Risk Management 2.0

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Presentation Outline

• Why do we need to enhance RM?
• RM Journey
• Effective On-Site RM Implementation
• Upstream Risk Control Measures
• Holistic RM
• Risk Evaluation for Health hazards
• Role of Human Resource Managers
• Duties of Employers
• The Way Forward
WSH Framework

• Introduced in 2005
• 3 key principles:
  1. Reduce risks at source
  2. Greater industry ownership
  3. Higher penalties for poor safety management

Risk Management as a cornerstone
Workplace Fatality Rates, 2004-2013

WSH Reform
Our RM Journey

- A Great Workforce
- A Great Workplace

Risk Assessment Guidelines

bizSAFE RM Capability Building Programme

RM competency assessment for WSHOs

WSH RM ACOP
- Issued 2011
- 1st revision 2012

RM Review Industry Focus Group Discussion, Industry & Public consultations

Our RM Journey
- Development of RM compendia
- $5m fund for work safety launched
- WSH (RM) Regs come into force
- Risk Management Assistance Fund (RMAF)
- Code of Practice on Workplace Safety and Health (WSH) Risk Management
- Role of WSHOs in RM legislated in new WSH (WSHOs) Regulations
- WSH awards (yearly)

- bizSAFE Convention 2015
- Feb 2015
- 2nd Revision of RM ACOP released at bizSAFE Convention
- May 2014
- Consultations
- Dec 2011
- Risk Assessment Guidelines
- Accreditation of RM Training providers and Auditors
- WSH RM ACOP
- Issued 2011
- 1st revision 2012
- bizSAFE
- bizSAFE RM Capability Building Programme
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Our RM Journey – Some Issues Faced

ISSUES

- RM is a “paper exercise”
- Over-reliance on procedures & PPE
- RM does not consider human factors

RM 2.0

- Effective on-site RM implementation
- Driving risk controls upstream
- Consideration for health hazards & human factors
Effective On-Site RM Implementation

Outcome: **Work gets done in a safe manner**

- Improvements needed:
  - Actual implementation of controls on-site and risk controls in RA documents are realised

- Allocate resources
  - Appoint personnel/team to be responsible for implementation
  - Implement control measures, translate documentation into reality
  - Allocate time to educate, brainstorm, put structures in place
Effective On-Site RM Implementation

Outcome: **Work gets done in a safe manner**

- Monitor and review effectiveness of risk control
  - Seek feedback from users on adequacy and effectiveness of risk controls
- Risk management initiatives communicated to all stakeholders
- RA documents should be accessible to all stakeholders, including workers
Effective On-Site RM Implementation

In the revised WSH RM ACOP:

• RM is an **integral** part of organisational work processes
• Customised and tailored to organisation
• Contributes to achievement of organisation’s objectives
• Improves performance of business, WSH compliance and environmental protection
• Takes into account organisational and human factors
Effective On-Site RM Implementation

In the revised WSH RM ACOP:

- Communication is important throughout all stages of RM

**ISO**

**Preparation**
- Form team
- Gather relevant information
- Identify tasks of each process

**Risk Assessment**
- Hazard identification
- Risk analysis
- Risk evaluation

**Risk Control**
- Obtain employer’s or management’s approval
- Implement risk control measures
- Communicate hazards identified and their controls
- Regular audits or inspections

**Record-keeping**
- Made available upon request
- Kept for at least 3 years

**Review**
- Monitoring and review on a regular basis

**Effective on-site implementation**

**Moving risk controls upstream**

**Holistic**

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Effective On-Site RM Implementation

Outcomes:

• Persons at work are able to articulate:
  – Hazards: What the potential dangers are
  – Precautions: Controls provided to make safe the job

• Risk controls are implemented on ground

• Corporate RM are consistently implemented across all sites
Driving Risk Controls Upstream

Outcome: Reducing Risk at Source

- Apply Hierarchy of Control to reduce risks at source
- The closer to source, risk reduction is more effective and least influenced by human error
- A combination of measures is generally more effective than relying on a single control
Driving Risk Controls Upstream

In the revised WSH RM ACOP:

