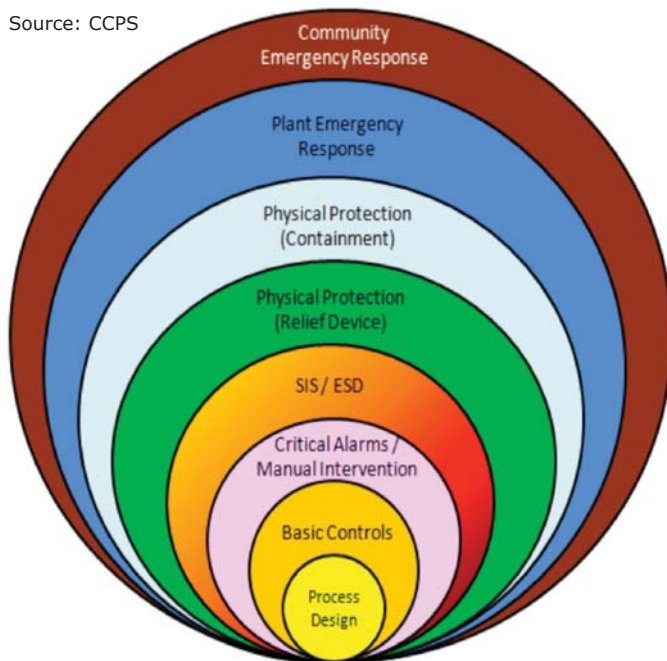


# Safety Interlock System Management

## What is a Safety Interlock System?

In the chemical industry, process safety relies on the principle of multiple independent layers of protection to control the potential escalation of risks to a major process safety incident. One of the critical process safety protective layers is the safety interlock system or safety instrumented system (SIS). SIS is designed to automate the response to hazardous process conditions in the process plant by generating the correct outputs to prevent the hazard or mitigate the consequences. An example could be the high level interlock to prevent an overflow scenario in a tower/storage tank, etc.

Source: CCPS



SIS – Safety Interlock System  
ESD – Emergency Shutdown

## Design of Safety Interlock System

To be effective, SIS would need to conform to certain equipment standard and design. The International Electrotechnical Commission (IEC) is the organisation that published the SIS functional safety standards for safety system and device manufacturers (IEC 61508) and system designers and users (IEC 61511).

SIS components consist of 3 parts.

- i) Initiators (Sensing elements)
- ii) Logic solvers (PLC, DCS, etc.)
- iii) Actuators (Valves, pumps, etc.)

For a fully functional SIS, these components would need to be effective, independent and auditable.

Through risk studies performed, organisations have the option to use SIS with the required Safety Integrity Levels (SIL) to reduce the risk levels of the respective threats. A Safety Integrity Level (SIL) is a classification of the SIS, with SIL 4 being the highest reliability to perform the required safety function.

SIL Safety Integrity Level (per IEC 61508)	Safety Availability	Type of Industry
4	>99.99%	Nuclear
3	99.9 – 99.99%	Applications in Chemical Industry/ Refinery (note: Installation of SIL 3 loops not preferred due to high design and maintenance requirements)
2	99 – 99.9%	High Risk related Safety Critical Applications in Chemical Industry/ Refinery
1	90 – 99%	Medium Risk related Safety Critical Applications in Chemical Industry/ Refinery
0	Basic Process Control	Low Risk related Safety Critical Applications in Chemical Industry/ Refinery

Safety Interlock Systems are designed to be independent of control functions and specific to the risk scenario. A clearly documented Cause and Effect chart must be made available for each SIS describing the initiators and final action with any specific conditions associated with SIS.

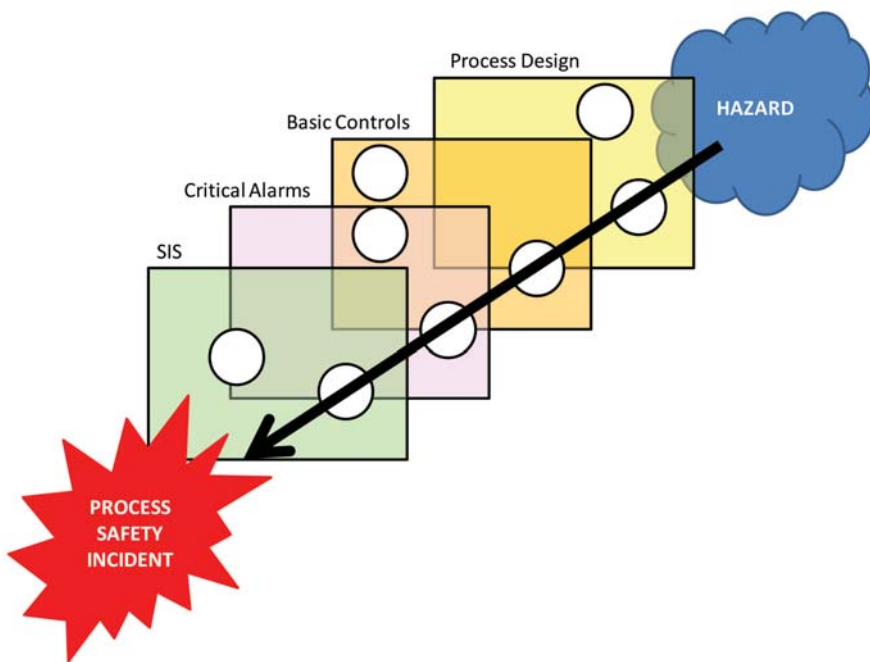
Before commissioning the SIS, rigorous verification of the SIS needs to be performed on site to confirm the desired functional safety actions. Plant operators need to be trained to understand and act accordingly to the SIS safety features.

### Maintenance of Safety Interlock System

To be effective, IEC61511 requires the SIS to be proof tested according to the interval directed by SIL requirements. The SIS maintenance requires trained personnel to perform proof-testing according to the prescribed maintenance procedures. If SIS maintenance is neglected, the SIL level functionality may be less than rated, or none at all. This will give a false sense of security on its robustness and could eventually compromise the hardware barrier to prevent a process safety incident.

