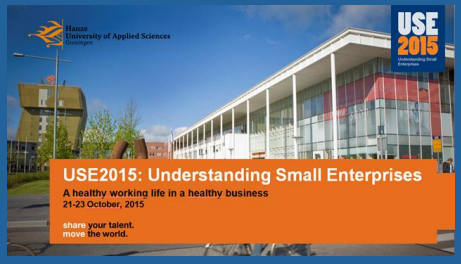
Issue 40 *(November 2015)*

SPOTLIGHT

MSD Symposium 2015

As part of the National Ergonomics Month by the Human Factors and Ergonomics Society, the Work-Related Musculoskeletal Disorders (WRMSD) Symposium was held at Novotel Singapore Clarke Quay, 6th October, where close to 200 people attended. Research analyst, Ms Edna Ng from the WSH Institute, presented on "Analysing Ergonomics Risks using a Mobile App" which can be used to identify ergonomic hazards at workplaces and provide recommendations to prevent musculoskeletal complaints.

3rd Understand Small Enterprises (USE) Conference 2015



WHAT'S TRENDING

Breakthrough in 3D Technology as New Technique Regenerates Complex Nerves

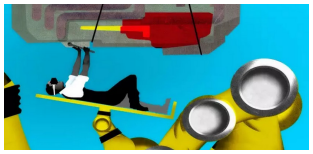
As 3D printing gains pace in the medical field, a national team of researchers has announced the development a groundbreaking 3D-printed guide that helps regrow both the sensory and motor functions of complex nerves after injury.

(Source: Medical News Today)

More...

Relevance: Would 3D nerve regeneration technology help injured workers regain bodily function and return to work sooner?

Industry 4.0 Will Promote Job Growth, but Stakeholders Must Help the Workforce Adapt



A net increase in industrial manufacturing jobs is forecast through 2025, as job gains in IT and data science will offset losses in assembly and production, according to new BCG report.

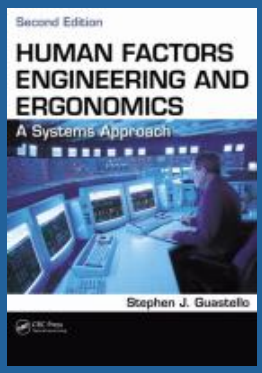
The 3rd USE Conference from 21st to 23rd October in The Netherlands, gathered participants from across the world to promote a better understanding of SMEs and WSH through evidence-based research. Research analyst, Ms Jo-Ann Chen from WSH Institute, presented on SME Business Leaders' Motivations and Barriers in WSH Leadership. Senior Manager, Ms Karen Seah, from WSH Council presented on the success of Singapore's bizSAFE programme in building SMEs' WSH risk management capability. Both papers will be in the Proceedings released in early December, while keynote presentations can be found here.

(Source: Boston Consulting Group)

More...

Relevance: How will the shift towards Industry 4.0 affect the safety, health, and well-being of workers?

RECOMMENDED READING FROM THE WSH INSTITUTE COLLECTION*



TITLE:
Human Factors Engineering and Ergonomics: A Systems Approach

AUTHOR:
Stephen J. Guastello

AREA OF INTEREST:
Human Engineering, Human-Machine Systems, Ergonomics and Industrial Health and Safety

Please use your QR code scanner to access the recommended reading titles on Ergonomics

Click here to access WSH Institute's e-books collection.

* The WSH Institute Collection is a compilation of WSH-related resources accessible to the public through our collaboration with the National Library Board (NLB).

OWL HIGHLIGHTS

1 Considerations for developing safety standards for industrial exoskeletons

Date of publication: May 2015
Source: Robo Mate

Workers that perform manual work are at higher risk of developing musculoskeletal disorders (MSDs) due to demanding tasks and working environments. Robo-Mate, a project funded by the European Commission, introduces exoskeletons into the industrial workplace. These exoskeletons are wearable robots that lessen the burden on workers' health, simultaneously maintain productivity and reduce workplace injuries in Europe. However, users of exoskeletons can be exposed to multiple risks and hazards due to their close proximity with the devices. Hence, this whitepaper highlights the need for development of standards to manage industrial worker exoskeletons. The Robo-Mate exoskeleton project can contribute to the development of these standards to govern the safety, reliability and quality of industrial exoskeletons for manufacturers, designers, employers and users. In addition, it provides recommendations on specific design requirements, single/multiple user capabilities and limitations, work environment conditions, operation and usability. Nevertheless, the vision for exoskeleton standards should address issues such as product management, product

reliability, product health and safety, occupational health and safety, and verification and validation.

