TOTAL WORKPLACE SAFETY & HEALTH (TWSH)

DRIVERS, CHALLENGES AND REWARDS

SINGAPORE HEALTHCARE ENTERPRISE RISK MANAGEMENT CONGRESS,
21ST AUGUST 2014
VERVIEW

What is Workplace Safety & Health?

Why do we need Total Workplace Safety & Health?

What does it mean to you?
SPS Hawazi Daipi: "We want everyone to arrive back home safe and healthy"

For the recently released DGUV Prevention Yearbook 2012/2013 (pages 26-27), SPS Hawazi Daipi was interviewed with regards to his thoughts on Singapore's WSH prevention strategies.
WHAT IS WORKPLACE SAFETY & HEALTH

- Management of workplace hazards and risks with the aim of prevention of injury or ill-health.

- **Risk** - combination of the likelihood of an occurrence of a hazardous event or exposure(s) and the severity of injury or ill health that can be caused by the event or exposure(s)

- Risk = Hazard X Outrage
RISK AREAS IN NUS

- Laboratories
- Workshops
- Animal facilities
- Construction Sites
- Offices
- Food & Beverage
- Sports facilities
- Housing
- Traffic & pedestrian
- Performance Halls
- Research Diving
- Field Trips
- Building Facilities
- Collaborations
ACCIDENTS IN OTHER UNIVERSITIES

2008 – Chemical Fire

2010 – Chemical explosion

2011 – Hair caught by lathe machine

2012 – Incompatible Chemicals

CSB Releases Investigation into 2010 Texas Tech Laboratory Accident; Case Study Identifies Systemic Deficiencies in University Safety Management Practices

Yale student dies after her hair 'is caught in a machine' at chemistry laboratory

Princeton University laboratory accident sends three people to the hospital
Can we prevent accidents in NUS?
PREDICTION BY.....
Happened on a Friday!
In last 20 years, two Asiana crashes resulted in deaths
By Joe Sterling, CNN
July 8, 2013 — Updated 0019 GMT (0819 HKT)
WERE THERE SIGNS?

Five airline 'near misses' prompt call for changes in safety rules
By Aaron Cooper, CNN
July 2, 2013 — Updated 1548 GMT (2348 HKT)

Report on “near misses”
WERE THERE SIGNS?

After MH17 And Two Other Plane Crashes, Is It Still Safe To Fly?

By Ismat Sarah Mangla  
@ismat  
i.mangla@ibtimes.com

on July 24 2014 9:15 PM

Nervous flyers have powerful reasons to be fearful right now. Over the last eight days alone, 462 people have been killed in three different air crashes on three different continents. That grim toll -- from [Malaysia Airlines](http://www.ibtimes.com), [TransAsia](http://www.ibtimes.com) and [Air Algérie](http://www.ibtimes.com) -- came just four months after the unsettling disappearance of MH370, a Malaysia Airlines jet carrying 239 human beings. Major swaths of airspace now seem vulnerable to missiles unleashed as part of one violent conflict or another -- a fact underscored by the downing of MH17 and the decision by major carriers to scrap flights into Israel.
THE DOMINO THEORY (H.W. HEINRICH)

Social Environment
Faults of Person
Unsafe act and/or Mechanical/Physical Hazards
Accident
Injury
DOMINO THEORY OF ACCIDENT PREVENTION

Removing “Unsafe Act and mechanical/Physical Hazards” (unsafe condition) prevents accidents!
Development of safety culture

Technology and standards
- Engineering improvements
- Hardware improvements

WSH Management Systems
- Visible leadership
- Personal accountability
- Shared purpose & belief
- Safety as core business value

INTERDEPENDENT STATE

WSH culture
- Integrated WSHMS
- Risk Management
- SWPs
- House rules

DEPENDENT STATE

Incident rate

Time
TECHNOLOGY & STANDARDS

http://www.cybervally.com/2011/03/5-important-safety-innovations-cars
TECHNOLOGY & STANDARDS

Implementing Recommendations from the Front Line

With input from front-line caregivers, Lancaster General Hospital has remodeled some patient rooms with special equipment to safely care for bariatric patients. Above: lift equipment into a bariatric bathroom.

Slip-Resistant Shoes to Prevent Falls

After assessing the data on slips, trips, and falls, AnMed Medical Center saw the need to focus on wet floors in environmental services and the nutrition department. Slip-resistant shoes are part of the solution.
A Targeted Investment in Safety

Making stair treads yellow was one of the simple but effective safety solutions that Blake Medical Center discovered by analyzing exactly where patients, visitors, and staff were tripping and falling.