### Operational Control of Safety Interlock System

Throughout the process industry history, there have been various catastrophic process safety incidents arising from SIS overrides. Override of SIS reduces a safety barrier, increasing the exposure of the plant to a process safety incident during an abnormal or emergency situation. Just like the Swiss Cheese model, a potential hazard could lead to a process safety incident when all the safety defences holes are aligned. Hence, no SIS should be bypassed without proper mitigations and authorisation.



However, SIS override situations could arise occasionally – maintenance work, SIS testing or SIS internal fault. Depending on the existing plant system, SIS overrides may be required to start-up equipment. Also, do note that some critical equipment requires SIS be functional before being operated (i.e. no overriding functions). As part of a management of change (MOC) process, a procedure would be required to handle these activities in a safe and controlled manner.

An initial risk assessment is required to be performed before bypassing the SIS. Interim measures to prevent the similar threat from the bypassed SIS would need to be identified and strengthened.

This could mean that other safety features in the plant, such as critical alarms, have to be closely monitored by operators. Another option could be to operate the plant in a less severe mode (i.e. lower throughput, temperature or pressure) to allow rectification of the SIS override situation.

If sufficient and effective mitigations are in place, appropriate approval should be acquired before performing the SIS override. The duration of these overrides should be limited to only as needed, to minimise the plant exposure to process hazards without SIS. When the activities to the SIS have been completed, the overrides should be normalised and documented.

To ascertain the process effectiveness of SIS overrides procedure, periodic audit reviews should be scheduled. Using a multi-disciplinary team approach, a review of the technical and management aspects of SIS would help to uncover the gaps and areas for continuous improvement in the existing SIS.

**Remember:  
SIS helps prevent  
potential hazardous  
situations from  
escalating into a  
major process safety  
incident. Treat SIS  
with respect and SIS  
will help save lives!**

Contributed by:  
SCIC P&E Committee

## JTC Chemicals Hub @ Tuas View: Providing “plug-and-play” environment for chemical companies

Come 2016, a new high-rise development called JTC Chemicals Hub @ Tuas View will be ready to house chemical companies involved in the manufacturing, blending and distribution of chemicals, including chemicals classified as Dangerous Goods (DG).

To kick start this development, a ground-breaking ceremony was held on 31 October 2014, officiated by Senior Minister of State for Trade & Industry and National Development, Mr Lee Yi Shyan. Mr Lee said, “The JTC Chemicals Hub is a good example of the government’s commitment to develop innovative infrastructure solutions to support the chemicals industry for higher productivity. We will continue to enhance our infrastructure to ensure the long-term sustainable growth of our chemicals companies.”

JTC Corporation (JTC) has specially designed the customised facility to meet the stringent standards and requirements for chemical manufacturing and blending activities. In the past, industrialists would have to design their own facilities or retrofit generic facilities with the necessary safety provisions. During JTC’s regular dialogue sessions with the Singapore Chemical Industry Council (SCIC) and the Singapore Manufacturing Federation (SMF), it was suggested that JTC consider building a customised facility for these chemical companies.

Estimated to cost S\$67 million, the JTC Chemicals Hub will come with safety-compliant features, such as enhanced fire protection systems to facilitate safe handling of chemicals, and shared facilities, such as fire-water retention tanks, and a centralised foam system. These built-in features provide companies with a plug-and-play environment, reduce their upfront capital investments and shorten their set-up time, thus enabling chemical companies, especially SMEs, to start up quickly and at a lower cost.

The JTC Chemicals Hub, with a total gross floor area of 26,000 sqm, will comprise a three-storey Production Block and a five-storey Annex Block. The Production Block will be built with a strengthened structure to resist blast, enhanced fire protection systems for safe handling of chemicals, and will house common facilities such as fire-water retention tanks and a centralised foam system. In total, the Production Block will have



14 modular units of 1,200 sqm each. Such modular units cater to companies with small space requirements, and they can scale up their manufacturing when their business grows. The Annex Block, being separated from the Production Block, will house light industrial activities, ancillary offices and R&D activities. By clustering the companies in a single development, companies can achieve land savings of up to 50%.

Mr Png Cheong Boon, CEO, JTC Corporation, said, “The chemicals industry is a key pillar of Singapore’s manufacturing sector. JTC works closely with the industry to develop suitable industrial infrastructure that will strengthen the industry’s competitiveness and support their growth. The JTC Chemicals Hub, with its built-in features and shared facilities, will provide chemical SMEs a quick start environment, and lower their capital and operating costs. This will make them more competitive and help them grow their business globally.”

Dr. Tay Kin Bee, SCIC Chairman, said, “The JTC Chemicals Hub @ Tuas View exemplifies the close partnership JTC has forged with SCIC’s members, especially our SMEs. Through interaction and discussions with our members, JTC has designed and developed an innovative solution that will bridge common infrastructure gaps that our members currently face, such as built-in safety provisions to handle and store flammable materials and also modular-designed units to accommodate individual companies’ typical space requirements.”

The new development will enhance Singapore’s existing suite of world-class infrastructure for the chemicals industry – one of the key factors that makes Singapore a choice location for major chemical companies. The Hub is part of JTC’s multi-faceted approach in creating and enhancing specialised infrastructure solutions for both MNCs and SMEs in the chemicals industry. Other key projects include the recently-opened Jurong Rock Caverns, South-east Asia’s first underground commercial liquid hydrocarbons storage facility; the continued development and enhancement of Jurong Island to strengthen its competitiveness; and the development of Lubes Park, a specialised park for the lubricants industry. These developments exemplify the Singapore Government’s commitment to supporting the growth of the key chemicals sector and in reinforcing Singapore’s position as an established global chemicals hub.



Contributed by: JTC Corporation

## 2<sup>nd</sup> Butadiene Plant Official Opening Boosting Competitiveness – Another Milestone for Petrochemical Corporation of Singapore



On 11 October 2012, Petrochemical Corporation of Singapore (Private) Limited (PCS) broke ground to start construction of a new second Butadiene Plant. Time flies and on 16 October 2014, PCS officially opened the new Plant marking another milestone for the company.

