OCCUPATIONAL HEALTH DISEASES IN CONSTRUCTION
SITE-PREVENTION IS BETTER THAN CURE

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- Introduction
- Statistics of Occupational Diseases
- Categories and types of health hazards
- General control measures
- Related legislations
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Objectives

- Categories of occupational health hazards
- Potential health effects due to exposure to the health hazards
- Principles of related legislations
Introduction

The joint International Labor Organization committee on Occupational Health, 1950 defined occupational health as “The highest degree of physical, mental and social well-being of workers in all occupations.”
“When you come to a patient’s house, you should ask him what sort of pains he has, what caused them, how many days he has been ill, whether the bowels are working and what sort of food he eats. So says Hippocrates.

I may venture to add one more question: what occupation does he follow?”

Bernard Ramazinni (1633-1714)
• Excessive exposures to health hazards at work may result in acute injury, chronic illness, permanent disability or even death.

• Loss of concentration at work and fatigue arising from poor health conditions may increase the risk of accidents.

• Construction work is featured by:
  ◦ High labour turnover
  ◦ Constantly changing work environment and conditions on site
  ◦ Different types of work being carried out simultaneously by several contractors.
  ◦ High turnover and low skilled labourers

• These features would further increase the health risks of workers.
Low health status and high health expenditures

Worker affected with occupational disease

Financial burden and loss of income
## Worldwide statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Numbers of fatal accidents</th>
<th>Fatal accident incidence rates*</th>
<th>Numbers of fatal diseases</th>
<th>Total numbers of fatal accidents and diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>345,000</td>
<td>16.4</td>
<td>-</td>
<td>-</td>
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<tr>
<td>2001</td>
<td>351,000</td>
<td>15.2</td>
<td>2.03 million</td>
<td>2.38 million</td>
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<tr>
<td>2003</td>
<td>358,000</td>
<td>13.8</td>
<td>1.95 million</td>
<td>2.31 million</td>
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<tr>
<td>2008</td>
<td>321,000</td>
<td>10.7</td>
<td>2.02 million</td>
<td>2.34 million</td>
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</table>

• 4.5% of construction workforce in United Kingdom affected by illness caused by or made worse by their work
• Translates to 90,000 workers in the construction and building trades
• 1.8 million working days lost due to work-related illness (0.9 million due to accidents)

Source: HSE UK
Malaysian Statistics

Occupational disease cases received and investigated (2005-2012)
<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>TOTAL</th>
</tr>
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<tbody>
<tr>
<td>Occupational lung diseases</td>
<td>115</td>
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<tr>
<td>Occupational skin diseases</td>
<td>40</td>
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<tr>
<td>Occupational Noise Induced Hearing Loss</td>
<td>1395</td>
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<tr>
<td>Occupational Musculoskeletal Disorders</td>
<td>82</td>
</tr>
<tr>
<td>Occupational Poisoning</td>
<td>61</td>
</tr>
<tr>
<td>Diseases caused by physical agents</td>
<td>4</td>
</tr>
<tr>
<td>Disease caused by biological agents</td>
<td>28</td>
</tr>
<tr>
<td>Occupational cancer</td>
<td>1</td>
</tr>
<tr>
<td>Occupational psychosocial diseases</td>
<td>1</td>
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<tr>
<td>Others</td>
<td>15</td>
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<td>Ruled out cases</td>
<td>50</td>
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</table>

