Why is occupational health and safety important?

• Work plays a central role in people's lives, since most workers spend at least eight hours a day in the workplace, whether it is in an office or in the factory, etc.

• Therefore, work environments should be safe and healthy. Yet this is not the case for many workers.

• Every day workers all over the world are faced with a multitude of health hazards, such as: dusts; gases; noise; vibration; & extreme temperatures.
So, what is the problem with occupational health?

• Unfortunately some employers assume little responsibility for the protection of workers' health and safety.
• In fact, some employers do not even know that they have the moral and often legal responsibility to protect workers.
• As a result of the hazards and a lack of attention given to health and safety, work-related accidents and diseases are common in all parts of the world.
Why is occupational health and safety important?

• Workers represent half the world’s population and are the major contributors to economic and social development.

• Their health is determined not only by workplace hazards but also by social and individual factors and access to health services.

• Occupational hazards cause or contribute to the premature death of millions of people worldwide and result in the ill health or disablement of hundreds of millions more each year.

• The burden of disease from selected occupational risk factors amounts to 1.5% risks of the global burden in terms of DALY.
Definition

Since 1950, the International Labour Organization (ILO) and the World Health Organization (WHO) have shared a common definition of occupational health.

Occupational Health is the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs. (ILO / WHO 1950)
Occupational Health, History

• The first written discussions specifically directed toward matters of occupational safety and health were those of Paracelsus, in the fifteenth century.

• In the early eighteenth century, Bernadino Ramazzini wrote the first book on occupational medicine, *De morbis artificium diatribe* (*Diseases of Workers*), and he is generally regarded as the "father of occupational medicine."

• Ramazzini wrote about the health hazards for dozens of occupations.
In the United States, in the early twentieth century, Dr. Alice Hamilton became the first woman physician appointed to a faculty position at Harvard University, where she worked at the School of Public Health promoting safe and healthful work practices in the United States.

She has been recognized as the leader of the occupational medicine movement in the United States, which came relatively late compared with that in Europe.
Identifying Safety and Health Hazards

The terminology used in Occupational Safety and Health (OSH) varies, but generally speaking:

• A **hazard** is something that can cause harm if not controlled.

• The outcome is the harm that results from an uncontrolled hazard.

• A **risk** is a combination of the probability that a particular outcome will occur and the severity of the harm involved.

• The calculation of risk is based on the likelihood or **probability** of the harm being realized and the **severity** of the consequences.
Identifying Safety and Health Hazards

In the context of OSH, “harm” generally describes the direct or indirect degradation, temporary or permanent, of the physical, mental, or social well-being of workers.

• For example, repetitively carrying out manual handling of heavy objects is a hazard.

• The outcome could be a musculoskeletal disorder (MSD) or an acute back or joint injury.

• The risk can be expressed numerically (e.g. a 0.5 or 50/50 chance of the outcome occurring during a year), in relative terms (e.g. "high/medium/low").
Risk assessment

Modern occupational safety and health legislation usually demands that a risk assessment be carried out prior to making an intervention.

It should be kept in mind that risk management requires risk to be managed to a level which is as low as is reasonably practical.

This assessment should:

• Identify the hazards
• Identify all affected by the hazard and how
• Evaluate the risk
• Identify and prioritize appropriate control measures
Risk Assessment

• The calculation of risk is based on the likelihood or probability of the harm being realized and the severity of the consequences.

• This can be expressed mathematically as a quantitative assessment (by assigning low, medium and high likelihood and severity).

• The assessment should be recorded and reviewed periodically and whenever there is a significant change to work practices.
Risk Assessment

• The assessment should include practical recommendations to control the risk.

• Once recommended controls are implemented, the risk should be re-calculated to determine if it has been lowered to an acceptable level.

• Generally speaking, newly introduced controls should lower risk by one level, i.e., from high to medium or from medium to low.
Common workplace hazard groups

1- Mechanical hazards.

By type of agent:

• Falling down from a height (construction workers)
• Confined Space
• Impact force
• Slips and trips
• Falling on a pointed object
• Compressed air/high pressure
• Entanglement
• Equipment-related injury

By type of damage:

Crushing, Cutting, Friction and abrasion, Shearing, Stabbing and puncture
2. physical hazards.

- Noise
- Vibration
- Barotrauma (hypobaric/hyperbaric pressure)
- Ionizing radiation
- Electricity
- Asphyxiation
- Cold stress (hypothermia)
- Heat stress (hyperthermia)
3- Biological Hazards:
• Bacteria
• Virus
• Fungi
  e.g. Blood-borne pathogens
  e.g. Tuberculosis
4- Chemical hazards
• include:
  Acids
  Bases
  Heavy metals
  Solvents
  Particulates: Fumes (noxious gases/vapors), silica particles (pneumoconiosis)
  Highly-reactive chemicals
  Fire, conflagration and explosion hazards.
Pneumoconiosis

• Pneumoconiosis has been the most serious and preventable occupational disease for a long time.

• The most common workplace mineral dusts that are known to cause pneumoconiosis are asbestos, silica (rock and sand dust), and coal dust.

• In China, the number of workers exposed to silica containing dusts was estimated to be as high as 12 million.

• Pneumoconiosis represents 70–80% of the total number of cases of reported occupational diseases.

• The risk is higher with exposure to mineral dusts, and inadequate use of personal protective equipment (PPE).
5- Psychosocial issues include

• Work-related stress, whose causal factors include excessive working time and overwork.
• Violence from outside the organization.
• Bullying, which may include emotional and verbal abuse.
• Sexual harassment.
• Burnout.
• Exposure to unhealthy elements during meetings with business associates, e.g. tobacco, uncontrolled alcohol.
Psychosocial hazards

In 1986, the National Institute for Occupational Safety and Health (NIOSH) listed psychological disorders among the ten leading work-related diseases and injuries among U.S. workers.

Psychosocial hazards, however, have received scant attention over the past decades. This is mainly because of the focus on controlling physical, chemical and biological hazards in workplaces.
6. Musculoskeletal Disorders

- Avoided by the employment of good **ergonomic design**.
- Musculoskeletal diseases are a major industrial problem in terms of both disability and cost.
- These diseases cause a large number of permanent disability ratings and a burden to medical services.
- Low back pain occurs in 50% of workers in heavy industries.
- Repetitive loadings appear to fatigue and weaken the tissues.
- The need to reduce musculoskeletal injuries in the workplace has become acute.