This new Butadiene Plant situated at Ayer Merbau in Jurong Island with production capacity of 100,000 mt/year will increase PCS's total butadiene production capacity to 160,000 mt/year enabling it to meet its customers' demand and further strengthen its overall competitiveness.

PCS also celebrated its 30<sup>th</sup> Anniversary of Commercial Operations on this day.

To commemorate these two auspicious events, about 180 guests consisting of officials from various



Singapore government agencies, customers, suppliers, contractors and business associates were invited to join in a grandiose celebration held at Four Seasons Hotel.

In his opening speech, PCS Managing Director, Mr Akira Yonemura said, "As we celebrate both the Official Opening of PCS 2<sup>nd</sup> Butadiene Plant and the 30<sup>th</sup> Anniversary of our Commercial Operations today, PCS has been able to grow with the support of our customers on Jurong Island and in the region. Our customers' growth, in turn, has been driven by the strong demand of petrochemical products in this region, particularly in China. PCS's growth over the years has mirrored that of Jurong Island and Singapore."

Economic Development Board Managing Director Mr Yeoh Keat Chuan, the guest of honour at the opening ceremony event, said, "PCS and Singapore share a long-standing partnership. The company's investment in Singapore's very first cracker in 1984 helped to kick-start the development of Singapore's Energy and Chemicals sector. Over the years, the

sector has grown to become a vibrant and thriving industry, providing 20,000 skilled jobs. Jurong Island alone has attracted more than S\$40 billion in investments and hosted over 100 global companies to date. We can proudly say that the Energy and Chemicals sector, accounting for a third of our manufacturing output, is a key pillar of Singapore's economy."

From the smiling faces and appreciation shown by the guests, it was indeed a very memorable and successful opening ceremony!

Contributed by: [Petrochemical Corporation of Singapore](#)



## Container Liner

Dry Bulk Container Liner is a cost effective packaging for transporting bulk cargo such as Chemicals, Petrochemicals, Agricultural products, Commodities or dry free flowing products in a 20' and 40' ISO Container.

Dry Bulk Container Liners come in both blown film Polyethylene (PE) Film or woven Polypropylene (PP) fabric. There are lots of advantages in using container liner. It is quick to install as it takes about 15mins to install in a 20' container. It also reduces packaging cost and minimises packaging waste as an empty container liner weighs around 10kg. Labour cost can be saved too as it only 1 attendant is required to load and unload the contents from the container liner. It also increases the efficiency of the loading and unloading of goods from the container to the Silo. As the Container Liner is a bag inside the container, it helps to maximise container space and in turn bring down the transport cost per ton for the products.

The most popular way of loading the product in the container liner is a **Thrower** whereby the mechanical device which receives the granular products from the silo propels it directly into the



PE Container Liner



PP Container Liner

container. Whereas for **Pneumatic Loading**, it is implement such as compressor, product conveying pipe and rotary valve feeder to load the products. For discharging, you can attach the conveyor pipe to the discharging spout and pump directly to the Silo.

Basically any industries that handle dry flowing product such as Powder, Granule, Pellets, Grains are suitable to use Container Liner.

### To find out more on Container Liner?

BlackVel Solutions Pte Ltd ([www.blackvel.com](http://www.blackvel.com)) is able to provide Total Solutions from arranging the empty container, customising the container liner, installing the container liner, providing loading attendant if required, to trucking the container and transporting to Port of Destination.



Contributed by: L&D Committee

## SCIC – Logistics & Distribution Conference 2014

As part of the initiatives by the SCIC Logistics and Distribution committee, a one-day conference on the Logistics & Distribution was organised on 15 October 2014 at M Hotel Singapore. The objective of the conference organised was to share related updates in the chemical supply chain sector.

More than 70 participants who had attended the conference gave positive feedback on the following topics which were presented:

- Globally Harmonised System (GHS) updates for Asia Pacific regions
- Regulatory updates for Asia Pacific regions
- Sharing on Transportation Risk Assessment and Emergency Response
- Updates on the Strategic Goods Control regime
- Mandatory IMDG Code Training for shore-side personnel
- Sharing on the legal implications on Transportation of Dangerous Goods – “An Unconventional Approach”
- Introduction to the Safety and Risk Management Centre (SRMC) and Overview of Quantitative Risk Assessment (QRA) Guideline Review
- Updates on the Advanced export Declaration (AED) readiness (After Trial Period)

SCIC would like to thank the speakers for volunteering their time to share at the conference and look forward to organising similar conference for our members.



## SCIC-NEA Dialogue Session 2014

On 12 November 2014, the National Environment Agency (NEA) and the Singapore Chemical Industry Council (SCIC) jointly organised a dialogue session for the SCIC members. The dialogue was co-led by Mr Koh Kim Hock, Director-General of Environment Protection Division of NEA and Mr Akira Yonemura, SCIC Board Director and Sponsor of SCIC Regulatory Affairs Committee.

The dialogue session began with a warm welcome speech by Mr Koh Kim Hock. Following was a presentation of an overview of SCIC's initiatives and past events/planned events by Ms Cissie Yeung.

NEA then shared the following initiatives to the industry:

- Updates on Proposed changes to air emission limits
- Updates on CP 100
- Proposed Controls of New Hazardous Substances
  - Trichloroethylene
  - Trichlorfon
  - Formaldehyde
  - Sodium hypochlorite and Calcium hypochlorite
- Update on Licensing Controls
  - Methyl Bromide phase out for non-QPS uses
  - Security Requirements for Facilities Storing Hazardous Substances
  - Hazardous Substances Licensing Matters

The dialogue session further provided a platform for participants to raise queries that they had pertaining to the topics which were presented. In closing, NEA took note of all the feedback from the industry and will continue to work closely with the industry through SCIC on future chemical-related regulatory matters.



## Globally Harmonised System (GHS)

### National GHS Seminar

In view of the fast approaching deadline for GHS implementation for mixture by 1 July 2015 (Manufacturers/Suppliers) and 1 July 2016 (Users), the MOM and SCIC, with support from the GHS Task Force members' organizations, had organised one session of the National GHS seminar targeted at the users of chemicals on 31 October 2014. This seminar is specifically organised to assist chemical users in complying with the regulations on hazard communication pertaining to GHS.



