Unit 3 Public Health/Environmental Health

Occupational Health

By

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25-10-2017
World Cancer Day 2017

Some alarming facts about the deadly disease, Cancer, in India:

- More women than men are diagnosed with cancer every year.
- Breast cancer cases are major threat as they are not detected in early stages.
- About 66 out of 3289 women examined in five different states were found with breast cancer.
- Around 5.37 lakh Indian women were detected with cancer in 2012 against 4.77 lakh men.
- Around 8.2 million people still die of cancer yearly and half of them are aged between 30 and 69.
- The figure may go up to 11.5 million by 2025 and 13 million by 2030.
2017

THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD

BUILDING RESILIENCE FOR PEACE AND FOOD SECURITY
ENDING POLIO

Humanity is on the verge of one the greatest public health achievements in history - *eradicating polio.*

- 16 million saved from paralysis
- 2 of 3 strains of polio likely eliminated
- 3 countries with wild polio
- 2.5 billion children vaccinated
- 99.9% reduction in polio
HOW THE ENVIRONMENT IMPACTS OUR HEALTH

People are exposed to risk factors in their homes, work places and communities through:

- **AIR POLLUTION** including indoors and outdoors
- **INADEQUATE WATER, SANITATION** and hygiene
- **CHEMICALS** and biological agents
- **CLIMATE CHANGE**
- **BUILT ENVIRONMENTS** including housing and roads
- **AGRICULTURAL PRACTICES** including pesticide-use, waste-water reuse
- **RADIATION** ultraviolet and ionizing
- **COMMUNITY NOISE**
- **OCCUPATIONAL RISKS**

World Health Organization

#EnvironmentalHealth
Introduction to Unit 3
Public Health and Environment

4 lectures
1. Introduction to Public Health and Environment -- 16-10-2017
2. Environment 1- Air pollution—18-10-2017
3. Environment: introduction to
   Water Quality and water borne diseases
   Food Safety and food borne diseases
   Waste and health- Management
   23-10-2017
4. Occupational Health -25-10-2017
<table>
<thead>
<tr>
<th>Presentation outline</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction; definition, rational, goal and objectives, OHS day, ergonomics</strong></td>
<td>08:15 to 08:25</td>
</tr>
<tr>
<td><strong>Hazards and risks; types and forms</strong></td>
<td>08:25 to 08:40</td>
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<tr>
<td><strong>Prevention and Control Principles</strong></td>
<td>08:40 to 09:00</td>
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<tr>
<td><strong>Occupational Health Programs</strong></td>
<td>09:00 to 09:15</td>
</tr>
<tr>
<td><strong>OH for Healthcare Workers (HCW)</strong></td>
<td>09:15 to 09:30</td>
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</tbody>
</table>
Definition: ‘Health’

• ‘…is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’ (WHO, 1948)

• ‘Health is only possible where resources are available to meet human needs and where the living and working environment is protected from life-threatening and health threatening pollutants, pathogens and physical hazards’ (WHO, 1992)
RATIONALE

• A large sector of the population is in the labor force.

• Because health and well-being are greatly affected by the work people do, physicians must learn about work/occupational health hazards and play an active role in promoting the health of workers and preventing and controlling work-related health problems.
According to the principles of the United Nations, WHO and ILO, every citizen of the world has a **RIGHT** to **healthy** and **safe** work and to a work environment that enables him or her to live a socially and economically productive life.
Magnitude of problem

- According to the estimates by ILO for accidents and diseases, there are globally about **2.2 million work-related deaths** annually.

- The largest share of work related fatalities is made up by **fatal diseases**: 1.7 - 2 million deaths annually.

- Almost half of these fatalities occur in Asian countries.

- The annual number of **non-fatal work-related diseases** has been estimated to be **160 million**.
FATHER of OCCUPATIONAL HEALTH

Ramazzini

Italy

1700

- “De Morbis Artificum Diatribia”
- 41 occupations and specific diseases to each occupation
اليوم العالمي للصحة والسلامة المهنية
What is 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)
Objectives of occupational health:

• 1- Health promotion: Fulfilling requirements of physical, mental and social wellbeing.
• 2- Protection of the workers from workplace health hazards to which workers are exposed
• 3- Prevention and control of workplace health hazards.
• 4- Rehabilitation of the disabled.
• The main aim of occupational health is to eliminate the hazard if not possible is to minimize the risk.
What is Occupational Health and Safety?