**TOTAL** 1792

Cases reported in 2012 according to type of diseases
<table>
<thead>
<tr>
<th>SEKTOR Diagnosis ↓</th>
<th>Pengilangan</th>
<th>Kuarı/Lombong</th>
<th>Pembinaan</th>
<th>Pertadangan</th>
<th>Kemudahan</th>
<th>Pengangkutan</th>
<th>Borong/Runcit</th>
<th>Hotel/Restaurant</th>
<th>Kewangan/service</th>
<th>PerkhID Awam</th>
<th>Jumlah</th>
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<tr>
<td>Occupational Lung Diseases (OLD)</td>
<td>6 2 0 1 8 0 0 0</td>
<td>1</td>
<td>5</td>
<td>88</td>
<td>111</td>
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<td></td>
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<td>Occupational Skin Diseases (OSD)</td>
<td>17 0</td>
<td>1</td>
<td>22</td>
<td>14</td>
<td>9</td>
<td>3</td>
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<td>Occupational Noise Induced Hearing Loss</td>
<td>818 7</td>
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<td>22</td>
<td>14</td>
<td>9</td>
<td>3</td>
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<td>Occupational Muscular - Skeletal Disorders (OMD)</td>
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<td>8</td>
<td>3</td>
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<td>Occupational Poisoning</td>
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<td>10</td>
<td>6</td>
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<td>0</td>
<td>25</td>
<td>58</td>
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<tr>
<td>Disease cause by Physical Agent</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>Disease cause by Biological Agent</td>
<td>0 0</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>32</td>
<td></td>
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<tr>
<td>Occupational Cancer</td>
<td>1 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Psychosocial Problem</td>
<td>0 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Other Types of Occupational Diseases</td>
<td>2 0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non Occupational Diseases</td>
<td>17 0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>25</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>933 9</td>
<td>3</td>
<td>55</td>
<td>25</td>
<td>8</td>
<td>6</td>
<td>42</td>
<td>153</td>
<td>1338</td>
<td></td>
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</tbody>
</table>
Common occupational health issues in construction sector

1. Musculoskeletal disorders (MSD)
2. Hearing damage
3. Hand arm vibration syndrome (HAVS)
4. Dermatitis
5. Respiratory illness: asbestos related, asthma and silica related diseases
6. Stress
CATEGORIES AND TYPES OF HEALTH HAZARDS
CATEGORIES OF HEALTH HAZARD

1. Physical
2. Chemical
3. Biological
4. Ergonomics
5. Psychosocial
Physical Hazards

- Heat
- Light
- Cold
- Humidity
- Air pressure
- Vibrations
- Noise
- Electromagnetic Frequency
- Injurious force (Slip, fall etc)
- Radiation
Health Effects

- **Cold**: Chill blains, Frost bite, Hypothermia.
- **Humidity**: Loss of body fluids, Dehydration.
- **Vibrations**: Injury and inflammation of bones, joints and soft tissues.
- **Abnormal pressure**: Pressure bends, Caissons disease, Air embolism.
- Noise: Hearing impairment, hearing loss.
- Light: headache, loss of concentration etc.
- E.M.F.: Headache, sleep disturbances, risk of blood and brain cancer.
- Radiant energy:
  a) Cosmic radiation: Cataract, skin cancer.
  b) U.V. radiation: Skin and bone cancer.
- Injurious force: injuries and accidents.
Chemical Hazards

- Noxious gasses
- Aerosols
- Corrosives
- Solvents
- Metals and Metal fumes

- Can be found in construction materials, paints, glue, pest control chemicals, interior design boards etc
Routes of Exposure

- **Inhalation**
  - Nasal cavity
  - Pharynx
  - Larynx
  - Trachea
  - Bronchus

- **Dermal Absorption**
  - Diaphragm
  - Pleural cavity
  - Right lung
  - Left lung

- **Ingestion**
  - Figure 3: Tiny hair-like structures in the air passageways help to clear them of foreign materials.

- Figure 5: It is dangerous to consume food and drink, or to smoke, at a workstation where chemicals are used. The food or drink may be contaminated by dirty hands or even vapors in the air. Cigarettes may be a fire or explosion hazard.
Health Effects

- Breathing difficulties
- Asthma
- Inflammation of the lung
- Dermatosis
- Disorders of the nervous system
- Cancer
- Immediate death!
Acute

These cause immediate health effects such as by corrosive, irritant, poisonous, inflammable and volatile gases, liquids, and solids.

Chronic

The effect take a long term to manifest (latency period), and may be difficult to identify, e.g. occupational cancers.
A former tunneling worker suffered from silicosis.

54 y.o.

Tunneling from 18 to 38 years old.

