Lecture 4 Occupational Safety and Health Dr. Muna Merza

Heat

**Heat differences:** mean produce as a result of metabolic activity lost to environment to maintain the body temperature at about 36.8 °C.

**Heat sources:**

a. sun.

b. heat underground.

c. body fraction.

d. electricity.

e. nuclear energy.

**Bodies can librates excess heat by:**

a. skin lost temperature by radiation and conduction.

b. sweat secretion.

**Bodies can take heat by:**

a. organic materials oxidation.

b. radiation conduction and convection.

**Heat exchange between body and environment influencing by:**

a. air temperature

b .mean radiation temperature.

c. water content of air.

d. wind velocity.

e. clothing.

f. metabolic rate.

**Heat adaptation affected by three factors:**

a. heat regulation center activity.

b. heat heart beats and blood circulation.

c. evaporation.

**Comfort range of temperature:**

14-19°C perfect temp. for working in winter.

17-22 C° perfect temp. for working in summer.

(both with humidity 40-50%).

**Effect of heat on body:**

a. psychic andneural disturbances (discomfort).

b. Affect body function.

c. pathological affects such as:

i. heat stroke.

ii. heat exhaustion.

iii. heat cramp.

iv. heatfrustration.

v. eye inflammation.

e. job insufficiency.

f. painful exposure.

**Classification of thermal environment:**

a. cold dry environment; dry less than 5C° with absence of liquid.

b. cold wet environment; above a dry of 0°C in presence of liquid.

c. hot humid environment; high dry temp. is coupled with high water vapor pressure.

d. hot dry environment; rise than 40 with high radiant heat load.

**Control includes:**

a. work procedures.

b. heat exchange.

c. rest pauses.

d. clothing's.

**Control and prevention of heat:**

1. Engineering prophylaxis means.

2. Medicalprophylaxis means, include;

a. primary medical examination.

b. prevent any person who suffer from heart and blood circulatory disease.

c. work training for first aid.

3. Substitution of hot processes by cold one.

4. Prevention of hot processes or isolation from workers.

5. Use of heat barriers.

6. Using of good ventilation with temperature regulation in work area and regulate humidity and air velocity.

7. Occupational education with heat hazards.

8. Restpauses in cold places.

9. Prevention of alcoholic drinking because the cause varadilation.

10. Rules and laws application in hot area.

**Chemical Hazard in General Work:**

Human being may be exposed to several chemical substances in the form of gas, vapor, and dust.

The nature and intensity of the exposure varies with the type of mineral, the decomposition of surrounding rock and technique employed.

The greatest hazard is that of pneumoconiosis due to the inhalation of fibrogenic dust, in particular silica.

**The chemical materials are:**

1. Toxic dust.

2. Vapors released by the metal such as arsenic, lead, manganese, or mercury.

3. Toxic or asphyxiate gases.

4. Fumes produced during firing.

5. The action of acid on skin.

**The factors contribute to disease caused by chemicals:**

1. The chemical and physical nature of substances.

2. Interaction between chemical substances and body tissues.

3. Size of chemical substances.

4. Concentration of chemical substances.

5. Storage site of chemical substances in the body.