The facts

- Work-related injuries and ill-health are increasing;
- 2.3 million people are killed at work every year;
- Every day 5,000 people die from work-related accidents, and that equates to (3) three deaths every minute;
- More than 160-million people in developing and developed countries die from work-related diseases;
- The costs and social impacts from death and diseases have risen;
- Losses due to compensation, lost work days, lost productivity, training and retraining, medical expenses equate to 4% of the world’s GNP – it’s therefore a developmental issue;
- The social and economic burden of the scourge is not evenly distributed;
- Fatality rates in some European countries are as twice as high as in some others;
- In some parts of the Middle East and Asia, fatality rates are sometimes four times higher than in Europe
- Certain hazardous jobs, as in agriculture, mining, and construction can be from 10 to 100 times riskier in that part of the world;

How is prevention undermined?

- (a) Through lack of respect for law and for workers’ rights; and
- (b) The informal economy (a vulnerable group) which now accounts for around ½ of the workers in the world.

What are the key elements to be addressed?

- Lack of legal and social protection
- Lack of representation and rights of workers.

In OSH we hear about the following:

Hazards and Risk

- A Hazard is a potential to cause danger to life, health, property or the environment
- Risk is the measured probability of an event to cause danger to life, health, property or the environment.

Hazards might be of chemical, biological, or of physical origin.
Occupational Safety and Health is:

The promotion and maintenance of the highest degree of the physical, mental, (spiritual) and social well-being of workers in all occupations

Workplaces may contain many hazards, e.g., unguarded machinery, slippery floors and inadequate fire safety measures.

We have, also, insidious hazards, falling into the following categories:

- Chemical (dusts, fumes, vapours, gases);
- Physical (noise, vibration, lighting, radiation, temperature);
- Biological (infestations, bacteria, viruses);
- Psychological (stress and strain); and
- Non-applicaiion of ergonomic principles (badly designed machinery and mechanical devices used by workers).

- Often these hazards (mix to) make the problem worse for the worker.
- Until lately, occupational health was always considered less of a problem than industrial safety.
- Accidents occur suddenly, sometimes causing trauma, (but) an industrial disease may take years before it produces an obvious effect on the worker’s health.
- Unsafe working conditions, (e.g., an unguarded machine) are easier to spot than a dust problem, dangerous noise levels or inadequate lighting.
- Everyday, we are faced with dusts, fumes, vapours, gases, noise, extreme heat, etc.
- The accepted approach to “OSH” is that accidents and diseases result from the hazards and dangers already built in the system.
- The way to make work safer and healthier is to modify the workplace and any unsafe processes so that hazards are removed at source.

Noise: regular safety inspections.

- Use engineering, e.g., physical improvements like maintenance), or administrative controls, (job rotation) so as to reduce noise levels;
- Monitor students hearing levels (where possible), and notify them of results;
- Provide a quiet environment for breaks and lunch
- Measure noise levels and control excessive noise.
- Provide appropriate hearing protection devices to protect students from hazardous noise levels
- Place posters in key areas
• Fix any noisy equipment

- Welfare facilities –
  
  Provide and maintain good changing, washing and sanitary conveniences to ensure good hygiene and tidiness

  * provide drinking facilities, eating areas and rest rooms to ensure good performance and well-being.

  * ensure regular use of PPE, by the provision of proper instructions, adaptation trials and training.

Work organisation – involve workers in the planning of their day-to-day work

- Solve work problems by involving workers in groups

- Stress. What is it?

• It is the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and injury.

- Positive stress is stress that is normal and necessary to perform work in a satisfactory manner.

- Negative stress is intense, continuous or prolonged, and can lead to physical illness and psychological disorders.

- Job stress is often confused with challenge.

- Challenge energises us psychologically and physically, and motivates us to learn new skills and master our jobs. Challenge is vital for healthy and productive work.

- The high stress environment of the modern workplace accounts for most of the problems linked to stress and burnout.

Reasons for increase in stress:

• Shift from manual to mental work; globalisation of the economy; reorganisation and mergers;

• Information/communication technology; 24-hour economy;

• New production concepts;

• Flexibilisation of work; and

• Work-home spillover.

Stress is rapidly growing under the pressure of globalization and increased world-wide competition.