Occupational health and safety (OHS) encompasses the social, mental and physical well-being of workers,

And

for that matter the “whole person”.
Occupational Safety and Health Legislation in Jordan

1. The Constitution of Jordan, of 1952,
2. Labour Law No. 8, of 1996
3. The provisional Public health law No. 54, of 2002
4. The Standards and Specifications Law No. 22, of 2000 Article (17)
5. The Law of Organizing Professional Labour, No. 27, 1999: Article (4)
6. Nuclear and Radioactive Energy Law No. 29, 2001:
8. The Social Security Law No. (19) of 2001:

The other laws that are related, in a way or another, to OSH are:
1. Civil defense law.
2. The environment Protection Law
3. The Agriculture law
4. Handicrafts and Industries Law
Table (12), Medical staff in the enterprises, as required by JLL

<table>
<thead>
<tr>
<th>Employees</th>
<th>P.T physician</th>
<th>F.T physician</th>
<th>Nurse</th>
<th>Medical unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-100</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
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<tr>
<td>101-500</td>
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<td>1</td>
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<td>1</td>
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<tr>
<td>501-1000</td>
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<td>2</td>
<td>3</td>
<td>1</td>
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<tr>
<td>&gt;1000</td>
<td>-</td>
<td>3*</td>
<td>4</td>
<td>1</td>
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</tbody>
</table>

*One of the physicians should be occupational medicine specialist
Governmental Agencies working on OSH

- A: Ministry of Labour:
- B: The Ministry of Health
- C: The Social Security Corporation
- D: Occupational Safety and Health Institute (OSHI):
- The Directorate of Civil Defense:

Social partners in Occupational Safety and Health:
- A- The workers organizations:
- B- Employers’ Organizations:

Semi Governmental Agencies and the NGOs
- 1- The Royal Scientific Society (RSS):
- 2- The Universities:
- 3- The Media:
- 4- The insurance companies
- 5-The international agencies:
- 6- The private sector:
Occupational Health components

Work environment ↔ Workers health

Occupational Hygiene
Hygienist

Occupational Medicine
Occupational Physician

Primary function

To reduce or eliminate worker exposure to workplace hazards.

Diagnosis, management and prevention of diseases due to or exacerbation by workplace factors.
Occupational Safety

Accidents: injuries, fire, explosion....

Machines, installations, equipments...

Safety Engineer
Occupational Diseases

Work-related Diseases

Occupational Diseases
are cause-specific, occurring mainly among working population, exposure at workplace is essential, notifiable and compensable.

Work-related Diseases
are multifactorial in origin (not only work), occurs commonly in the community, exposure at work-place may be a factor, may notifiable and compensable.
Global estimates of occupational burden of disease
### Differences between Occupational and Work-Related Diseases

<table>
<thead>
<tr>
<th>Work-related Diseases</th>
<th>Occupational Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occurs largely in the community</td>
<td>Occurs mainly among working population</td>
</tr>
<tr>
<td>“Multi-factorial” in origin</td>
<td>Cause specific</td>
</tr>
<tr>
<td>Exposure to workplace may be a factor</td>
<td>Exposure to workplace is essential</td>
</tr>
<tr>
<td>May be notifiable and compensable</td>
<td>Notifiable and compensable</td>
</tr>
</tbody>
</table>
Accidents

- **Sudden unfavorable** event following series of consequent and/or parallel human errors.

- Accidents are the end-products of unsafe acts and unsafe conditions of work.

- Factors - technical equipment, working environment, worker

Accidents have **preventable** causes
What is Ergonomics?

• The term ‘ergonomics’ comes from the Greek words: 
  **ergon (work) and nomos (law)**.
• study of the laws that govern the interaction between people, machines, and their environment.
• study of the relation between people and their work environment.
• **fitting workplace conditions and job demands to the capabilities of workers**
Ergonomics: `Adjustment of Man & Machine`/

Application of human biological sciences with engineering science to achieve optimum *mutual adjustment of man & his work*, the benefit being measured in terms of human efficiency and well being

Tool / machine design to fit to work. Ergo tools/ ergofriendly tools: Tools which reduce the stresses or problems resulting in CTD’s / MSD’s.)
The Goal of Ergonomics

• Is to make the work fit the operator, **not** make the operator fit the work.
Bad ergonomics
• **Hazard** is something with the potential to cause harm, such as a substance, a piece of equipment, a form of energy, a way of working or a feature of the environment.