Topics covered included:

- ✓ Singapore GHS Implementation Journey
- ✓ GHS Classifications & Hazard Communication
- ✓ The GHS – most frequently asked questions
- ✓ Singapore's Regulatory Requirements Updates
- ✓ Implementation Timeline and Phases



The half-day seminar is an introductory session to the GHS and is one of the GHS trainings provided by SCIC. Members may visit SCIC website [www.scic.sg](http://www.scic.sg) for more information on other levels of GHS training courses.

## Launch of SS 597 : 2014 Code of Practice for Bulk liquid oxygen storage installations on user premises (previously CP 34 : 1985) at IGAS Oxygen Safety Seminar

The new SS 597 : 2014 which has replaced CP 34 : 1985 was reviewed by a standards Working Group under the Technical Committee (TC) for Chemistry. The guidance for persons associated with the design, installation, operation and maintenance of bulk liquid oxygen storage systems is now included. An update to the minimum separation distances between bulk liquid oxygen systems and exposure hazards was also included in the revision.



The new standard which has been re-numbered as SS 597 : 2014, was launched on 30 September 2014 at the IGAS Oxygen Safety Seminar in NTU@One North. This seminar was jointly organised by the Industrial Gases Association of Singapore (IGAS), Asia Industrial Gases Association (AIGA), SCIC and SDO@SCIC. More than 150 participants consisting of the industries and academia involved with the distribution, handling and use of oxygen attended this seminar.

The IGAS Oxygen Safety Seminar began with the launch of SS 597. Mr Steven Tan, Group Director, Quality and Standards of SPRING Singapore commenced the launch with a welcome address. Dr Keith Carpenter, Chairman of CSC subsequently presented an 'Overview of Chemical Standards and Industry'. This was followed by an overview of the standards under the purview of the Technical Committee for Chemistry by its Chairman, Mr Leong Kwai Yin.

The Convenor and a member of the Working Group on Gases spoke on the highlights of SS 597 : 2014. Ms Oei Hun Ping, Senior Specialist, OSH Specialist Department from the Ministry of Manpower, was invited to present on 'Compressed Breathing Air in Cylinders'.



After the launch, the IGAS Oxygen Safety Seminar featured various presentations by speakers from Linde Gas Singapore, Air Products Singapore and Singapore Oxygen Air Liquide to help in the implementation of SS 597.

The following members of the Working Group on Gases who contributed in their individual capacity are gratefully acknowledged:

Name of member	Organisation
WG Convenor	
Mr Aaron Kalaichelvan	Air Products Singapore Pte Ltd
WG Members	
Ms Maggie Lim	Iwatani Industrial Gases Pte Ltd
Mr Lum Kok Whye	National Oxygen Singapore Pte Ltd
Mr Nai Boon Leng	Singapore Oxygen Air Liquide Pte Ltd
Dr Sheng Pingxin	Asia Industrial Gases Pte Ltd
Mr Tan Boon Lee	Linde Gas Singapore Pte Ltd

The following former WG members are also gratefully acknowledged for their important individual contributions towards the development of SS 597 : 2014:

- Mr Ernest Khoo
- Mr Jerry Wong



## 18<sup>th</sup> Singapore International Bunkering Conference (SIBCON) – “Driving Transformation in the Marine Fuel Industry”

The latest editions of two important bunkering standards (SS 600 : 2014 *Code of practice for bunkering* and SS 524 : 2014 *Specification for quality management for bunker supply chain* (QMBS) were launched at the Singapore International Bunkering Conference and Exhibition, organised by the Maritime and Port Authority of Singapore (MPA) from 14 to 17 October 2014. The event attracted more than 1,600 delegates from over 50 countries.

Singapore’s Minister for Transport, Mr Lui Tuck Yew, presided over the SIBCON 2014 opening ceremony on 15 October 2014 and announced the launch of the latest editions of SS 600 : 2014 and SS 524 : 2014.

MPA worked closely with the industry with the support of SDO@SCIC, the Standards Development Organisation appointed by SPRING Singapore, in the review of these bunkering standards.

The revised SS 600 includes safeguards to provide a greater transparency in the bunkering transaction, thereby strengthening customers’ confidence in the quality of Singapore’s bunkering industry. The revised SS 524 incorporates the latest developments in



international quality management systems and practices and its structure is more closely aligned to these systems. Companies adopting the SS 524 will be on par with international benchmarks and this will facilitate the company implementation of other management system standards.



At SIBCON 2014, MPA also introduced several new initiatives as part of Singapore’s continued efforts to enhance our bunkering processes and prepare the bunkering industry to meet the demands of the future:

- Productivity and Innovation Credit scheme benefits for mass flow meter
- Appointment of A\*STAR’s National Metrology Centre as data verifier for the mass flow meter acceptance test
- Licensing of bunker surveying companies
- Increase productivity in Singapore’s bunkering industry
- Availability of ECA-compliant fuel in the Port of Singapore
- Pilot programme on LNG bunkering

Please visit MPA News Centre at <http://www.mpa.gov.sg> for details on the new initiatives.

## SIBCON 2014 Pre-Conference Symposium – “Transforming Bunker Custody Transfer in the New Era of Mass Flow Metering”



The SIBCON 2014 Pre-Conference Symposium on Mass Flow Meters was held on 14 October 2014 with 270 participants. This Symposium, chaired by Mr Seah Khen Hee, the Chairman of Singapore

Technical Committee for Bunkering, was well received with active industry engagement.

Various speakers including the Convenor for the Singapore Working Group for Mass Flow Metering presented on the current challenges faced by the bunkering industry and how mass flow meters can help to improve the efficiency of bunker custody transfer through sharing their experiences in the use of coriolis mass flow meters as well as the current work being carried out under the Singapore national standardisation programme.