New technologies, de-skilling, down-sizing, job losses/job insecurity and poorer conditions of work add to the problems.
Job conditions that may lead to stress:

- The design of tasks.
- Heavy workload, infrequent rest breaks, long working hours or shiftwork; hectic and routine tasks that have little meaning, do not use workers’ skills, and provide a sense of control...working to the point of exhaustion.
- Management style.
- Lack of participation by workers in decision-making, poor communication in the organisation, lack of family-friendly policies...e.g., needing the boss’s approval for everything, and the company is insensitive to family needs
- Interpersonal relationships.
- Poor social environment and lack of support or help from co-workers and supervisors.
- Work roles. Conflicting or uncertain job expectations, too much responsibility, too many hats to wear.
- Career concerns.
- Job insecurity and lack of opportunity for growth, advancement, or promotion, rapid changes for which workers are unprepared.
- Environmental conditions.
- Unpleasant/dangerous physical conditions, e.g., crowding, noise, air pollution, or ergonomic problems.

Workplace violence is –

Any action, incident/behaviour in which a person is assaulted, threatened, harmed, injured or humiliated in the course of, or as result of, his/her work because of the action of another person.

Types of workplace violence

All behaviour that departs from reasonable conduct and involves, among other things:

- Intentional behaviour, aimed at physically injuring or assaulting a person, leading to actual physical or psychological harm;
- Verbal abuse, including swearing, insults or condescending language;
- Aggressive body language indicating intimidation, contempt or disdain
- Harassment, including mobbing, bullying, racial and sexual harassment;
- Expression of intent to cause harm, including threatening behaviour, verbal and written threats.
• Bullying is persistent, unwelcome behaviour, mostly using unwarranted or invalid criticism, nit-picking, fault-finding, also exclusion, isolation, being singled out and being treated differently, shouted at, humiliated, excessive monitoring, having written warnings imposed.

• Mobbing is often concerned with aggression from a group of people and this aggression tends to be directed towards one single person.

Mobbing/bullying is offensive behaviour through vindictive, cruel, malicious or humiliating attempts to undermine an individual or group of workers.

ERGONOMICS is fitting the job to the worker, not the usual practice of fitting the worker to the job. It optimizes, first and foremost, the comfort of the worker, his/her health, safety and efficiency.

MSDs relate to a series of factors re:

*work organization, often acting together:

*physical factors like muscle strain, frequent repetitive actions, uncomfortable work postures, cold vibration and psychosocial factors like mental stress, time pressures and lack of training.

MSDS are the main work-related health problems in the industrialised world. They can affect the lower back, tendons, muscles, nerves, circulation and joints of upper limbs (elbows, wrist, hands, shoulders) and the neck. They can result in long-term illness/injuries, which may involve a series of operations.

Methods for assessing health and safety:

• Legislation/regulations, compliance–factory inspectors; national policy on oshe

• Adoption of ilo standards (conventions and recommendations)

• Enterprise level – training, osh policy, joint health and safety committees, absences owing to accidents and illnesses and other causes;

• Environment – production processes, transport, mixing, application, storage, disposal of chemicals and their impacts on fauna and flora

Work is generally considered good for health, and a healthy working population is vital to economic and social progress, but certain kinds of work can be damaging.

Work patterns are changing, leading to the demise of some of the older job-related, diseases, e.g., pneumoconiosis and an increasing detection of newer conditions, such as:

• Musculoskeletal disorders;

• Work-induced stress and mental problems;

• Asthmatic/ allergic reactions;

• Problems caused by hazardous material, e.g., carcinogens; and

• Building related disorders.

Specific hazards facing all teachers
Infectious diseases such as the flu, TB, measles, and chicken pox can easily spread throughout a school.

Fires: the risk of fire in schools, because of lack of adequate fire escapes, fire (training) drills, fire alarms.

Accidents may occur in labs, workshops and vocational training centres.

Classrooms – proper ventilation and lighting are essential.

Noisy working conditions disturbing for brain work;

Reduce strain of standing by providing seats/desks that are designed according to ergonomic standards;

Apart from the physical environment, working conditions of teachers depend on “human relations”:

(a) Between teacher and pupil;
(b) Teacher and parent;
(c) Teacher and school authorities; and
(d) Teacher and colleagues.

Too little cooperation between colleagues as well as strict authorities lead to heavy mental stress; and too many administrative duties contribute to overwork;

The high incidence of nervous disorders may be influenced by mental strain of teaching and education;

Other stressors include:

- a) too little time for recreation and body exercise;
- b) overloading of timetables;
- c) too great a number of pupils; multiple social roles of teacher/nurse/parent;

Education explosion:-

(a) too many children and (b) insufficient classroom facilities- overburdening teaching staff;

Attention should be given to maintenance/housekeeping of floors, stairways and walkways.

Diseases: teachers are prone to

- (a) Respiratory diseases,
- (b) Nervous disorders,
- (c) Musculoskeletal disorders
The high incidence of respiratory diseases may be due to

(a) Vocal strain,

(b) Dry and dusty air in classrooms/contagious infections.