• **Harm** includes death and major injury and any form of physical or mental ill health.

• **Risk** it is a measure of the probability that the hazard (defined previously) will manifest some degree of harm.
## Hazards of workplace

<table>
<thead>
<tr>
<th>Physical</th>
<th>Chemical</th>
<th>Mechanical</th>
<th>Biological</th>
<th>Socio-psychological</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Noise</td>
<td>1-Gases</td>
<td>1-Accidents</td>
<td>1-Bacteria</td>
<td>1-Shift work</td>
</tr>
<tr>
<td>2-Radiation</td>
<td>- Asphyxiants</td>
<td>2-Lak of ergonomics</td>
<td>2-Virus</td>
<td>2-Work hierarchy</td>
</tr>
<tr>
<td>3-Vibration</td>
<td>- simple</td>
<td></td>
<td>3-Parasites</td>
<td>3-Interpersonal relation</td>
</tr>
<tr>
<td>4-Heat and cold</td>
<td>- Toxic</td>
<td></td>
<td>4-Fungus</td>
<td></td>
</tr>
<tr>
<td>5-Changes of pressure</td>
<td>- Irritant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-Electricity</td>
<td>- lower</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- Toxic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-Dust -- organic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-- Inorganic</td>
<td></td>
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<tr>
<td></td>
<td>3-Metals: e.g.</td>
<td></td>
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<tr>
<td></td>
<td>lead, Mercury, Arsenic, Aluminum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-Chemical compound</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Forms of Hazards

<table>
<thead>
<tr>
<th>Form</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airborne</strong></td>
<td>- Chemical as dusts, gases, etc&lt;br&gt;- Physical as radioactive particles&lt;br&gt;- Biological as microbiological organisms&lt;br&gt;( all of which enter the body via the lungs)</td>
</tr>
<tr>
<td><strong>Radiated emissions</strong></td>
<td>- Noise, heat, light or ionizing and non-ionizing radiation&lt;br&gt;( affects body through the skin or other exposed organs)</td>
</tr>
<tr>
<td><strong>Liquid form</strong></td>
<td>Chemicals in liquid form can affect the skin or enter the body via that organ</td>
</tr>
<tr>
<td><strong>Solid form</strong></td>
<td>Chemicals in solid form can affect the skin or enter the body via that organ</td>
</tr>
</tbody>
</table>
Man and man (psychosocial hazards):

Rhythm of work.

- job security,
- job satisfaction,
- leadership style,
- responsibility,
- security, welfare conditions,
- communication,
- participation,
- incentive,
- system of payment,
- human relationships amongst workers themselves on one hand, and those in authority over them on the other hand.
Psychosocial hazards

• Psychosocial hazards like frustration, lack of job satisfaction, insecurity, poor human relationships, emotional tension may undermine both physical and mental health of the workers.

The health effects can be classified in two main categories:

(a) Psychological and behavioral changes as: hostility, aggressiveness, anxiety, depression, fatigue, alcoholism, drug abuse, Sickness and absenteeism;

(b) Psychosomatic ill health: including fatigue, headache; pain in the shoulders, neck and back; propensity to peptic ulcer, hypertension, heart disease and rapid ageing.
DISEASES DUE TO PHYSICAL AGENTS

Heat - Heat hyperpyrexia, Heat Exhaustion
      Heat Syncope, Heat Cramps, burns, Prickly heat

Cold - Frost bite,

Light – Occupational Cataract,

Atmospheric-pressure - Caisson disease, air embolism, explosion.