Lancaster General is part of the growing number of hospitals that have implemented “no passing zones” where all employees are obligated to respond to patient fall alarms. The result: quicker response times, fewer patient falls, more satisfied patients, and a “flatter hierarchy” where physicians and other staff look out for each other’s safety.
ECHNOLOGY & STANDARDS

Reducing Injuries From Patient Aggression

A caregiver wears Kevlar sleeves to reduce the risk of injury.

Tying Up Loose Ends

Associates at St. Vincent’s Medical Center have suggested practical safety solutions, such as tying loose cords and positioning a recharging station to minimize lifting of heavy batteries.

www.osha.gov/dsg/hospitals/mgmt_tools_resources.html
SAFETY MANAGEMENT SYSTEMS

Caring for Our Caregivers

Safety and Health Management Systems: A Road Map for Hospitals

The Plan-Do-Check-Act Cycle

Plan: Establish the organization’s commitments, goals, and expected safety and health performance; develop an organizational structure and processes to manage and achieve performance objectives; identify workplace hazards and risks; evaluate and select control measures, and reduce identified risks; and determine activities, processes, programs, and resources needed to achieve objectives.

Do: Implement plans, programs, and procedures throughout the organization in a systematic and controlled manner.

Check: Monitor and measure whether plans are carried out and determine whether plans are effective and safety and health objectives are achieved; and conduct periodic reviews of the suitability and effectiveness of the safety and health management system.

Act: Take needed corrective actions; modify and update the safety and health management system and organization’s goals and objectives as needed; and implement the entire PDCA cycle on a regular and periodic basis.


www.osha.gov/dsg/hospitals/mgmt_tools_resources.html
SAFETY MANAGEMENT SYSTEMS

The hazard prevention and control hierarchy

- Engineering controls
- Safe work practices
- Administrative controls
- Personal protective equipment
NUS SAFETY POLICIES & DIRECTIVES

Policies
• University Safety & Health Policy
• Biological Safety Policy
• Chemical Safety Policy
• Radiation Safety Policy
• Fire Safety Policy
• Safety Policy for Tenants
• NUS Crisis Policy

Safety Directives
• Access to and Supervision of Undergraduates in Laboratories for Project or Research Work
• Authorized Access to Laboratories
• NUS Students Working In Non NUS Organizations

NUS Safety Policies & Safety Directives:
http://www.nus.edu.sg/osh/policies.htm
Safety Culture is the way safety is perceived, valued and prioritised in an organisation. It reflects the real commitment to safety at all levels in the organisation. It has also been described as "how an organisation behaves when no one is watching".

http://www.skybrary.aero/index.php/Safety_Culture
IMPORTANCE OF ARRESTING UNSAFE ACTS

Safety Pyramid developed by H.W Heinrich (1931)

Frank E. Bird, Jr (1969)
SAFETY CULTURE

Felt Leadership in Action

As Midtown Hospital’s COO leads a daily meeting.

Open Lines of Communication

Blake Medical Center’s “Ask Dan” campaign encourages all employees to share their questions and thoughts with the CEO.

Recognizing a “Good Catch”

At UMC Brackenridge, the Chief Operating Officer sends a note and a small gift to thank an associate for identifying a “good catch” by reporting a safety concern related to a miss event.
Safety Every Day

Cincinnati Children’s Hospital, safety incidents and concerns are reviewed at daily check-in meetings.

Making Reporting Routine

Saint Thomas Midtown Hospital encourages associates to report every injury and “good catch.”
A researcher at a university reported that a vial of potentially infectious material “exploded” when she removed it from liquid nitrogen.

Another researcher was blinded in one eye when a cryotube exploded while being thawed.
• Ensure cryogenic storage vials are designed for VAPOUR PHASE STORAGE in liquid nitrogen freezers
• Perform visual check on cryovial to ensure there are no defects around the rim
• Do not re-use cryovials
• When removing samples, pause for a moment in the neck of the Dewar before bringing them into the room atmosphere (if the cryovial was to pop open, it would usually happen early in the warming up phase)
• Don face shield together with cryogloves
Did you know that a hospital is one of the most hazardous places to work? In 2011, U.S. hospitals recorded 253,700 work-related injuries and illnesses, a rate of 6.8 work-related injuries and illnesses for every 100 full-time employees. This is almost twice the rate for private industry as a whole.

