The change of culture in fire safety management in highly complex/high risk industries and facilities: “Proactive” as opposed to “Reactive”

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Workshop Objective

• To share the experiences and discuss the concerns of professionals and authorities who are involved in various aspects of fire safety management in highly complex/high risk industries and facilities.
Workshop Program

1. Introduction
2. Opening presentation by the workshop chairman
3. Brief discussion on the background and areas of interest of the participants based on information collected through “participant information forms”
4. Other scheduled and unscheduled presentations
5. Case study exercise based on key points of discussion identified for the purposes of the workshop.

6. Forum discussion

7. Workshop wrap-up presentation by the Chair: Conclusions and future actions

8. Preparing a post-workshop statement to be issued to conference delegates (post-workshop activity)
The change of culture in fire safety management in highly complex/high risk industries and facilities: “Proactive” as opposed to “Reactive”
Introduction

• The objective of this presentation is not to “preach” or “teach” but to facilitate discussion.

• The presentation aims to create questions, more than answering them.

• We hope most of these questions will be discussed and even answered during the forum discussion session.
Introduction

- Let’s start with RISK.....................
“There is no such thing as zero risk, only acceptable risk”
Introduction

- Risk is expectation of loss

- Risk is dependent on the probability of a loss-event occurring combined with its magnitude and hence, consequence
Introduction

• The probability can be insignificant

• But the consequence can be catastrophic and the risk therefore becomes considerable.
  – Consequence:
    • life safety;
    • environmental protection; or
    • business continuity
Why do we need to analyse and identify risks?
Introduction

• Fire Safety Management ≈ Risk Management

• Objectives:
  – Prevent event from happening
  – Mitigate consequences
Introduction

• Best approach to prevention: Identify sources of loss-events and control them

• How?
  – Risk analysis
  – Appraisal of fire incidents
Introduction

• For successful fire risk and safety management:
  – Understanding risk
  – Understanding means of risk mitigation
  – Top-down dedication to risk management
  – Education and training
Introduction

- A fact we must always keep in mind:
  - Many (most?) fire incidents are directly or indirectly traced back to human error
    - Errors made at the “coal-face”
    - Errors originating from management levels
- So, fire safety management plans should address people as a key “hazard”
Introduction

• All fire safety management plans should be site specific and be developed by or with significant contribution from the facility owners and operators.
Introduction

• It is essential that local fire authorities are a key stakeholder in fire risk and safety management.

• Their involvement should be encouraged and their contribution should be valued.
Introduction

Points of discussion:

1. Top-down approach to fire safety management
2. Multi-objective management measures
3. Voluntary prevention in lieu of enforced prevention
4. Learning from misfortunes of others
5. Understanding and ranking the hazards and risks
Introduction

Points of discussion:

6. Hazard mitigation: generic or industry and facility specific
7. Facility specific Fire Safety Management Plans
8. Facility specific Interim Fire Safety Management Plans to address construction / maintenance / refurbishment activity specific risks
9. The role of local authorities (i.e. PACDA) in fire safety management
1. Top-down approach to fire safety management

- The key to successful fire risk and safety management lies in dedication from all levels of management within an organisation towards:
  - the introduction of preventative systems and maintenance schedules;
  - hazard mitigation measures; and
  - ongoing education and training programs for staff.
1. Top-down approach to fire safety management

- Management commitment to safety –
  - Attitudes and actions of management can significantly influence the entire staff
  - It is critical that the management commit to the success of a safety management system implementation.
  - Creating a culture of “commitment to safety”
1. Top-down approach to fire safety management

- The top-down strategy should require the implementation of the following among other things:
  - Basic fire safety infrastructure renovation
  - Regular fire safety trainings
  - Independent, transparent facility inspections
2. Multi-objective management measures

- Objectives:
  - Fire safety
  - Disaster prevention
  - Environmental protection
  - Business continuity
3. Voluntary prevention (proactive) in lieu of enforced prevention (reactive)

• Codes and regulations provide the basis for the minimum accepted level of safety.
• These are usually based on “acceptable levels of risk”
  – What is acceptable?
  – Who decides and how?
• What is necessary to take it to the next level?
4. Learning from misfortunes of others (and yours!)

• Lessons are learned from each emergency incident.

• Unfortunately, many of those experiences and lessons are limited to those who were involved directly involved.

• Unless feedback on the incident is shared with others (internally/externally/globally) a valuable learning opportunity can be lost.
4. Learning from misfortunes of others (and yours!)

• The industry has a duty to evaluate problematic incidents, as well as those that go extremely well, and communicate the findings (including the lessons learned), to others.

• An effective way to accomplish this is through a post-incident assessment and appraisal.
4. Learning from misfortunes of others (and yours!)

• An appraisal is a fact-finding exercise and a chance to relate and record pieces of information that collectively form a picture of an incident.

• An appraisal must not be turned into a witch-hunt or result in creating scape-goats.

• Lessons learned from the appraisal should be used constructively to:
  – prevent incidents;
  – correct deficiencies; and
  – influence training and education.
4. Learning from misfortunes of others (and yours!)

• Management (at all levels) must be willing to act upon the lessons learned and correct the problems as quickly as possible.