Noise - Occupational deafness, NIHL

Radiation - Cancer, Leukemia, aplastic anemia, Pancytopenia

Electricity - Burns, Shocks,
Heat Illness

• Predisposing Factors
  – Physical activity
  – Extremes of age, poor physical condition, fatigue
  – Excessive clothing
  – Dehydration
  – Cardiovascular disease
  – Skin disorders
  – Obesity
  – Drugs
    • Phenothiazines, anticholinergics, B and Ca channel blockers, diuretics, amphetamines, LSD, cocaine, MAOIs
Heat Stroke

**SYMPTOMS**
- True emergency
- Altered LOC
- Any neurological finding
- **And** elevated temperature
- May still be sweating initially
- Syncope
- History is critical

**PREVENTION**
- **Awareness**
- **Adaptation of behavioral and physical activity**
  - Clothing
  - Activity
- Appropriate hydration
- **Education**
**Frost Bite**

**SYMPTOMS**
Caused by freezing conditions which cut off circulation, usually in extremities (hands, feet, ears, nose), which may be permanently affected. Frost-bitten areas are cold, pale or marbled-looking, solid to the touch, and painless (until circulation is restored).

**TREATMENT**
Giving warm drinks, and covering with blankets. Warm the injured part with body heat only-put a hand under an armpit, for example. Do not rub the skin or apply direct heat to the injured area.
CHEMICAL HAZARDS

- Routes of entry - Inhalation, Ingestion, skin absorption. (inhalation is the main route of entry)
- Chemical agents can be classified into-
  1) **Metals** - Lead, TEL, As, Hg, Cd, Ni, Co etc.
  2) **Aromatic Hydrocarbons** - Benzene, Toluene, phenol etc.
  3) **Aliphatic Hydrocarbons** - Methyl alcohol
  4) **Gases** - *Simple asphyxiants*: N2, CH4, CO2
     * Chemical asphyxiants: CO, H2S, HCN
     * Irritant gases: Ammonia, SO2, Cl2,
     * Systemic poison: CS2
Pneumoconiosis is a generic name covering the group of lung disorders which result from the inhalation of “inorganic dust”

- pneumon = lung
- konis = dust

Pneumoconiosis = accumulation of inorganic dust in lungs, following non-neoplastic tissue reaction.
Industrial dust

• **Inorganic dust** (consists of particles of minerals and metals)
• **Organic dust** (contains particles of plant and animal origin, and also microorganisms that are on them, and their waste products)
• **Mixed dust**
Inorganic dust

Asbestos fibers under the electron microscope
Talc - hydrated aluminum silicate
Coal dust of mining enterprises

Organic dust

Dust generated during processing of raw cotton
Moldy hay
Pathogenesis

Size of Dust

10 - 5 μ - Upper Respiratory tract
5 - 3 μ - Mid respiratory tract
3 - 1 μ - Alveoli
DUSTS (Pneumoconiosis)

Inorganic Dust
- Coal Dust - Anthracosis
- Silica - Silicosis
- Asbestos - Asbestosis

Organic Dusts
- Cane Fiber - Bagassosis (Bronchi get affected)
- Cotton dust - Byssinosis
  (In Textile industries)
- Tobacco - Tobaccosis, Lung Cancer
- Grain Dust - Farmer’s Lungs
Biological Hazards

**Bacteria** - Tetanus, Tuberculosis, Anthrax, Brucellosis (Milkmen), Gonorrhea (Sex-workers - Genital organs get affected).

**Virus** - Hepatitis, AIDS

**Protozoal & Parasitic** - Malaria, Hydatid (Dog handlers), Hookworms, tapeworms (Agri-workers), etc.

**Fungi** (Agri-workers) - Tinea-infections, Coccidiomycosis, Psittacoses, ornithosis, etc.
MECHANICAL HAZARDS

Injuries-
  Falls, cuts, abrasions, concussions, contusions, etc.

Ergonomic Disorders-
  Musculo-skeletal disorders (MSDs), Cumulative-trauma-Disorders (CTDs) etc.
PREVENTION OF OCCUPATIONAL DISEASES

• Prevention of occupational diseases may be grouped under three heads:-
General Outlines of Prevention of Occupational Hazards

• **Environmental**
  1- Substitution
    - of the process
    - of the used substances
  2- Isolation - within the work-place
  3- Segregation
    far from the work-place
  4- Ventilation
  5- Environmental Monitoring
    TLV
  6- Assurance of Ergonomics in the work-place

• **Medical measures**
  1- Preplacement Medical examination
    - Selection of suitable workers
    - Base line for follow-up
  2- Periodic Medical examination
    - Early detection in the reversible stage
    - Indicator of the OH program
  3- Personal protective devices
  4- Health education
Hierarchy of Occupational Exposure Controls

1. Elimination or Substitution
2. Process or equipment modification
3. Isolation or Enclosure
4. Local exhaust ventilation
5. Personal Protective Equipment
6. Work practices and housekeeping
Occupational Health Hierarchy of Controls

- Elimination and/or substitution
- Engineering Controls
- Administrative Controls
- Workplace Practices
- PPE

Increase effectiveness and sustainability

Increase participation and supervision needed
I. Medical measures

1. Pre-placement examination

• It is complete medical examination before the worker is employed.