Presentations	Speakers
Recent trends in bunker quantity disputes	Mr Muralidharan Chathoth, Assistant Vice President, Viswa Lab
Role and future of mass flow metering	Mr Simon Neo, Executive Director, Piroj International
Overview of the standards and conformance infrastructure to support the bunkering industry	Mr Steven Tan, Group Director, Quality and Standards, SPRING Singapore
Proposed standard for the new application of mass flow metering in bunkering	Mr Seah Khen Hee, Chairman, Technical Committee for Bunkering
A practical standard for mass flow metering	Captain Yoon Peng Kwan, Convenor, Working Group for Mass Flow Metering
Metrology for bunkering – Mass flow metering	Dr Thomas Liew, Executive Director, A*STAR’s National Metrology Centre (NMC)
Industry experiences in installing and operating mass flow meters	Mr Desmond Chong, General Manager, Sinanju
Legal implications of mass flow meters	Mr Kelly Yap, Partner, Head of Litigation, Oon & Bazul
P&I perspective on claims management	Mr Christian Ott, Vice President Head of Claims, Skuld P&I Club Singapore

# SINGAPORE WORLD WATER DAY

EVERY DROP COUNTS

Let's celebrate Singapore World Water Day together **21 March 2015**

World Water Day is held annually on 22 March, a day designated by the United Nations as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources.

In Singapore, World Water Day is an occasion where our community partners such as companies, schools, grassroots organisations, NGOs and public agencies organise activities for the community all over the island.

2015 marks a milestone year for Singapore - 50 years of nation building. Water security and community stewardship of our resources have been integral in the nation's growth. Singapore World Water Day 2015 will be held on 21 March 2015 at Sports Hub with many activities that organisations could participate in. The theme is "Every Drop Counts". To this end, every contribution matters, regardless of scale and reach. If your organisation is not able to participate on 21 March, you could organise an in-house water conservation campaign or quiz in the month of March to draw awareness to using water responsibly.

To find out how your company could be a part of Singapore World Water Day, please contact [pub\\_swwd@pub.gov.sg](mailto:pub_swwd@pub.gov.sg).

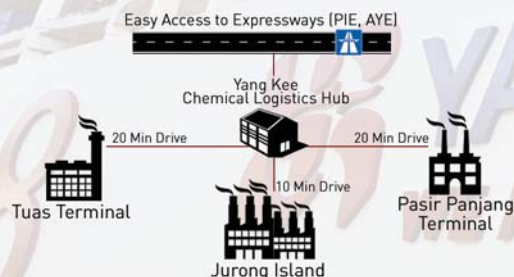
For more information, visit [www.singaporeworldwaterday.com](http://www.singaporeworldwaterday.com).



Your Partner of Choice in Highly Efficient Total Logistics Solution



- 9 Storey "Ramp Up" warehouse of more than 800,000 sqft for Hazardous Chemicals and Dangerous goods storage.
- Competent and experienced Operation Team.
- 24 hours surveillance.
- Ideal for local and regional distribution.
- Designated area for storage of ISO tanks.
- All personnel undergone comprehensive training in safe handling of Hazardous Chemicals and Dangerous goods.
- Automated drumming line and blending facility.
- More than 50 prime movers and trucks to transport Hazardous Materials.
- Provision of Temperature Controlled Storage.
- Highly competent Company Emergency Response Team (CERT) and comprehensive plans (ERP) to handle emergency situations.



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## Workshop on Process Safety Performance Indicators (PSPI)

As part of industry capability building, the SCIC's Process and Engineering Committee organised a Workshop on Process Safety Performance Indicators (PSPI) on 17 Oct 2014. This initiative assists the industry to continually improve its knowledge, tools and methodologies, in process safety.

This workshop aims to provide an insight on the implementation and improvement of process safety



framework, including guidance on establishment and review of PSPI.

The morning session provided an overview of the evolution of process safety in Singapore and an introduction to Process Safety Management (PSM). The importance of process safety was highlighted through sharing of key learning from major process safety incidents.



The second half of the workshop focused on the overview and implementation of PSPI by identifying what are lagging and leading indicators, selecting the appropriate set of indicators for implementation as well as reviewing the indicators for continuous improvement. With an appreciation of the PSPI concept, participants were also given a hands-on opportunity to discuss and share the basis for their selection of PSPIs that are suitable for their organisations.

## Sharing Session on Low Temperature Thermal Desalination Technology: Water and Low Energy Saving Solution for the Chemical

With the objective of sharing with the petrochemical companies on the latest water and energy saving technologies that could benefit their operations, PUB – the national water agency, organised the first seminar on "Low Temperature Thermal Desalination Technology (LTTD) for SCIC members on 24 October 2014 at the WaterHub Auditorium. A joint effort by the PUB and SCIC, this seminar is the first of the series Industrial Water Solutions seminars.

Raising industries' awareness on the new and innovative technologies forms only part of PUB's overall Industrial Waters Solutions strategy. As outlined by Mr Harry Seah, PUB's Chief Technology Officer in his opening speech at the seminar, other efforts included:

- grooming local industrial water solution providers and attracting foreign players to Singapore, so as to create a stronger value chain locally to serve the diverse industrial base;
- funding mechanisms from PUB and the Environment & Water Industry Programme Office (EWI) to support and encourage the adoption of appropriate industrial water solutions;
- taking a proactive engagement approach by meeting companies to work with them on the adoption of water efficiency initiatives, raise water conservation awareness and encourage community stewardship.

Dr Tay Kin Bee in his welcome speech also highlighted on the need to "increasingly look towards alternative water resources and to have more stringent water quality discharge requirements especially for waste

water recycling." He also encouraged participants at the seminar to provide feedback to PUB so that future programs could be better tailored to address their needs and concerns.

The seminar included a luncheon and tea break, which enabled the 70 participants to network and meet the speakers from 5 leading commercial solution providers. This provided an opportunity to learn more about the current state of the art membrane and non-membrane based technologies.

The speakers' representation included the Aquastill (The Netherlands), Memsys (Singapore), Cyclect (Singapore), Medad (Singapore) and Thermal Purification Technologies (Switzerland). Their presentations showcased their technology solutions and examples of how integrating LTTD in industrial processes has enabled sustainable operations of chemical plants as well as delivering energy and water savings of up to 20% of OPEX by using waste heat to produce high-quality process water suitable for direct system re-use. Members who are interested may contact SCIC to obtain a copy of the presentation slides.

