There are many health hazards at workplace e.g. noise, vibration, radiation, chemicals, extreme temperatures, ergonomic factors and biological agents. Exposure to health hazards may result in occupational diseases or work-related illnesses. Many of these are insidious and only manifest after a prolonged period of exposure to the hazards; some are irreversible and have no cure. Occupational health deals with management of workplace health hazards and persons who are exposed to such hazards or suffer from occupational diseases or ill health.

The Workplace Safety and Health (WSH) Act and its subsidiary regulations set the standards for the safety, health and welfare of persons at work in all workplaces.

The Act specifies the duties of various stakeholders:
- Employers: ensure the health and safety of all persons at work
- Occupiers: ensure the workplace is safe and without risks to health
- Principals: ensure the health and safety of contractors and subcontractors engaged at work

The following sections highlight some of the subsidiary regulations and the management of various hazards in the workplace.

**WSH (Risk Management) Regulations**

In every workplace, the employer, principal and self-employed shall conduct a risk assessment in relation to the safety and health risks in the workplace at least once every 3 years or when there is an occurrence of any injury to any person; or any significant change in work practices.

They must take all reasonably practicable steps to eliminate any foreseeable risk. Where this is not feasible, they must implement reasonably practicable measures to minimise or control the risk following the hierarchy of control below:

- Elimination
- Substitution
- Engineering control
- Administrative control
- Personal protective equipment (PPE)
- Safe work processes
- Safe worker

The key requirements of the WSH (Noise) Regulations are:
- Implement noise control measures to reduce the noise emitted from machinery or equipment used. Where it is not practicable to reduce the noise, limit the duration of exposure.
- Conduct noise monitoring at least once every 3 years.
- Where there are >10 workers exposed to excessive noise.
- Appoint a noise control officer to advise on noise control measures. Where there are >50 workers exposed to excessive noise.

**WSH (Incident Reporting) Regulations**

When an employee meets with an accident, injury at the workplace or suffers an occupational disease specified in the Second Schedule of the WSH Act, the employer shall submit a report to MOM within 10 days.

Common occupational diseases are occupational skin diseases, noise-induced deafness and musculoskeletal disorders.

**Management of Noise Hazards at Workplace**

Noise is generated from machines, equipment, work, operations and processes. Prolonged exposure to excessive noise can cause noise-induced deafness or permanent hearing loss. Other detrimental effects of excessive noise include tinnitus and acoustic trauma.

A person shall be deemed to be exposed to excessive noise, if the noise that he would be exposed to, when not wearing any hearing protector, exceeds the permissible exposure limit specified in the Schedule of the WSH (Noise) Regulations.

To reduce noise, control measures can be carried out at:
- Source – install silencers, apply damping material, use vibration isolators
- Path – enclose machines or processes, erect noise barriers, apply sound absorbing materials
- Receiver – isolate workers in control rooms, reduce exposure time through job rotation

For more information, refer to Approved Code of Practice on Risk Management.
Periodic medical examinations are required if workers are exposed to any of the toxic substances prescribed in the WSH (Medical Examinations) Regulations.

Workplace with chemical hazards should implement a chemical management programme. For more information, refer to WSH Guidelines on Management of Hazardous Chemicals Programme.

Management of Heat Stress at Work

Being in a tropical environment, workers are more prone to heat stress which can result in heat exhaustion, heat cramps and heat stroke. The risk factors include:

- Physical work capacity
- Susceptible individuals
- Un-acclimatized persons

Preventive measures to reduce the risk of heat stress include:

- Allowing new workers to acclimatise to the hot weather
- Provision of drinking facilities
- Arrangement of heavy physical work to be done during cooler parts of the day
- Provision of shaded areas for work and rest during breaks
- Training of workers on heat-related disorders and appropriate preventive measures

Under the WSH (General Provisions) Regulations, occupier shall take reasonably practicable measures to ensure that the persons at work are protected from excessive heat and harmful radiations.

A key indicator to evaluate levels of heat stress is the Wet Bulb Globe Temperature (WBGT). WBGT measures the environmental factors and correlates to deep body temperature and physiological response to heat stress.

For more information, refer to WSH Guidelines on Managing Heat Stress in the Workplace.

Ergonomics in the Workplace

Physical ergonomics typically involves work such as manual lifting, carrying, pushing and pulling and repetitive actions or motions.

Poor ergonomics may cause workers to suffer from musculoskeletal disorders (MSD). Common MSDs include lower back pain, Carpal Tunnel syndrome, Trigger finger, Epicondylitis and De Quervain’s Tenosynovitis.

The main risk factors of work-related MSDs include:

- Forceful exertions
- Awkward postures
- Static postures
- Repetitive movements
- Vibration

Control measures to reduce the risk of MSDs in the workplace include:

- Automation to eliminate work activity
- Use of mechanical tools to reduce exertions
- Redesign work processes to reduce exertions or holding time
- Design of user-friendly workstations
- Job rotation to reduce repetitive movements
- Training on proper lifting techniques
- Provision of short breaks between tasks

Workplace with MSD risks should implement an ergonomics programme. For more information, refer to WSH Guidelines on Improving Ergonomics in the Workplace.

This leaflet is prepared by MOM, Occupational Safety and Health Division (OSHD), Specialist Department.

The guidelines are available on the Workplace Safety and Health Council.
Website: www.wshc.sg
Email: contact@wshc.sg