• Significance:
  – To put the right man in the right place.
  – To detect diseases not previously know to the workers.
  – A useful benchmark for future comparison

• It is done at the time employment and includes
  – the worker's medical, family, occupational and social history;
  – a thorough physical examination and
  – a battery of biological and radiological examinations,( eg., chest x-ray, electro-cardiogram, vision testing, hearing testing, urine and blood examination, special tests for endemic disease.

• A fresh recruit may either be totally rejected or given a job suitable for his physical and mental abilities
I. Medical measures

2. Periodical examination

• Aims at detecting as early as possible any deviation from normal health.
• The frequency and content of periodical medical examinations will depend upon the type of occupational exposure.
• Ordinarily workers are examined once a year. But in certain occupational exposures (e.g., lead, toxic dyes, radium) monthly examinations are indicated.
I. Medical measures

3. Medical and health care services:
   • The medical care of occupational diseases
   • First aid services which if properly applied will reduce suffering, disability and will hasten recovery
   • Immunization is another accepted function of an occupational health service.
I. Medical measures

4. Notification:
notification of cases and suspected cases of occupational disease.

Aim of notification in industry:
• Initiate measures for prevention and protection and ensuring their effective application
• Investigate the working conditions and other circumstances which have caused or suspected to have caused occupational diseases.
I. Medical measures

5. Supervision of working environment:
Periodic inspection of working environment provides information of primary importance in the prevention of occupational disabilities.
The physician should pay frequent visits to the factory in order to inspect the various aspects of the working environment such as temperature, lighting, ventilation, humidity, noise, cubic space, air pollution and sanitation which have an important bearing on the health and welfare of the workers.
I. Medical measures

6. Maintenance and analysis of records:
   • The worker's health record and occupational disability record must be maintained.
   • Review of records should enable the service to
     a. watch over the health of the workers,
     b. to assess the hazards inherent in certain types of work and
     c. to devise or improve preventive measures.
I. Medical measures

7. Health education and counseling
Health education should start before the worker enters the factory and should be continuous.

About:
• Personal hygiene.
• All the risks involved in the industry in which he is employed
• Use of personal protective equipments.
• Safety and accident prevention.
• Special diet & food sanitation.
II- Engineering and Environmental Measures

1. Design of building
2. Good housekeeping
3. General ventilation
   4. Mechanization
5. Substitution
6. Dusts control
7. Enclosure
8. Isolation
9. Local exhaust ventilation
10. Protective devices
11. Environmental monitoring
12. Statistical monitoring
II- Engineering and Environmental Measures

1. Design of building

• Start in the blue-print stage including the type of floor, walls, height, ceiling, roof, doors and windows, cubic which should receive attention in the original plan of the building ..
2. Good housekeeping

- General cleanliness, ventilation, lighting, washing, food arrangements and general maintenance.
- It also contributes to efficiency and morale in industry.
- The walls, ceilings, and passages should be white-washed at least once a year.
- The dust which settles down on the floor, ledges, beams, machinery and other stationery objects should be promptly removed by vacuum cleaners or by wetting agents.
- Masks, gloves, aprons and other protective equipment should be kept clean and in a state of good repair.
- To prevent accidents, the right thing should be in the right place.
- Not only the inside, but the outside of the plant should also be kept clean and tidy.
II- Engineering and Environmental Measures

4. General ventilation

• Good general ventilation decreases the air-borne hazards to the workers, especially hazards from dusts and gases.

• There should be good general ventilation in factories. It has been recommended that in every room of a factory, ventilating openings shall be provided in the proportion of 5 sq. feet for each worker employed in such room, and the openings shall be such as to admit of a continued supply of fresh air.