• The process should be considered an important tool for improving safety and health.
4. Learning from misfortunes of others (and yours!)

- The incident information is also a key requirement of risk assessments in order to identify event frequencies, reliability and consequence information.
- Most of this data needs to be “derived”.
4. Learning from misfortunes of others (and yours!)

• How can the post incident information can be made accessible to all (locally and globally)?
  1. Publicly available incident reports – most major incidents
  2. Data sources in the form of published literature or computer data banks (fee-paying)
  3. Consultants and industry groups
  4. Others
5. Understanding and ranking the hazards and risks

• Hazard identification (and ranking) and risk assessment involves a critical sequence of information gathering and the application of a decision-making process.
5. Understanding and ranking the hazards and risks

• Hazard identification and risk assessment assist in discovering:
  – what could possibly cause a major accident (hazard identification);
  – how likely it is that a major accident would occur and the potential consequences (risk assessment); and
  – what options there are for preventing and mitigating a major accident (control measures).
5. Understanding and ranking the hazards and risks

• These activities should assist in improving operations and productivity and reduce the occurrence of incidents and near misses.
5. Understanding and ranking the hazards and risks

• Past, present and future hazards
  – To identify all hazards, it will be necessary to consider past, present and future conditions, hazards and potential incidents
  – Past incidents, (*i.e. learning from misfortunes*), provide an indication of what has gone wrong in the past and what could go wrong in the future
5. Understanding and ranking the hazards and risks

• Hazard and risk identification techniques:
  – HAZOP
  – Equipment failure case definition
  – Checklists
  – What-If Techniques
  – Brainstorming
  – Task Analysis
  – Failure Modes Effects Analysis (FMEA)
  – Failure Modes Effects and Criticality Analysis (FMECA)
  – Fault Tree and Event Tree Analysis
  – Historical records of incidents
5. Understanding and ranking the hazards and risks

- Risk identification/analysis techniques require three things more than anything else:
  - Data;
  - Data; and
  - Data.............
6. Hazard mitigation: generic or industry and facility specific

• Hazard mitigation in the context of subject facilities can be described as:

  “Actions taken to control/reduce/eliminate the short and long-term risk to human life, environment, property and business continuation from hazards”
6. Hazard mitigation: generic or industry and facility specific

• The control mechanisms may be “proactive” or “reactive”
6. Hazard mitigation: generic or industry and facility specific

- **Proactive controls**
  - **Elimination:**
    - Substituting high hazard systems
  - **Prevention:**
    - Changing design standards
    - Increasing inspection frequencies

- **Reactive controls**
  - **Reduction:**
    - Process shutdown
    - Systems/layout changes
  - **Mitigation:**
    - Fire protection
    - ERPs
6. Hazard mitigation: generic or industry and facility specific

• In the context of high hazard facilities, a useful and effective hierarchy of control measures is as follows (mostly proactive):
  – eliminate hazards;
  – prevent incidents;
  – reduce consequences; and
  – mitigate the harm.
7. Facility specific Fire Safety Management Plans

• There are occasions where generic fire safety management plans (FSMP) are adopted with minimum modifications.

• It is critical that FSMPs are specifically developed for each facility reflecting the unique hazards and risks.
8. Facility specific Interim Fire Safety Management Plans

• Many incidents occur during maintenance (regular or required), repair, reconstruction, expansion and similar activities
• During such activities many active systems may be isolated
• FSMPs may not be effective
• Activity specific “Interim Fire Safety Management Plans” can be extremely effective in reducing risks
9. The role of local authorities in fire safety management

- In major incidents local fire authorities will have the key responsibility of intervention, control and post fire clean-up.
- To conduct these activities effectively and safely they will need full co-operation of the facility operators before, during and after the major incidents.
9. The role of local authorities in fire safety management

• Authorities may have specific requirements, such as:
  – Accessibility: i.e. full perimeter access (land or water)
  – Site specific system requirements
  – Levels of training provided to facility staff
  – Inspections
  – Others
Case Study Exercise
Case Study Exercise

• The exercise is based on the Coode Island fire incident which was presented by Mr Parkan Behayeddin during the first day of the conference.
Case Study Exercise

• The Exercise:

1. View the fire incident film
2. During the film take notes in relation to the relevant key points of discussion
3. Discuss the relevant key points in light of the Coode Island incident
4. Develop recommendations
Points of discussion

1. Top-down approach to fire safety management
2. Multi-objective management measures
3. Voluntary prevention in lieu of enforced prevention
4. Learning from misfortunes of others
5. Understanding and ranking the hazards and risks
6. Hazard mitigation: generic or industry and facility specific
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8. Facility specific Interim Fire Safety Management Plans to address construction / maintenance / refurbishment activity specific risks
9. The role of local authorities (i.e. PACDA) in fire safety management
Workshop Exercise
Forum Discussions
Forum Discussion Topics (including but not limited to the following)

• Personal/organisational incident experiences (good or bad!)
• Organisational initiatives (proactive Fire Safety Management)
• Workplace culture
• Relationships with local authorities
• Local authority frustrations or commendations
• Others......
Conclusions and Future Actions