Chicken pox – risk of birth defects, contracted by airborne respiratory droplets, is more serious in adults than children.

Gastroentiritis/bacterial salmonella – person-to-person transmission via food or water or via faecal/oral route, use good food and water sanitation, strict hand washing procedures.

Viral gastroenteritis: person-to-person transmission/via food or water or via faecal route. Also by inhalation.

German measles (rubella) - airborne respiratory droplets, direct contact with infected people, risk of birth defects, all children should be vaccinated.

Hepatitis A virus – faecal oral transmission – especially contaminated food and water, also possible by direct person-to-person contact, risk of spontaneous abortions and stillbirths, use of good food and water sanitation.

Hepatitis B virus - sexual contact, contact of broken skin or mucous membranes with blood or other body fluids, use universal precautions for all exposures to blood and body fluids (nose bleeds and cuts)

- Vaccinations for teachers and children, TB testing and other standard public health measures are essential.

Stress

- The following stressors contribute to stress, absenteeism and burnout among teachers:
  - Overcrowded classrooms,
  - Classroom noise,
  - Environmental pollution,
  - Overloaded schedules,
  - Inadequate facilities,
  - Career progression questions,
  - Job security; and
  - Lack of control over working conditions.

Solutions include both institutional changes to improve working conditions and stress reduction programmes where possible.

Violence against teachers by students and sometimes intruders – and students against students - is a growing problem.
Teachers in specialised classes can have additional occupational hazards, such as:

- Chemical exposures,
- Accidents,
- Machine and electrical hazards,
- Accidents,
- Excessive noise levels,
- Radiation and fire, depending on the particular classrooms

**Indoor air pollution**

- Newly constructed or renovated school buildings release chemicals, dusts and vapours into the air.

**Other sources of indoor air pollution are:**

- Roofing
- Insulation
- Carpets/furniture/paint

Unrepaired water damage, as from roof leakage, can lead to:

- Microorganisms in building materials and ventilation systems
- The release bioaerosols that affect respiratory systems of teachers/students and result in:
  - (a) Respiratory infections,
  - (b) Asthma,
  - (c) Allergic rhinitis,
  - (d) Pneumonia.

**Noise**

- The desirable classroom sound level should be 40 to 50 decibels.
- Dual work of mother/teacher may affect women’s health
- Exposure to pesticides in the control of insects and vermin and wind drift from agrochemicals may trigger asthmatic attacks
- Teachers in special education programmes can sometimes be at greater risk.

**Hazards include:**
- Violence from emotionally-disturbed students;
- Transmission of infections such as HIV/AIDS, hepatitis A, B, C, from institutionalised and developmentally-disturbed students

Vocational Training and Apprenticeship

Teachers and students in vocational programmes face occupational hazards from

- Chemicals,
- Machinery,
- Physical agents and other hazards associated with the particular trade or industry.
- Some students learn skills using old machinery donated by industry
- These machines may not be equipped with modern safety features such as, e.g., proper machine guards, fast-acting brakes and other control measures
- Teachers often have not had adequate training in the hazards of the trade and appropriate safety measures
- Often the school doesn’t have adequate ventilation and/or fire precautions

Mechanics:

Accident hazards:

- Injuries during work with mechanized equipment, such as:
  - (a) Lathes,
  - (b) Drills,
  - (c) Boring and honing machines,
  - (d) Discs, shapes and various cutting tools – cutters, wrenches, screwdrivers, chisels, and sledgehammers.
- Injuries resulting from lifting or hoisting equipment
- Stabs and cuts by knives, sharp objects, hand tools
- Slips, trips, falls from ladders, falls into inspection pits and falls on level surfaces
- Crushing of toes by heavy objects
- Burns, scorches by contact with hot surfaces
- Eye injuries from splinters and flying objects
- Bursting of tyres
- Accidents due to badly installed and inappropriately maintained steam and water pressure cleaners
- Electrocution caused by short circuits
- Carbon monoxide poisoning during inspection by pit workers

Physical hazards
- Excessive noise, greater than 90dBA, especially in body work
- Exposure to extreme heat and elements while working in open sheds
- Chemical hazards
- Chronic exposure to a wide range of industrial chemicals, including heavy metals, e.g., brake fluids, degreasers, detergents, lubricants, metal cleaners, paint removers, thinners
- Skin diseases and other conditions caused by chemicals – e.g., adhesives, asbestos, antifreeze and brake fluids, epoxy resins, gasoline, oils, and nickel
- Eye irritation, dizziness, nausea, breathing problems, headaches due to contact with chemical irritants, dust fumes and anti-knock agents
- Biological hazards
- Infections as a result of micro-organism contamination and growth in certain adhesives
- Ergonomic and social factors
- Acute musculoskeletal injuries (inter-vertebral disk rupture, tendon rupture, hernia, etc.) caused by physical overexertion and incorrect combination of weight lifting and moving of loads;
- Cumulative trauma disorders, including carpal tunnel syndrome, caused by long-time repetitive work
- Tiredness and general ill feeling
- Danger of being attacked by individuals – dissatisfied customers
- Psychological stress when working under time pressure.