OSHA created a suite of resources to help hospitals assess workplace safety needs, implement safety and health management systems, and enhance their safe patient handling programs. Preventing worker injuries not only helps workers—it also helps patients and will save resources for hospitals. Download the overview* and explore the links below to learn more about the resources available.
HOW ARE OUR INCIDENT RATES?

Injuries and Illnesses Resulting in Days Away from Work, 2011

<table>
<thead>
<tr>
<th>Industry</th>
<th>Cases per 10,000 full-time employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals</td>
<td>157.5</td>
</tr>
<tr>
<td>Construction</td>
<td>147.4</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>111.8</td>
</tr>
<tr>
<td>Private industry (U.S. average)</td>
<td>105.2</td>
</tr>
<tr>
<td>Professional and business services</td>
<td>54.5</td>
</tr>
</tbody>
</table>

Data source: Bureau of Labor Statistics

Moving safety upstream (2)
2013 Healthcare Industry Statistics (Singapore)

Accident Frequency rate per million man-hours

- Admin and support services: 0.7
- Health activities: 1.6
- Marine: 1.6
- Construction: 2.0
- Manufacturing: 2.6

http://www.wshi.gov.sg/
Accelerating the reduction of incidents

- Technology & standards
- WSH Management Systems
- Safety Culture
- Integrated workplace safety & Health
- Behavior based culture
- Design for safety
DESIGN FOR SAFETY

Safety features incorporated into the product
Patented dual snap-cap enables both culturing and storage in the same tube. Leave loose to allow for aerobic culturing while keeping your sample clean and sterile. When a tight closure is required, simply push down on the cap to obtain a leak-proof seal. This prevents leakage of your sample during handling and storage. It also prevents your sample from evaporating.

Ref. from BD Falcon
DESIGN FOR SAFETY

Trolley for Chemical waste transportation
TOTAL WORKPLACE SAFETY & HEALTH?

- Holistic and integrated system to manage workplace safety and health risks.
- Encompass BOTH safety and health risks.
- Promotion of health and well-being of workers.
DRIVERS
WHY THE NEED FOR TWSH?

Changing Demographics of workplace:

Email interview with insight, dated 04-Sep-2010

By Channel NewsAsia, Updated: 26/7/2010

There should be no retirement age:
MM Lee
ASSESSING THE “FITNESS TO WORK”

1. Pre-work
2. Pre-employment
3. “Periodic Assessment”
4. Return to work
5. Exit
WHY THE NEED FOR TWSH?

2. Unhealthy workforce:
   ▪ May lead to safety lapses at work, increase in sickness absenteeism, increased likelihood of musculoskeletal and other stress related problems.
Working with a chronic disease

by Brouwer S, PhD, Koolhaas W, MSc, van Rijn RM, PhD, de Vries HJ, PhD

Objective As the workforce ages, the prevalence of workers with chronic diseases increases. The aim of this study is to provide insight into the characteristics of those workers and present the consequences of chronic diseases on work participation. Potential personal and societal implications will be discussed.

Method Data gathered in several studies will be used: a systematic literature review about the influence of poor health on exit from paid employment and data from two cross-sectional studies about working with chronic diseases.

Results Self-perceived health status is a risk factor for leaving the labor force and is strongly associated with work ability. Psychosocial factors based on individual resources (such as coping behavior, self-efficacy, work attitude, and perceived support) influence the level of work ability among workers with chronic diseases. Poor-to-moderate work ability levels were found among workers with chronic diseases, which indicate a higher risk of long-term sickness absence and work disability.

Conclusion To increase sustainable employability of workers with chronic diseases, good health should be promoted and psychosocial factors should be addressed in strategies and interventions at the workplace.

Key terms perceived health; psychosocial.

“Poor-to-moderate work ability levels were found among workers with chronic diseases, which indicate a higher risk of long-term sickness absence and work disability”
WHY THE NEED FOR TWSH?

“Holistic Approach to Safety” – Safety Mindset
HOW YOU WORK IS HOW YOU LIVE

- National Workplace Safety and Health (WSH) campaign 2014
- Highlights how the bad habits formed at work, the risks we take at our workplace will not only affect us at work but also has a negative impact on the quality of our lives outside work.