To read more, click here

2 RC12: Recommendations for the prevention and control of dust explosions

Date of publication: 2015
Source: RISC Authority

This document provides guidance on reducing the occurrences and aftermaths of dust explosions at the workplace. It also looks at hazards and preventive measures for secondary explosions, which often causes greater damage than the primary event. Examples of common materials that will form combustible dusts are listed in six categories: agricultural products, agricultural dusts, carbonaceous dusts, chemical dusts, metal dusts and plastic dusts. It was stated that an explosion will only propagate through a cloud if the concentration of particles lies within certain limits which may be as low as 10g/m3. This guidance suggests that any dust concentration above the lower exposure limit should be treated as potentially hazardous. Indicative properties of some of these dusts, such as the explosive limits and ignition temperature of dust cloud, are also presented. Recommendations for the prevention and control of dust explosion are categorised into 11 components, of which 5 are listed below;

(i) Compliance with fire safety legislation,
(ii) Business continuity,
(iii) Fire safety management and procedures,
(iv) Applying the five basic principles, VICES(ventilation, ignition, containment, exchange, and separation)
(v) Ventilation

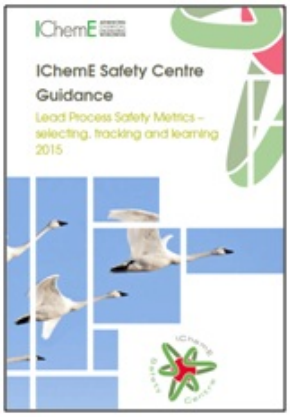
To read more, click here.

3 IChemE Safety Centre guidance: Lead process safety metrics – selecting, tracking and learning 2015

Date of publication: 2015
Source: IChemE

This guide is specifically targeted at industries managing process hazards such as oil and gas, chemical, food, and pharmaceutical. It focuses on the operational phase and aims to help organisations develop consistency in lead process safety metrics and facilitate effective benchmarking. Lead process safety metrics are important in helping organisations understand the state of their facilities and systems while providing them with an indication of impending issues. 21 leading metrics are defined and mapped to 6 functional elements of process safety, which are:

(i) Knowledge and competence – ensuring workers are equipped with adequate knowledge and awareness, understand the impact of their actions, and are able to carry out tasks consistently,
(ii) Engineering and design – applying the hierarchy of controls in the engineering and design of equipment and safety systems,
(iii) Systems and procedures – implementing high-level management systems that include safety, maintenance, and setting standards to adhere to, and
(iv) Assurance – undertaking systematic monitoring and evaluation such as inspection, testing, monitoring, verification or audits to ensure all processes and operations are running smoothly, and
(v) Human factors – understanding the interactions between the job, individual, and organisation, all of which have an impact on work performance and
(vi) Culture – measuring the effectiveness of safety culture.



To read more, click here.

4 Cleaning products and short-term respiratory effects among female cleaners with asthma

Date of publication: 2015
Source: Occupational Environmental Medicine

This study examines the short-term respiratory health effects of cleaning products among female cleaners with asthma condition. 21 professional women cleaners with pre-existing asthma participated in the study. The 15- day data collection period required participants to record the types of cleaning products used at work and the form of its application (e.g., liquid solution, spray). They are asked to record the daily upper and lower respiratory tract symptoms (URTS and LRTS) using a symptom severity scale that range from zero to four. In addition, the forced expiratory volume in 1s (FEV1) and peak expiratory flow (PEF) are measured 3 times a day using a portable, handheld PIKO-1 meter. The results indicated that;

(i) participants performed approximately 11 days of cleaning work during the 15 day follow up period,
(ii) 2.4 cleaning products were used per day,
(iii) participants were exposed to at least one strong irritant (eg: ammonia, bleach, hydrochloric acid),
(iv) bleach was the most frequently used product,
(v) 81% and 86% of participants reported at least one URTS and LRTS respectively.

(Note: URTS were associated with the use of any bleach, glass cleaner, powder detergent, liquid detergent, limescale remover or air freshener. For LRTS, elevated mean ratios (MR) were observed for the use of liquid detergents, hydrochloric acid, degreasers, and bleach.)

These results indicate an increased risk following exposure to cleaning products, and suggest that short-term exposure to irritant cleaning agents among cleaning workers may exacerbate pre-existing asthma. The study highlights the need to develop workplace health and safety practices that limit the use of irritant chemicals in cleaning products and the need to improve the understanding of the mechanisms by which exposure to cleaning products induces or exacerbates respiratory diseases.

To read more, click here.

Other Useful Resources

- **Factors Associated With Truck Crashes in a Large Cross Section of Commercial Motor Vehicle Drivers** *(JOEM)*
- **Best practices: Engineering controls, work practices, and exposure monitoring for occupational exposures to diacetyl and 2,3-pentanedione** *(CDC, NIOSH)*
- **Analysis of material handling safety in construction sites and countermeasures for effective enhancement** *(The Scientific World Journal)*
- **Managing electrical risks in the workplace code of practice** *(Safe Work Australia)*

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Mission: Enhancing WSH through knowledge, innovations and solutions.

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OBSERVATORY FOR WSH LANDSCAPE

The Observatory for WSH Landscape (OWL) is a function of Workplace Safety and Health Institute. OWL aims to observe, analyse and communicate changes in the workforce, workplace and working life to researchers, policy makers and industries in Singapore and Asia.