• Control risks at source by implementing the Hierarchy of Control.
• Elimination of hazard should take precedence, where feasible.
• Where elimination is not feasible, measures should be taken to reduce risk in this order:
  – Substitution
  – Engineering controls
  – Administrative measures
  – Personal protection
Elimination of Hazards at design stage

• Design for Safety (DfS)
  - consideration for safety of builders, users, public and maintenance personnel at the design stage

• Design Risk Management
  - Hazards can be avoided by proper plant design and selection of machinery and equipment

• Re-design of work task or activities
  - Using rotators to rotate ISO-tanks to enable entrance through manhole from ground
  - Provision of conveyer belts for material movement eliminates manual carrying of materials
Driving Risk Controls Upstream

Substitution examples

• Proactive:
  – Replacing a flammable & toxic raw material with a non-flammable and less toxic one

• Reactive:
  – Replacing solvent-based cleaning agent with a water-based one, only after a fire that left an employee with burns
### Substitution examples

<table>
<thead>
<tr>
<th>Process, operation, equipment, material</th>
<th>Substitutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drop piling</td>
<td>Bore piling</td>
</tr>
<tr>
<td>Gear drive</td>
<td>Belt drive</td>
</tr>
<tr>
<td>Metal gear</td>
<td>Plastic gear</td>
</tr>
<tr>
<td>Roller conveyor</td>
<td>Belt conveyor</td>
</tr>
<tr>
<td>Asbestos</td>
<td>Gypsum board</td>
</tr>
<tr>
<td>Benzene</td>
<td>Toluene or xylene</td>
</tr>
<tr>
<td>Hand tool</td>
<td>Ergonomically designed tool</td>
</tr>
<tr>
<td>Load cell test</td>
<td>O-cell</td>
</tr>
<tr>
<td>Raw material in liquid form</td>
<td>Raw material in granule form</td>
</tr>
</tbody>
</table>
Driving Risk Controls Upstream

Examples of Engineering Controls

- Acoustic enclosure
- Local exhaust ventilation system
- Containment or enclosed system
- Customised working platforms for working at heights
- Machine guarding
- Automatic process
- Robotic operation
- Radiation shielding
- Mechanical lifting aids
- Limit switch for machinery
Factors influencing WSH within an Organisation

- **Environment**
- **Organisation**
  (Manpower and workload distribution, shift work)
- **Workplace**
  (Process, operation, work, equipment, machinery, workspace)
- **Employees**

Within Organisation’s control

Traditional RM
Our Underlying Assumptions when implementing RM

We assume our employees to be similar in most aspects when we do RA.

In reality, our employees are unique individuals with differing physical and mental capabilities.
Holistic RM

Environment

Organisation
(Manpower and workload distribution, shift work)

Workplace
(Process, operation, work, equipment, machinery, workspace)

Employees

Within Organisation’s influence

Holistic RM

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In the revised WSH RM ACOP:

- RAs should consider organisational culture* & human factors^ which could compromise work ability and safety, leading to workplace accidents

^ Or individual health factors
*Reference drawn from ISO 31000 Risk Management
Holistic RM

In the revised WSH RM ACOP:

- Work organisational factors, *such as*
  - Excessive workload
  - Prolonged working hours
  - Lack of adequate training
  - Inadequate acclimatisation

- Individual health risk factors, *such as*
  - Consider key attributes, from health assessments or medical examinations or other sources, required for safety critical tasks or high risk work activities
  - Individual susceptibility to certain health risks
  - Smoking as risk factor for many diseases
  - Alcohol misuse
Holistic RM

In the revised WSH RM ACOP:

- Risk control measures can be implemented to take into account varying perceptions and behaviour.
- In addition to human factors, other factors to consider when identifying hazards:
  - Proximity between hazardous activities
  - Compatibility of work activities
  - Non-routine work activities and situations
  - Environmental conditions e.g. haze or lightning storms
Holistic RM: Examples

Organisational Factors: Workload Management (Fatigue)

• Worker resting on ground of open yard was run over by a seven-tonne forklift.
  - Driver did not notice the worker was in his path
  - both worker and forklift driver had been working beyond 14 hours that day.
  - Forklift driver had worked beyond 20 hours on two separate days the week before.