### Look Out for the Next Seminar

Tentatively planned in March 2015, the focus topic for the next seminar to be held would be on "Industrial Wastewater Treatment Technologies". SCIC will keep all members informed via email as soon as the seminar is confirmed.

## SCIC Annual General Meeting 2014

SCIC held its seventh Annual General Meeting (AGM) on 14 November 2014 at the M Hotel Singapore. The meeting was chaired by SCIC Chairman, Dr Tay Kin Bee who first shared with the members a summary of the activities by SCIC.

The meeting proceeded with the following proposals supported and endorsed through voting of members who were present:

- 1) Financial report for the period ended 31 May 2014
- 2) Appointment of Messrs YM Woo & Co as company auditor for FY 14-15
- 3) Re-election of Board Members retiring by rotation for term 2014/2016:

Mr Leaw Tiew San  
CEO (Contract Logistics, SEA)  
CWT Logistics Pte Ltd

Ms Suiniaty Basirun  
Country Manager, Singapore  
Dow Chemical Pacific (Singapore) Pte Ltd

Mr Georges Grosliere  
Singapore Chemical Plant Manufacturing Director  
ExxonMobil Chemical Asia Pacific

Mr Shamsheer Zaman  
Managing Director  
Linkers (Far East) Pte Ltd

Mr Akira Yonemura  
Managing Director  
Petrochemical Corporation of Singapore Pte Ltd

Mr Andrew Lim Choon Ann  
Deputy CEO  
Pride-Chem Industries Pte Ltd



Dr Poh Poc Huck  
General Manager Pulau Bukom Manufacturing Site  
Manufacturing Director & Local Senior  
Downstream Representative for Singapore  
Shell Eastern Petroleum (Pte) Ltd

Mr Kazuyuki Sakata  
Managing Director  
Singapore Oxygen Air Liquide Pte Ltd

- 4) Election of Board Members for term 2014/2016:

Mr Jacques, Jean-Paul Cazin  
General Manager, Manufacturing & Supply, APR  
Chevron Oronite Pte Ltd

Mr Shuji Matsuyama  
Director/General Manager, Plant  
Mitsui Elastomers Singapore Pte Ltd

- 5) Change of financial year end of the company to from 31 May to 31 December

In closing, Dr Tay thanked members for their attendance and the session continued with some light refreshments networking among the members.

## SCIC Events in 2014

Events	Date
Nanotechnology Standards Awareness Seminar- Update on Health and Safety Aspects in Nanotechnology	18 Feb
SCIC Annual Dinner 2014 & Responsible Care Awards 2013 Presentation	21 Mar
Workshop on Management of Hazardous Chemicals Programme (MHCP)	20 Jan, 21 Feb, 26 Mar, 23 Apr, 19 May, 30 Jun, 22 Jul, 15 Aug
Sharing Session with SMEs- Challenges in implementing Process Safety Management (PSM) and incident sharing	29 Apr
SCIC Training Course of "Regulatory, Technical & Safety Requirement of ISO Tank Containers"	28-29 May
Asia Petrochemical Industry Conference 2014 (APIC 2014)	15-16 May
Training Course on Compliance of International Maritime Dangerous Goods (IMDG) Code (2 sessions)	21-23 May, 29-31 Jul
Paint industry briefing session on wet scrub resistance	20 Jun
Accidents Investigation Workshop	10 Jul
Process Safety Management (PSM) Engagement Seminar	13 Aug, 26 Sep

## SCIC Events in 2014

Events (cont'd)	Date
SCIC Annual Golf Challenge Trophy	24 Jul
ChemEx – The Jurong Island Open Day	2 Aug
Sharing Session on Improving Long Term Energy Efficiency Potential	5 Aug
Chemical Standards Exchange 2014 – “Building Confidence with Health and Safety Standards”	19 Sep
SCIC-IGAS Seminar on Industrial Gases Safety	30 Sep
Logistics and Distribution Conference	15 Oct
Workshop on Process Safety Performance Indicators (PSPI)	17 Oct
Seminar on “Water and Energy Savings using Low Temperature Thermal Desalination Technology for the Chemical Industry”	24 Oct
SCIC Year End Cocktail and Networking Reception	7 Nov
SCIC Annual General Meeting	14 Nov
Trans-Pacific Partnership (TPP) and Regional Comprehensive Economic Partnership (RCEP) roundtable session	21 Nov
International Symposium for Nanosafety: Social, Environmental and Health Impacts	18 Nov
Outreach Sessions to Institutions and Schools	All Year Round

Standards Launches	Date
Launch of revised SS 5 Methods of test for paints and varnishes	28 Feb
Launch of revised SS 586 Specification for hazard communication for hazardous chemicals and dangerous goods	7 Mar
Launch of SS 597 Code of practice for bulk liquid oxygen storage installations on user premises (previously CP 34)	30 Sep
Launch of revised bunkering standards (SS 600 : 2014 & SS 524 : 2014) at Singapore International Bunkering Conference (SIBCON 2014)	14-16 Oct

Globally Harmonised System (GHS) Trainings	Date
GHS Chemical Users Course	13 Jan, 26 Feb, 11 Mar, 17 Apr, 16 May, 24 Jun, 16 Jul, 19 Aug, 22 Sep
GHS Classification of Single Substance Workshop	25-26 Aug
GHS Classification for Mixture	5-6 Mar, 9-10 Sep
Conference cum Workshop on the Globally Harmonised System of Classification and Labelling of Chemicals 2014	5-6 May
13 <sup>th</sup> National GHS Seminar	25 Mar
14 <sup>th</sup> National GHS Seminar	31 Oct

Dialogue Sessions	Date
SCIC-MOM Dialogue	14 Aug
SCIC-SCDF Dialogue	25 Sep
SCIC-NEA Dialogue	12 Oct

Responsible Care Events	Date
SCIC Responsible Care Good Practices Sharing Workshop 2014 (Distribution and Product Stewardship Codes)	30 May
SCIC Responsible Care Good Practices Sharing Workshop 2014 (Community Awareness & Emergency Response and Employee Health & Safety Codes)	17 July
Responsible Care Good Practices Sharing Workshop (Pollution Prevention and Process Safety Codes)	22 July
Responsible Care Introductory Briefing Sessions	28 Feb, 27 Aug, 26 Sep
Responsible Care Co-Ordinators Get Together Session	12 Sep
Jurong Island Visit – Community Outreach for Grassroots Leaders of South-West CDC	18 Oct

## LOOKING FOR AN ADVERTISING PLATFORM?



The advertising space for **SCIC ChemDigest 2015** is now open. ChemDigest is a quarterly publication by SCIC and will be distributed to all SCIC member companies which include manufacturers, logistics service providers, traders, our overseas counterpart associations, government agencies and Institutes of Higher Learning.