• In rooms where dust is generated there should be an efficient exhaust ventilation system.
II- Engineering and Environmental Measures

4. Mechanization

- The plant should be mechanized specially for hazardous processes e.g. dermatitis can be prevented if hand-mixing is replaced by mechanical devices.
II- Engineering and Environmental Measures

5. Substitution
• By substitution is meant the replacement of harmful material by a harmless one, or one of lesser toxicity

6. Enclosure
• Enclosing the harmful materials and processes will prevent the escape of dust and fumes into the factory atmosphere. Example, grinding machinery can be completely enclosed. Such enclosed units are generally combined with exhaust ventilation.

7. Isolation
• Sometimes it may be necessary to isolate the hazardous process in a separate building so that workers not directly connected with the operation and are not exposed to hazard. Isolation may not be only in space, but also in the fourth dimension of time. Certain operations can be done at night in the absence of the usual staff
II- Engineering and Environmental Measures

8. Dusts control
   • Dusts can be controlled at the point of origin by sprays, e.g., wet drilling of rock. Inclusion of a little moisture in the materials will make the processes of grinding, mixing comparatively dust-free.

9. Local exhaust ventilation
   • Local exhaust ventilation, dusts, fumes and other injurious substances can be trapped and extracted "at source" before they escape into the factory atmosphere and thus the breathing zone of workers may be kept free from dangerous dust and poisonous fumes.
   • Dusts, gases and fumes are drawn into suction and are conveyed through ducts into collecting units.
II- Engineering and Environmental Measures

10. Protective devices

- Protective devices comprise respirators, gas masks, ear plugs, ear muffs, safety shoes, aprons, gloves, gum boots, barrier creams, screens, and goggles. The worker should be instructed in the correct use of protective devices.
II- Engineering and Environmental Measures

11- Environmental monitoring

• Periodical environmental surveys sampling the factory atmosphere to determine whether the dusts and gases escaping into the atmosphere are within the limits of permissible concentration.

• The use of "permissible limits" has played an important part in reducing occupational exposure to toxic substances.
II- Engineering and Environmental Measures

12. Statistical monitoring

• Statistical monitoring comprises the review at regular intervals of collected data at the health and environmental exposure of occupational groups.

• The main objective of these reviews is to evaluate the adequacy of preventive measures and occupational health criteria, including permissible exposure levels.

13. Research

• better understanding of the industrial health problems.
III- Legislation

• Society has an obligation to protect the health of the worker engaged in diverse occupations.
• The worker is more important than the machine which he operates.
• Factory laws, have been framed in every country to govern the conditions in industry and to safeguard the health and welfare of the worker.
For effective implementation of national policies and programs, a good national OSH system is critical, including:

- laws and regulations, and collective agreements where appropriate, on occupational disease prevention;
- law compliance mechanisms, including effective workplace inspection systems; cooperation between management and workers and their representatives;
- occupational health services;
- a mechanism for the collection and analysis of data on occupational diseases;
- provision of OSH training and information;
- collaboration with social security schemes covering occupational injuries and diseases. (ILO 2013)
Hazard prevention and control programs require:

- political will and decision-making;
- commitment from top management, with a clear and well circulated policy basis;
- commitment from workers;
- well defined goals and objectives;
- adequate human and financial resources;
- technical knowledge and experience;
- adequate implementation and competent management of programmes;
- establishment of multidisciplinary teams;
- mechanisms for communication;
- monitoring mechanisms (indicators);
- continuous improvement of the programme
Only a small proportion of the global workforce has access to occupational health services for primary prevention and control of diseases and injuries caused or aggravated by work. In 2007, the 60th World Health Assembly endorsed a Global Plan of Action on Workers’ Health for 2008-2017 and urged WHO member states to devise national policies and plans for its implementation.
Risk factors for mental health problems

- Drugs/alcohol
- Lack of education
- Poor nutrition
- Poverty
- Racial injustice
- Violence/delinquency
- War
- **Work stress**
- Unemployment
Sources of Stress at Work

• Work policies
• Interpersonal relations
• Work environment
Workplace Population

• Mental health should not only be limited to children and adolescents, but to adults as well. Adults need good coping mechanisms as they gain more tasks and responsibilities.

• Just like students spending a huge portion of their time in school, adults spend a third of their day in their workplace.

• Work holds potential stressors for an individual, as he needs to establish himself/herself at his/her work.

• Failure in work tends to devalue an individual’s self-esteem.
A healthy workplace considers the:

**importance of psychosocial well-being and mental health wellness of workers**

and provides policies, facilities, and environment that support programs to **maintain overall health and work efficiency**.