INGING WORK HOME: LAPTOP COMPUTERS

- Head tilts beyond maximum neutral range
- Shoulders hunched
- Lumbar region of back unsupported
- Chin thrust forward
- PC not properly supported and no room for air circulation between PC and legs
- Feet are flexed instead of flat on floor
- Bent knee cuts off circulation to leg
- Insufficient support beneath legs

Courtesy of Occupational Health Clinic for Ontario Workers Inc.
HOW YOU WORK IS HOW YOU LIVE

- Two sides of the same coin
  - Can the way we lead our lives outside work affect workplace performance?
  - Can workplace programmes exert positive influence on our quality of life outside work?
  - Can we shift an individual’s own beliefs and values so that they believe and act in a safe, healthy manner beyond the workplace?
  - Will an improved quality of life as a result of workplace programmes translate into higher work productivity?
NO-WIN SITUATION

Aging workforce, unhealthy lifestyle & lack of safety mindset

Higher risk of ill health and injury

Reduced quality of life, productivity & shortened career
THE DOMINO THEORY (H.W. HEINRICH)

Social Environment

Faults of Person

Unsafe act and/or Mechanical/Physical Hazards

Accident

Injury
1. Physical work environment & processes
   - Physical, chemical, electrical, biological, ergonomics hazards etc.

2. Work organisation
   - Work schedules
   - Work expectations
   - Work based relationships

3. Individual health factors
   - Age
   - Pre-existing health conditions or risk factors
   - Lifestyle (drinking, smoking etc)
   - BMI
   - Pregnancy
RECOGNIZE INTERSECTIONS IN THE WORKPLACE

Work Organisation

Well – Being ➔ Happy at work ➔
Occupational ➔ Safe at work ➔

Physical Work Processes

Individual Health Factors

Product at work
CREATE A WIN-WIN SITUATION

Aging workforce, Economic, Environmental & Social Challenges

Total WSH Approach
- Healthier lifestyles
  - “Resilient” employees
- Employees with safety mindset

Reduced risk of ill health and injury in the workplace

Quality of life, high productivity and longevity in career

Win-Win situation for both employee & employer
## EXAMPLE OF TWSH IN ACTION

<table>
<thead>
<tr>
<th>Work Process</th>
<th>Major Work Activities</th>
<th>Hazards</th>
<th>Accidents or Ill health arising from hazards</th>
</tr>
</thead>
</table>
| Assisting elderly / disabled patient to other washroom (bathing, dressing, using the toilet) | Transferring patient from the bed to wheelchair | Manual lifting of patient | Musculoskeletal disorder (MSD)  
- Neck & upper limb disorders  
- Lower limb disorders  
- Back pain & injuries |

**Work organization factors**  
- Staffing issues?  
- Peak period?  

**Long work shift / fatigue**  

**Older workers may have increased incidence of MSD**

**Individual factors**  
- Muscle weakness  
- Bone loss  
- Poor lifestyle
HOW CAN TWSH HELP?

PIPETTING ERGONOMICS

Courtesy of University of Guelph
HOW CAN TWSH HELP?

PIPETTING ERGONOMICS

Courtesy of University of British Columbia
HOW CAN TWSH SUPPORT SHARPS HANDLING?

**Guidelines for safe handling of sharps.**

- Keep hands away from needles
- Use mechanical methods for needle removal
- Never bend, recap or manipulate sharps by hand.
- Dispose of entire unit into sharps container
- Collect reusable sharps in labeled, leak-proof container
BETTER WORK PERFORMANCES

▪ Since 2008-2013, 44,500 employees have participated in the Energy and Resilience programme and 80% said their performance at work had improved and 90% reported increases in energy.

▪ There were significant reduction in perceived workplace pressures and better able to cope.

▪ Employees were more likely to make improvements in their lifestyle, especially diet, and report they are in excellent health.
“IF OUR STUDENTS DO NOT SEE AND EXPERIENCE SAFETY & HEALTH BEST PRACTICES BEING IMPLEMENTED IN THE UNIVERSITY, THEY WILL ALSO MOST LIKELY ENTER THE WORKFORCE IGNORANT OF SAFETY & HEALTH ISSUES. SO, IN NUS, OUR RESPONSIBILITY TO MAINTAIN HIGH SAFETY STANDARDS IS EVEN GREATER.”

Prof Tan Chorh Chuan
President
National University of Singapore
THANK YOU

Saravanan Gunaratnam
Deputy Director
Office of Safety, Health & Environment
National University of Singapore

oshsg@nus.edu.sg

http://www.nus.edu.sg/osh/