

# Occupational Health

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# Occupational Health

Definition. It 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 caused by their working conditions ; controlling risks and adaptation of work to people and people to their jobs (according to their physiological and psychological capabilities). (ILO)

# Objectives of occupational Health

- To maintain the workers in complete physical, mental and well being.
- To prevent the workers health to depart from good health due to working conditions.
- To protect the workers from the hazards of their jobs.
- To place the workers in places to suit their physical and mental preperdness.

# Occupational Health Services

Means the services with essentially preventive functions and responsible for advising the employer , the workers and their representatives in the undertaking on.

- 1. The requirements for establishing and maintaining a safe and healthy working environment which will facilitate optimal physical and mental health in relation to work.

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- ۲. The adaptation of work to the capabilities of workers in the light of their state of physical and mental health .
  - ۳. Identification and assessment of the risks from health hazards in the work place. This involves surveillance on the factors in the working environment and working practices which may affect workers health. It also requires a systemic approach to the analyses of occupational disease and accidents.

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- ξ. Advising on planning and organization of work and work practices including the design of the work- places, and on the evaluation , choice and maintenance of the equipment and substances used in the work. In so doing the adaptation of the work to the workers is promoted.
  - ο. Providing advice , information , training and education on occupational health, safety, and hygiene and on ergonomics and protective equipments.

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- 7. Surveillance of workers health and working environment relation to work
  - 8. Contributing to occupational rehabilitation and maintaining in employment people of working age , or assisting in the return to employment of those who are unemployed for reasons of ill health or disability.
  - 9. Organising first aid and emergency treatment.

# Occupational Health Directorate

- Conducting research and studies on the hazards of the occupation on the external environment and the population living in the area..
- Training programs about occupational services.
- Training programs and health education about safety and occupational health to the employer and employee.
- To keep on communicating with other sectors involved in safety and occupational health either private or Governmental.
- Supervising occupational health all over the kingdom.

# Continued

- One of the important goals of the Directorate is to introduce the concept of climate changes and its impact on health.

# Occupational Health Directorate

- The Directorate is divided into two departments:
- Occupational Medicine which is responsible for Pre-placement test, periodic examinations and special tests in certain circumstances .
- Industrial hygiene department which is responsible for assessment of working environment, environmental measurements, and inspection of the firms, health education about the hazards and safety.

# Plans of the Directorate

- To establish three occupational health units in the three zones of the kingdom because we hope to cover most of the workers with safety and occupational health services:
- South zone : In Aqapa
- Middle zone: In Mafraq
- North zone : in Irbid .
- Strategic planning to establish units in the rest of governorates which is equal to ٩.

# Continued

- To establish a surveillance unit for occupational diseases and injuries to know the prevalence and incidence of them in order to place a program of health education about the occupational disease and injuries .
- To place a program to raise level of awareness about all hazards in the occupational environment(physical, chemical. And biological)

# Challenges which face occupational Health

- Lack of man power who specialized in this field.
- Lack of interest also in the field.
- Lack of financial support from all sides.

# Occupational Disease

It denotes to a specific clinical and pathological syndrome caused by a hazard specific to a particular type of work or to the work environment and more prevalent among these group of workers than total population.

# Hazard , Risks, Outcomes

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

The out come is the harm that results from uncontrolled hazard.

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



Example; manual handling of heavy objects is a hazard , the outcome could be musculoskeletal disorder , the risk expressed numerically like 1,000 chance the outcome occur during a year

# Hazard Assessment

Hazard analysis is a process in which the individual hazards of the work place are identified, assessed and controlled/eliminated as close to source (location of the hazard), thus hazard control is a dynamic program of prevention

# Risk Assessment

1. This assessment should:
2. Identify the hazard.
3. Identify all affected by the hazard and how.
4. Evaluate the risk.
5. Identify and prioritize appropriate control measures.

The calculation of risk is based on the probability of the harm being realized and the severity of the sequences and should be reviewed periodically.

# Common work place hazard groups.

Mechanical hazards,

၁. Impact force, collision and falls from height.
၂. Struck by objects.
၃. Confined places.
၄. Slips and trips.
၅. Falling on pointed objects
၆. Compressed air/ high pressure fluids.
၇. Equipment related injuries.

By type of damage.

