

### Find a little, learn a lot.

Major disasters in process industries have been occurring globally. These disasters could be caused by failure of one or multiple barriers, such as leadership failure, design failure, human errors, poor maintenance practices, etc. Some examples of major disaster in the history of process industries that resulted in significant impact to safety and health of public community, environment and financial loss are:

- June 1974: A vapor cloud explosion at a chemical plant near village of Flixborough, England killed 28 people and seriously injured another 36. Damage extended to 1,821 nearby houses and 167 shops and factories.
- December 1984: Toxic released at Bhopal, India resulted death toll range from 4,000 to 20,000. The disaster caused the region's human and animal population severe health problems to the present.
- March 2005: An explosion ignited by a nearby running diesel truck at BP refinery in Texas City, Texas resulted in over 100 seriously injured and 15 dead, including employees of Jacobs, Fluor and BP. Refer to the US CSB link for the 10<sup>th</sup> year anniversary safety message for this incident <https://www.youtube.com/watch?v=hcKM4xWywLE>
- April 2010: Deepwater Horizon oil spill in the Gulf of Mexico. Eleven oil platform workers died in an explosion and fire that resulted in a massive oil spill in the Gulf of Mexico, considered the largest offshore spill in US history.



The above unfortunate accidents have taught the industry important lessons through detailed analysis of immediate and underlying causes. The key is to think about what we can learn from these, what can go wrong in our own process industries, and how we can be better prepared to prevent the occurrence of similar disaster and respond appropriately to an emergency.

### The Nature of Accident Process



Recognising and understanding the warning signs of an accident are essential knowledge and skills to prevent, alert and mitigate the potential escalation of accident occurrence. Many disasters have occurred because organisations have ignored the warning signs of precursor incidents or have forgotten the lessons learnt from similar past incidents. Thus the paramount importance of a good investigation is its influence and lasting impression on management and systems via learning from those incidents.

### What can you do?

Everybody in your organisation including executives, unit management, engineers and supervisors play a part of leadership and ownership in learning from incidents and applying those learnings to prevent recurrence. Learning and sharing from the past incidents greatly enhance an organisation's ability to:

- Proactively review risk assessments and work procedures to recognise the potential initiating events or warning signs of accident.
- Develop mitigation plan to eliminate recognised hazards or initiating event and prevent the potential escalation of accident e.g. proper equipment spacing and layout, installation of emergency shut off valve, good management of inventories of flammable materials on site and so on.
- Maintain and familiarise yourself with safety critical protective device or equipment and procedures intended to protect against major accidents in your plant.
- Ensure there are practice of emergency procedures and frequent emergency drills at your plant.
- Continuously engage colleagues or stakeholders to share the lessons learnt from the past incidents to help all strengthen process safety awareness and capability to recognise the warning signs of accidents.

References for learning from past incidents:

*Chemical Industry Case Studies – Singapore WSH council in collaboration with Ministry of Manpower*  
*Chemical Safety and Hazard Investigation Board, U.S., Investigation reports*  
*Center for Chemical Process Safety Beacons*  
*Kletz, T. Learning from Accidents. Oxford, UK: Butterworth-Heinemann, 2001.*  
*Lees, F. P., Loss Prevention in the Process Industries*

## Process Safety is Everybody's Responsibility!

An initiative of the Process & Engineering Committee

**SINGAPORE CHEMICAL INDUSTRY COUNCIL LIMITED (SCIC)**  
 8 Jurong Town Hall Road, #25-04, The JTC Summit, Singapore 609434  
 Tel : 6267 8891 Fax : 6267 8893