Plumbing

Hazards – falls from height (from ladders, scaffolds and roofs; falls on level surfaces (slips and falls on wet, slippery surfaces);
- Cuts and stabs from broken sanitary ware
- Blows on the head from pipes, overhead bars, and corners (in particular) in confined spaces or in low ceiling cellars and passages;
- Foreign particles in the eyes, during drilling or insulation (dismantling work);
Injuries to feet from falling tools or pipe sections

Burns from portable blowtorches used for soldering and brazing;

Electric shock and electrocution from portable lamps and electric tools;

Fires and explosions as a result of using mobile electric lamps or tools in confined spaces, e.g., inside cisterns) containing combustible-gas residues;

Sprains and damage to internal organs, e.g. hernia, bursting of small blood vessels, as a result of overexertion;

Bites and stings by rodents, insects, mites, etc.;

Poisoning by phosgene released from chlorinated solvents at high temperatures (e.g., in the presence of flames, arcs, burning cigarettes, etc), particularly in confined spaces;

Poisoning by toxic gases released in sewage systems

Chemical Hazards

Contact dermatitis from exposure to various components of drainage and sewage liquids, from exposure to solvents and other components from glues and pipe-cleaning fluids, especially when working with plastic piping;

Irritation of respiratory system and eyes from exposure to acids, alkalis and corrosive liquids used to unclog piping;

Oxygen deficiency or exposure to asphyxiant gases when working in confined spaces;

Irritation of respiratory tract and possible damage to lungs from exposure to asbestos, mineral fibres and other inorganic aerosols or fibres when applying or dismantling piping insulation or asbestos pipes

Biological Hazards

Exposure to a wide variety of micro-organisms, parasites in sewage, stagnant water, sanitary installations, with risk of legionnaires disease, dermatitis, etc;

Ergonomic and Social Factors

Exposure to excessive damp, cold and heat, in cellars, or in construction, agriculture and other field work;

Lower back pain; heat stress when wearing vapour-barrier suits; wrist problems due to overexertion on threading and cutting work; calluses on the knees (plumber knee) because of prolonged work in a kneeling posture;

Increased risks have been reported, in the case of plumbers re: leptospirosis, bronchial carcinoma; liver cirrhosis; lung cancer; liver cancer

Masons
The most common form of occupational dermatitis to be found among construction workers is caused by exposure to cement

5 to 15% of construction workers – most of them masons – acquire dermatitis during their work lives

One is toxic contact dermatitis – local irritation of skin exposed to wet cement and is caused by the alkalinity of the cement

Allergic contact dermatitis – generalized allergic skin reaction to exposure to the water-soluble chromium compound found in most cement

Allergic contact dermatitis is chronic and debilitating. Can lead to decreased worker productivity and early retirement.

In the 1960s and 1970s cement dermatitis was the most common repeated cause of early retirement among construction workers in Scandinavia.

Home Economics

- Electrical hazards – follow standard electrical rules;
- Cuts from knives and sharps utensils – always cut away from your body, always use appropriate tools, and always keep knives sharpened;
- Fires and burns – have stove hooves with grease filters and clean your filters
- Cleaning products – use protective gloves/goggles/aprons/appropriate footwear or use less hazardous substitutes.

Welding – fire, electric shock from arc welding equipment,

- Burns caused by molten metal sparks, injuries caused by excessive exposure to radiation
- Oxyacetylene torches produce carbon monoxide, nitrogen oxide and unburned acetylene, which is a mild intoxicant
- Compressed gas cylinders must be stored in dry locations, well ventilated and secured from unauthorized persons

Wood working (machining) injuries/wood dust/noise/fire/formaldehyde/epoxy/solvents

Paint finishes – mineral spirits/toluene/turpentine, ethyl alcohol.

Have dust collection system for woodworking machines. Avoid irritating and allergic hardwoods. Clean wood dust and remove fire hazards.

Science – wear personal protective equipment when doing demonstrations with toxic chemicals

Ensure all equipment is properly guarded to avoid electrical hazards

Store all equipment and tools properly