In addition, advertiser will also enjoy the benefit of having the placement of their company's logo and link on SCIC website. For more information, please contact Ms Tricia Seetoh at [tricia@scic.sg](mailto:tricia@scic.sg)



## Chemical Cluster Directory of Singapore (CCDS)

13<sup>th</sup> Edition

SCIC is pleased to announce that the Chemical Cluster Directory of Singapore 2014 - 13<sup>th</sup> Edition has been published. This is the official guide for the chemical and other supporting industries. Reports and articles for the Singapore government agencies relating to the Chemical Industry, together with key statistics of the industry, have also been incorporated to make this publication a highly valuable information source book.



A copy of the Chemical Cluster Directory of Singapore will be mailed to the main contact person of SCIC member companies. Members who are interested to obtain additional copies may contact SCIC Secretariat office at 6267 8891 or email to [secretariat@scic.sg](mailto:secretariat@scic.sg)



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## Welcoming New SCIC Members

SCIC would like to welcome the following companies:

### GAIA SCIENCE PTE LTD

Gaia Science Pte Ltd is a renowned technology distributor headquartered in Singapore with direct offices in Malaysia, Indonesia & Myanmar, focusing on the sales and servicing of scientific and laboratory equipment. In addition, our experts also specialize in the design and construction of research and development (R&D) facilities such as BSL2, BSL3 and animal research facilities.

Our customers range from the universities, government institutions & private industry sectors such as that of food, pharmaceutical, chemical & semiconductors. As an employee owned company, Gaia Science places great emphasis on employee empowerment to inspire and collectively groom the very talents that has synergistically propelled the company into success across the region and ultimately towards a greener earth & better quality of life through the promotion of science & technology.

 [www.gaiascience.com.sg](http://www.gaiascience.com.sg)

### TAYLOR MINISTER LEASING (FAR EAST) PTE LTD

Taylor Minister Leasing (TML) an international leasing company privately owned since in 1975. Headquarters is in Holland with three regional offices (Singapore, UK and Houston) and a very strong technical support team based in Rotterdam. TML managed approx. 5500 iso tank containers comprising of T11 for liquids, T50 for petrochemical gases and T75 cryogenic tanks for industrial gases and approx. 6000 ibc tanks.

Please contact Patrick Neo the Regional Director for Asia Pacific at +65-96313063 or email: [neo65@singnet.com.sg](mailto:neo65@singnet.com.sg)

 <http://www.tml-group.com/>

### NRG ENGINEERING PTE LTD

NRG Engineering has built a reputation as a provider of Customised Project Management solutions including Safety and People management for the Oil and Gas, Mining and Infrastructure industries since 2005. Our team has "The Power To Deliver", thanks to our wealth of multinational and mobile staff and worldwide project experience ranging from Africa to Asia.

 <http://nrgengineering.com/>

### NANOMATERIALS TECHNOLOGY PTE LTD

NanoMaterials Technology Pte Ltd (NMT) is a technology-based Singapore company specializing in development, manufacturing and distribution of metal oxide nano-materials such as zinc oxide, cerium oxide and multi-doped tin oxide for glass coating, solar control film, lubricants, plastics and rubber applications. NMT also provides drug development contract research services to pharmaceutical companies.

 [www.nanomt.com](http://www.nanomt.com)

### XIN JI DA TRADING PTE LTD

Established in the 1980s, Xin Ji Da Trading Pte. Ltd. is the leading global supplier of industrial chemicals. Renowned for its comprehensive range of products, Xin Ji Da Trading Pte. Ltd. also provides tire-manufacturing raw materials such as tire cords, bead wires, carbon black, silica and rubber chemicals to prominent tire manufactures and business entities around the world.

 <http://www.xinjida.com.sg/>

For more information on SCIC membership, please send in your enquiries to [secretariat@scic.sg](mailto:secretariat@scic.sg)

## Appreciation of Contributions Rendered to SCIC Director – Mr Bay Yew Chuan

The Board and secretariat of SCIC would like to extend our heartfelt appreciation to Mr Bay Yew Chuan of Store+Deliver+Logistics Pte Ltd for his longstanding commitment and contributions towards SCIC during his tenure as a Director of the Board from 2002 to 2014.

SCIC extend its best wishes to Mr Bay on his retirement.



## Welcoming New Committee Members

SCIC would like to extend a warm welcome to the following members and companies into the:

### REGULATORY AFFAIRS COMMITTEE

#### Mr Sheshasayee Melmangalam

Global Product Stewardship & Regulatory Affairs Advisor  
ExxonMobil Chemical Asia Pacific Pte Ltd

## Appreciation to Committee Chairman and Member

SCIC would like to express its thanks to the following committee chairman and member for their outstanding contributions to SCIC during their tenure as a chairman and member of the following committee:

### Regulatory Affairs Committee Chairman

**Mr Kew Jin Woon**, Eastman Chemical Asia Pacific Pte Ltd

### Regulatory Affairs Committee Member

**Ms Linda Lai**, ExxonMobil Chemical Asia Pacific Pte Ltd

## Jurong Island Visit – Community Outreach to Grassroot leaders of the South West Community Development Council (SW-CDC)



As part of the ongoing community outreach efforts by SCIC and its members through the Responsible Care initiatives, SCIC has been organising annual awareness sharing sessions to proactively engage members of public.

The objective of such session is to address increasing public opinion and concern, especially the residents and students residing in the South-West region about flaring incidents associated with chemicals operations in Jurong Island. Through such joint community outreach, the misconception on flaring by the public can be addressed and also helped to allay any fears.