61 y.o.
A carpenter suffered from asbestosis

Working as a carpenter from 23 to 56 years old
Pleural Mesothelioma

Healthy Lung

Diseased Lung

pleura

cancer

diaphragm
Dermatitis
Tired
Cansado

Headache
Dolor de cabeza

Dizzy
Mareado

Sweaty
Sudoroso

Blurred vision
Tiene la vista nublada

Throwing up
Vomitando

Muscle pain
Calambre de los músculos

Cramps
Dolor de estómago o calambre
Biological Hazards

- Bacteria - leptospirosis, cholera, thypoid
- Viruses – dengue
- Fungi & molds
Ergonomic Hazards

- Manual handling is common in construction work.
- Common causes of injury are due to
  - Poor manual lifting posture
  - Long working period
  - Repetitive movements
- Even one bad lift can cause a lifetime of pain and disability
Psychosocial Hazards

- Poor job control
- Job demand
- Poor support at work
- Lack of interpersonal skills
- Job dissatisfaction
- Poor amenities at construction site
Health Effects

- Stress
- Burnout
- Fatigue
- Low Back Pain
- Gastritis
- Hypertension
- Insomnia
- Depression
GENERAL CONTROL MEASURES

Hazards identification and risk assessment

The process to look at the conditions workers are exposed to the hazards and determine whether the hazards likely to cause any harm to the workers.
Hierarchy of Control

Apply the highest level of control commensurate with the risk level—lower value controls may be used in the interim until long-term controls are implemented.

ELIMINATION
SUBSTITUTION
ENGINEERING
ADMINISTRATIVE
BEHAVIOR
PPE

Increasing effectiveness and sustainability

Increasing participation and supervision needed
RELATED LEGISLATIONS
NOTIFICATION OF ACCIDENT, DANGEROUS OCCURRENCE, OCCUPATIONAL POISONING AND OCCUPATIONAL DISEASE REGULATIONS 2004
REPORTING REQUIREMENTS UNDER OSHA 1994

Section 32(2) require every registered medical practitioner attending or visiting a patient whom he believes to be suffering from any diseases listed under FMA 1967 or any regulation made under OSHA 94 to report the matter to Director General.
REPORTING OF OCCUPATIONAL POISONING & DISEASE (Reg. 7)

(1) An employer shall send a report in an approved form to DOSH within 7 days where a person at work suffers from one of the occupational poisoning or occupational disease in the 3rd Schedule - J KKP 7

(2) A registered medical practitioner or medical officer attending to a patient suffering from any one of the OP or OD listed in the 3rd Schedule shall within 7 days report to DG and notify the employer of the patient - J KKP 7
OCCUPATIONAL SAFETY AND HEALTH (USE AND STANDARD OF EXPOSURE OF CHEMICALS HAZARDOUS TO HEALTH) REGULATIONS, 2000 (USEC HH)
Process Flow

Presence of Chemical Hazardous to Health at Workplace

Assessor conducts Chemical Health Risk Assessment

- Health risk significant
  - Recommendation for medical surveillance for all workers in the work unit / work type involved
  - Employer sends workers for medical surveillance with registered OHDs
    - Level below BEI
      - Continue annual monitoring
    - Level above BEI
      - Biological effect monitoring
      - Frequent monitoring till level is normal
      - MRP
- Health risk not significant
  - Employer continues implementation of current control measures
HEALTH SURVEILLANCE

(Part IX, Regulation 27)

To detect exposure levels and early biological effects and response;

- Biological monitoring;
- Medical surveillance;
- Biological effect monitoring;
- Review of records and occupational history;
- Enquiries about occupational poisoning or occupational disease symptoms;
HEALTH SURVEILLANCE PROGRAMME

(Part IX, Regulation 27 (3))

Medical Surveillance

• Identify changes in health status due to chemical exposure;

• Frequency:
  Less than 12 months or at such shorter interval;
OTHER REGULATIONS UNDER FACTORIES AND MACHINERY ACT 1994

- Lead Regulation 1984
- Asbestos Regulation 1986
- Mineral Dust Regulation 1989
- Noise Regulation 1989
CONCLUSION

- Occupational diseases could be a silent problem at the workplace, causing high turnover and sick absenteeism.
- Occupational disease notification from the construction sector is relatively low compared to other sectors.
- Ensure proper recognition of occupational diseases (hazards & early health effects).
- Early identification and reporting will facilitate appropriate preventive and remedial actions for workplace improvement, while protecting the health of employees.