1. crushing.
2. Cutting.
3. Friction and abrasion
4. Shearing.
5. Stabbing and puncture

# Physical hazards

1. Noise.
2. Vibration.
3. Lighting.
4. Barotrauma( hypobaric/ hyperbaric pressure).
5. Ionizing radiation
6. Electricity
7. Asphyxiation.
8. Cold stress and heat stress

# Chemical hazards

١. Acids
٢. Bases
٣. Heavy metals
٤. Solvents (organic and inorganic).
٥. Particulates ( Asbestos and fine dust / fibrous material and silica
٦. Fumes (noxious gases/vapors).
٧. Highly reactive chemicals
٨. Fire conflagration and explosions

# Chemical Hazards

All organic solvent affect the CNS either as depressant or anesthetics.

1. Aliphatic hydrocarbons, alkane, alkenes, alkynes. Petroleum and natural gas are the most important sources. the more saturated is the less toxic.
2. Aromatic hydrocarbons, Benzene ,its effect on the blood forming tissues in he bone marrow( leukemia).
3. Halogenated hydrocarbons. The halogens are Br, F, Cl, I, and astatine.

# Continued

The chlorinated are more toxic than fluorinated hydrocarbons,  $\text{CCl}_4$  is toxic to the liver and kidney.

ƴ. Nitro hydrocarbons, the toxicological effect depend whether the hydrocarbon is aliphatic or aromatic, nitroalkans are irritant and causing nausea while nitro aromatics are more hazardous causing methemoglobine.

ξ. Alcohol, Methyl alcohol is toxic to the optic nerve.

# Biological hazards

1. Bacteria.
2. Viruses.
3. Fungi
4. Molds
5. Blood born pathogens

# Psychosocial Issues

١. Work-related stress (excessive working time).

٢. Violence.

٣. Sexual harassment.

٤. Bullying, which includes emotional and verbal abuse.

٥. Mobbing

Finally Musculoskeletal disorder which can be avoided by the employment of good ergonomics design

Gases, are divided into,

1. Simple asphxiant,  $\text{Co}_2$ , methane, helium, their action is by replacing  $\text{O}_2$  in the atmosphere

2. Chemical asphnixiant,  $\text{H}_2\text{S}$ ,  $\text{HCN}$ ,  $\text{CO}$ ,

$\text{CO}$  has the affinity to replace  $\text{O}_2$

$\text{HCN}$  causing paralysis of the mitochondria thus preventing the cell from respiration.

$\text{H}_2\text{S}$  causing paralysis to the center of respiration in the brain.



# Physical Hazards

Noise

Vibration

Radiation

Thermal stress

# Climate changes ( Population)

- Population included in the assessment are those workers in the industrial firms. Construction and agricultural workers ,are the main workers who are going to suffer from climate changes because Jordan belongs to the temperate climate . If the greenhouse emission still on the increase they are going to suffer from the thermal stress.

- When the temperature rises the wind waves velocity will decrease which in turn will affect the particulate movement so the workers will be exposed to a heavier dose of particulates. There are certain liquids that will evaporate also and the gases will be suspended and stagnate in the atmosphere. Therefore the exposure to the hazards will increase and the health of the workers will deteriorate and the productivity will decrease.

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- On the other side if rain fall increase the agricultural workers are the most affected people from both aspects , the productivity and their health

# Complication of increase in temperature

- **Heat syncope** results from peripheral venous pooling therefore diminished venous return and hypotension without water or salt depletion
- **Heat edema** . It occurs in the unacclimated workers 1-2 days after exposure caused by oliguria and hyperaldosteronism.
- **Heat tetany**. The cause is central hyperventilation leading to systemic alkalemia and it is self limiting on removal from the heat stress

# Continued

- **Heat cramps** , powerful cramps in the skeletal muscles that have been subjected to hard physical work in hot surrounding and its due to water intoxication or by salt depletion.
- **Heat exhaustion** , when water replacement of sweat is adequate but salt replacement is not.
- **Heat stroke** when the rectal temperature is  $\geq 40^{\circ}\text{C}$  and no sweating due to depression in the center of temperature regulation in the hypothalamus.

# Continued

- **Heat rash** , it is an acute inflammatory disease of the skin after a period of prolonged sweating.

# Prevention

- Engineering control, this involve the delivery of fresh air and shielding the resources.
- Clothes should be suit the climate.



**Thank You**