To help the grassroots leaders to better understand and appreciate the information shared, the SCIC with the support of the National Environment Agency (NEA) and Industry Members organised the inaugural Jurong Island visit on 18 October 2014 (Saturday) for the grassroots leaders of the South West Community Development Council (SW-CDC).

Hosted by one of SCIC members, ExxonMobil, the visit was attended by officials from the various districts of SW-CDC as well as representatives from the SCIC Board, the Responsible Care Committee, NEA and People's Association (PA). Attendees from the SW-CDC are mostly professionals and also grassroots leaders in their respective districts.



It was a fruitful session for the attendees as they were presented information on understanding the flaring operations. A lunch reception was followed where there was a good exchange of information between the grassroots leaders and the industry members. The visit ended with a bus plant tour where the host showed and explained to the attendees the operations set-up and practices in a chemical plant.

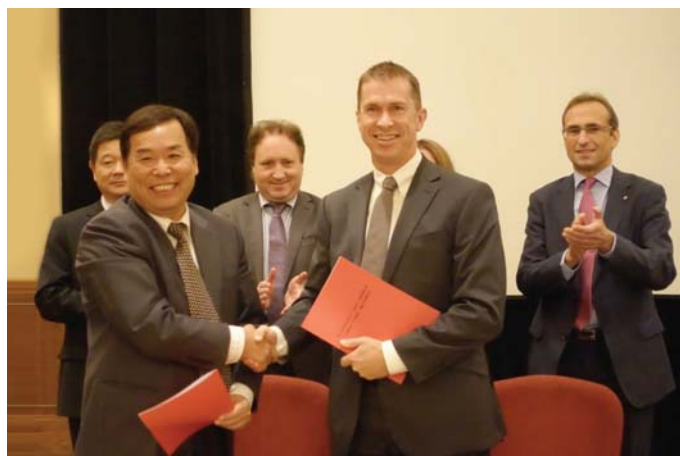


Positive feedback have been received that such community outreach session organised has been beneficial in clarifying concerns

related to the chemical industry's operations. The grassroots leaders looked forward to the continuous engagement of the public by the chemical industry.

SCIC would like to thank the ExxonMobil, NEA and PA for the support and will continue in this community outreach efforts.

## Responsible Care Leadership Group Meeting (ICCA-RCLG)



MOU signing between the Association of International Chemical Manufacturers (AICM) and China Petroleum and Chemical Industry Federation (CPCIF) which allowed for both associations to cooperate on the use of the Responsible Care logo in China.

The Responsible Care Leadership Group (RCLG) Meeting was held from 21 to 22 October 2014 in London and hosted by the Chemical Industry Association (CIA), UK.

Key highlights of the meeting discussion included:

- Status updates on the roll out of the revised Responsible Care Global Charter and the approach to 2015 public release on charter signatory list.
- Association of International Chemical Manufacturers (AICM) and China Petroleum and Chemical Industry Federation (CPCIF) Responsible Care Logo MOU Signing
- Endorsement of the RCLG membership application by China Petroleum and Chemical Industry Federation (CPCIF)
- Harmonized Process Safety Metric Recommendation for Key Performance Indicators (KPI) reporting by associations
- Responsible Care progress updates in China and Vietnam

The Responsible Care Leadership Group is part of the International Council of Chemical Associations (ICCA), which is the world-wide voice of the chemical industry, representing chemical manufacturers and producers all over the world, to lead and oversee the implementation and promotion of the Responsible Care programme globally.

For more information on the ICCA and Responsible Care, please visit [www.icca-chem.org](http://www.icca-chem.org)



The meeting has endorsed on CPCIF's application as the latest member of the RCLG.



## Q Forthcoming Events

2015 < >

### 21 January

Training Workshop on Globally Harmonised System (GHS) for Chemical users

### 27-28 January

SCIC-GHS Classification and Labelling of Chemicals

### 27 February

Training Workshop on Globally Harmonised System (GHS) for Chemical users

### 20 March

SCIC Annual Dinner 2015 and Responsible Care Awards 2014 Presentation

### March

SCIC-GHS Classification and Labelling of Chemicals

### March

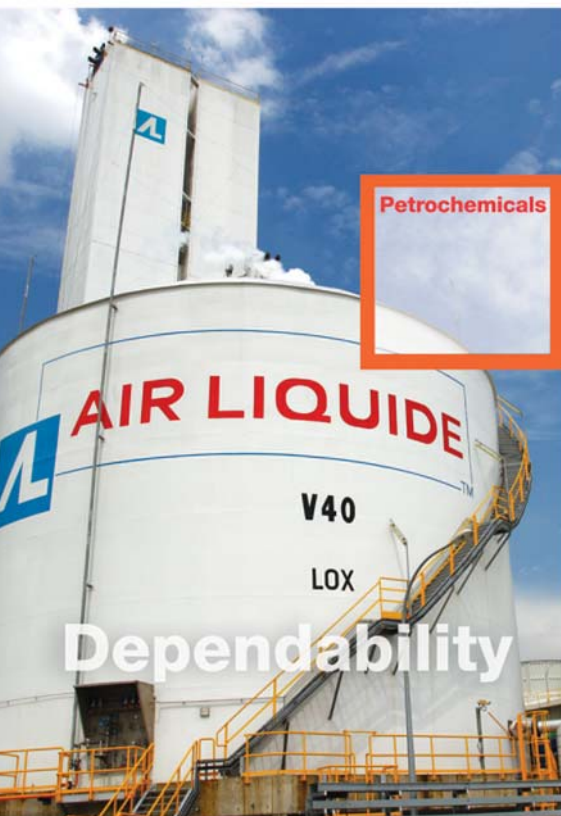
Training Workshop on Globally Harmonised System (GHS) for Chemical users

### March

Compliance of the International Maritime Dangerous Goods (IMDG) Code

For more information on the dates of these training courses, you may visit our website at [www.scic.sg](http://www.scic.sg) or contact SCIC at [secretariat@scic.sg](mailto:secretariat@scic.sg)

Note: SCIC may change/amend the events listed above without any prior notice.



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