**Employers** must see to it that enforcing efficiency does not jeopardize the worker’s health, including his/her mental wellness.

There are some sources of stress in the workplace that **must be minimized not removed**.
Workplace health promotion - What is it?

The European Network for Workplace Health Promotion has defined workplace health promotion as the **combined efforts of employers, employees and society to improve the health and well-being of people at work.**

This vision of workplace health promotion places particular emphasis on:

- **improving the work organization and working environment,**
- **increasing workers' participation in shaping the working environment,**
- **and encouraging personal skills and professional development.**

Workplace health promotion **focuses on a number of factors that may not be sufficiently covered in the legislation and practice of occupational health programmes**, such as:

- the organizational environment, the promotion of healthy lifestyles,
- and non-occupational factors in the general environment.
- Non-occupational factors include family welfare, home and commuting conditions, and community factors which affect workers' health.
Aims of MHP in the workplace

- Identification of workplace risks - ways to reduce them
- Development of a workplace culture to support wellbeing
- Flexible working/work-life balance
- Use of multi-component wellbeing programmes (e.g., including physical exercise programmes in MHP programs/ Mental Health Policies)
- Training and awareness on mental health issues for managers as well as employees
- Early identification of stress and mental ill-health
- Access to counseling
Workplace-based mental health and wellness activities should:

- Enhance the adult’s good coping mechanisms as they gain more tasks and responsibilities
- Maintain overall health and work efficiency of workers
- Facilitate good interpersonal relations among workers
- Provide for a stress-free physical environment

I love my job
## Benefits of Workforce Health Promotion

<table>
<thead>
<tr>
<th>To the organization</th>
<th>To the employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>a well-managed health and safety programme</td>
<td>a safe and healthy work environment</td>
</tr>
<tr>
<td>a positive and caring image</td>
<td>enhanced self-esteem</td>
</tr>
<tr>
<td>improved staff morale</td>
<td>reduced stress</td>
</tr>
<tr>
<td>reduced staff turnover</td>
<td>improved morale</td>
</tr>
<tr>
<td>reduced absenteeism</td>
<td>increased job satisfaction</td>
</tr>
<tr>
<td>increased productivity</td>
<td>increased skills for health protection</td>
</tr>
<tr>
<td>reduced health care/insurance costs</td>
<td>improved health</td>
</tr>
<tr>
<td>reduced risk of fines and litigation</td>
<td>improved sense of well-being</td>
</tr>
</tbody>
</table>

These benefits are greater for low-paid workers in high risk occupations and settings, and in this way occupational health interventions can reduce inequities. Efforts made by WHO and its partners to strengthen key aspects of occupational health focus on increasing the coverage of workers in under-served countries and regions with basic occupational health services.
There is **no health without mental health**

• Everyone is **susceptible to mental health problems**
Who is a Health Care Worker?

- Nurse
- Doctor
- Aide, orderly
- Pharmacist
- Laundry worker
- Housekeeper
- Dentist
- Dental hygienist
- Maintenance staff
- Laboratory technician
- Radiology technician
- Physical therapist
Blood borne Pathogens (BBPs)

Microorganisms present in Blood, or Other Potentially Infectious Materials
Blood borne Pathogens (BBPs)
Other Potentially Infectious Materials (OPIM)

- Blood
- Semen
- Vaginal secretions
- Cerebrospinal fluid
- Synovial fluid
- Pleural fluid
- Peritoneal fluid
- Amniotic fluid
- Saliva (if contaminated with blood)
- Any body fluid that is visibly contaminated with blood
# Blood borne Pathogen Diseases

Some examples of bloodborne pathogens:

- Malaria
- Syphilis
- Brucellosis
- Leptospirosis
- Arboviral infections
- Relapsing fever
- Creutzfeld-Jakob Disease
- Viral Hemorrhagic Fever

<table>
<thead>
<tr>
<th>Main blood borne pathogens and diseases of concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B Virus (HBV)</td>
</tr>
<tr>
<td>Hepatitis C Virus (HCV)</td>
</tr>
<tr>
<td>Human Immunodeficiency Virus (HIV)</td>
</tr>
<tr>
<td>— Hepatitis B</td>
</tr>
<tr>
<td>— Hepatitis C</td>
</tr>
<tr>
<td>— AIDS</td>
</tr>
</tbody>
</table>
Health Care Workers and BBPs