• Long working hours induced fatigue in workers and forklift driver had reduced alertness

• Employer may put in place:
  - policy on workload management to prevent workers’ fatigue
  - appointment of multi-functional team to implement Fatigue Management plan.
Holistic RM: Examples

Human Factors

• Delivery driver with poorly managed diabetes may develop complications such as blurred vision, impaired senses
  – May compromise driver’s ability to respond to dangerous situations on the road, posing a hazard to other drivers, passengers, pedestrians, including themselves.
  – Not a problem if diabetes is under control

• Employers can put in place health programmes to help employees manage their health
  – Allowing medical service provider to offer optional detailed medical screening services at corporate rates to employees
  – Provide healthier food options at the staff canteen
  – Encourage off-the-job health and safety
Risk Evaluation for Health hazards

- RM must consider health hazards
- Relevant risk factors are to be considered for different health hazards
- Exposure assessments should be conducted where possible to estimate employees’ exposure to health hazards
  - Conducted by competent persons using recognised methods, acceptable standard procedures and standard calibrated equipment
- Exposure estimates compared with established health exposure standards
Risk Evaluation for Health hazards (Example)

Step 1: Hazard Identification
Step 2: Exposure Assessment
Step 3: Hazard Characterization
Step 4: Risk Characterization
Step 5: Risk Control
Step 6: Documentation & Communication

- **e.g. Machine noise**
- **e.g.** Leq 8hr = 93 dBA
- Leq 8hr > 85 dBA Exposure is excessive

<table>
<thead>
<tr>
<th>Sound Pressure Level (dBA)</th>
<th>Duration per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>8 hours</td>
</tr>
<tr>
<td>88</td>
<td>4 hours</td>
</tr>
<tr>
<td>91</td>
<td>2 hours</td>
</tr>
<tr>
<td>94</td>
<td>1 hour</td>
</tr>
<tr>
<td>97</td>
<td>30 minutes</td>
</tr>
<tr>
<td>100</td>
<td>15 minutes</td>
</tr>
</tbody>
</table>

Average Noise Exposure (dBA) | Risk of NID (%)
----------------------------|-----------------|
80                           | 1               |
85                           | 8               |
90                           | 25              |

Noise Induced Hearing Loss
Role of Human Resource Manager*

• Recruit suitable candidates able to meet both position requirements and WSH obligations
• Ensure employees given appropriate and sufficient orientation and WSH training
• Support employer to ensure effective RM communications to all employees and consider WSH outcomes in appraisals
• Put in place programmes that support and maintain employees’ safety, health and wellbeing

*In the absence of a HR Manager in the organisation, the equivalent person undertaking such a work profile of the HR Manager should execute the duties mentioned above
Duties of Employers

- Ensuring safety and health of persons at work
- Assist and support other stakeholders in the workplace
  - WSH Professionals, occupiers, principals, etc
- Employers play their part, for example:
  - Allocate resources to realising control measures in workplaces
  - Demonstrate WSH commitment
  - Put in place sound organisational structure, so that RM is integrated into the business operation
  - Safety is a beyond a priority; it is a core value
Role of WSH Professionals

• Assist and support other stakeholders in the workplace
  – Employers, occupiers, principals, employees etc

• WSHOs play their part
  – Provide WSH advice customised to workplace
  – Assist in realising control measures in workplaces
  – Work with employer to ensure effective communications
  – Shape key management decisions
RM Strategies

Vision Zero

Strategic Outcome:
Effective Risk Management in Workplaces

1. Promoting RM
2. Building Capability
3. Engaging Stakeholders
4. Legislation & Enforcement
5. Compliance Assistance

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The Way Forward – RM Initiatives

Building Capabilities
• RM 2.0 training for WSH Professionals
  - April 2015 by SISO
• Existing WSH Courses updated to align to revised RM ACOP

Compliance Assistance
• Online RA compendia tool
• RA awareness posters for workers
• Simplified Guide to implementing RM

Legislation & Enforcement
• Review WSH (RM) Regulations

Promotion & Engagement
• Video on RM implementation
• Conference, seminar, forum, focus group discussion, public consultation
In Summary

Effective on-site implementation

Moving risk controls upstream

Holistic

Enhanced Risk Management (RM 2.0)
Thank You!