Occupational Transmission

Causes of percutaneous injuries with hollow-bore needles, by % total percutaneous injuries

- Most common: Needle sticks
- Cuts from other contaminated sharps (scalpels, broken glass, etc.)
- Contact of mucous membranes (eye, nose, mouth) or broken (cut or abraded) skin with contaminated blood

Source: CDC [1999]
Transmission of BBPs

Occupational Exposure:
Means reasonably anticipated skin, eye, mucous membrane, or parenteral (piercing of the skin) contact with blood or OPIM that may result from the performance of an employee's duties

Exposure Incident:
is a broken skin, mucous membrane or sharps injury exposure to blood or OPIM
Transmission of BBPs

Risk of infection depends on several factors:

- The pathogen involved
- The type/route of exposure
- The amount of virus in the infected blood at the time of exposure
- The amount of infected blood involved in the exposure
- Whether post-exposure treatment was taken
- Specific immune response of the individual

Courtesy of Owen Mumford, Inc.
Health Care Workers and BBPs

Occupational Transmission

Risk of infection following a needle stick or cut from a positive (infected) source:

- HCV: 3%
- HIV: 0.3%
- HBV: 30%
How to Reduce Your Risk?

Immunization of health care personnel
<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Indication</th>
<th>Route/Schedule</th>
<th>Booster dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hepatitis B</strong></td>
<td>All health care staff</td>
<td>3 doses i.m 0,1 month, 6 month</td>
<td>Not recommended</td>
</tr>
<tr>
<td><strong>Influenza</strong></td>
<td>All health care staff</td>
<td>1 i.m dose of inactivated injectable vaccine annually</td>
<td>Vaccine repeated annually</td>
</tr>
<tr>
<td>MMR</td>
<td>HCP born 1975 or later without serologic evidence of immunity or prior vaccination</td>
<td>2 doses of MMR 4 weeks apart are given S.C</td>
<td></td>
</tr>
<tr>
<td>Vaccine</td>
<td>Indication</td>
<td>Route/ Schedule</td>
<td>Booster dose</td>
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<td>---------------------</td>
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<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Varicella (Chickenpox)</td>
<td>HCP who have no serologic proof of immunity, prior vaccination or history of varicella disease</td>
<td>2 doses of varicella vaccine 4 weeks apart are given S.C</td>
<td></td>
</tr>
<tr>
<td>Tdap (tetanus, diphteria &amp; pertusis)</td>
<td>Persons without a history or an unknown history</td>
<td>3 doses i.m 0, 1-2 months, 6 months</td>
<td>Td booster doses every 10 years If exposed to a dirty wound and last booster dose is &gt; 5 years.</td>
</tr>
<tr>
<td>Meningococcal</td>
<td>Microbiologists who are routinely exposed to isolates of N. meningitis</td>
<td>Single dose</td>
<td></td>
</tr>
</tbody>
</table>
Exposure Controls

- Following universal precautions
- Equipment and Safer Medical Devices
- Proper work practices
- Personal protective equipment
Exposure Incident

If you have an exposure incident to blood or OPIM, immediately do the following:

- Thoroughly clean the affected area
  - Wash needle sticks, cuts, and skin with soap and water
  - Flush with water splashes to the nose and mouth
  - Irrigate eyes with clean water, saline, or sterile irrigants

- Report exposure to (supervisor, person or department responsible for managing exposures, etc.); fill out an Incident Report Form
Post-exposure evaluation

- Documentation of the route(s) of exposure
- A description of the circumstances under which the exposure occurred
- Provide immediate post-exposure medical evaluation and follow-up to exposed employee:
  - Confidential
  - Testing for HBV, HCV, HIV
  - Preventive treatment when indicated
Occupational Health and Infection Control Measures

• Health care workers require appropriate personal protective equipments and the necessary knowledge to realize their work in a safety way in hospitals and health care settings.
Saying goes: ‘Who lost something cannot give it.’

يقول المثل: "فاقد الشيء لا يعطيه".

"Be sure to secure your own oxygen mask first before helping another."
الطريق لصحة أفضل .. وإنتاج أكبر .. واقتصاد مزدهر