Lecture 2 Occupational Safety and Health Dr. Muna Merza

**WORK HAZARDS IN INDUSTRIAL ENVIRONMENT IN GENERAL WORK**

Hazards can have negative effects at the workplace for worker and company productivity.

Types of workplace hazards include chemical, ergonomic, physical, psychosocial and general workplace planning.

**1. Chemicals**

Chemicals at the workplace can range from cleaning products to chemical production. When chemicals are not used, stored or handled properly, they can cause injury, illness, fire or even explosions at the extreme.

Ways that chemicals can harm workers can include contact with the skin, inhalation or ingestion; the impact can take place immediately or overtime over prolonged exposure.

One way to **prevent** chemical hazards from negatively impacting your workplace, ensure all workers and supervisors are property trained.

**2. Ergonomic**

Ergonomic hazards are present in work environments from offices to construction sites; this includes injuries or strains from repetitive strains, strains from lifting/pushing/pulling, standing, shiftwork or slips and falls.

Ways to **manage** ergonomic hazards include making sure that workers have the right equipment and tools to do their jobs comfortably, designing the workplace to be more ergonomic, and empowering workers to perform exercises or stretches to prevent musculoskeletal disorders.

**3. Physical**

Physical hazards are substances or activities that threaten your physical safety such as conditions that can cause injury, illness and death. The most common physical hazards are temperature, air quality, mould, noise or radiation.

These hazards are particularly relevant for workers who work in industrial environments, such as in oil and gas, mining, construction and more.

In these environments, companies, supervisors and workers need to work closely together to manage the risks. Companies must ensure the right equipment, monitoring and training is provided, and workers have to proactively communicate with each other.

**4. Psychosocial**

Psychosocial hazards are stress, violence or bullying in the workplace environment. This can involve how workers interact with other workers and/or emotional responses workers have that negatively impact a worker’s productivity or effectiveness.

Companies should have resources or a department that workers can contact if they are experiencing stress, harassment or other concerns.

Supervisors and managers should have regular meetings with workers on a one-on-one basis where workers can voice their concerns.

**5. Workplace**

Workplace hazards include confined spaces or ventilation, temperature, or heights and particularly apply to work environments in oil and gas, mining, construction or other industrial environments. Environments with persistent safety hazards should require detailed safety planning and may even require emergency response teams to be on standby. Workers in workplaces with an abundant amount of hazards should get regular safety training, have strict safety procedures and regular training drills.

No workplace is completely hazard-free, and industrial environments are particularly risky. However, it’s in the best interest of the employer, supervisors and workers to keep everyone safe and healthy.

**Physical hazard**

A physical hazard is an agent, factor or circumstance that can cause harm without contact. Can be classified as type of occupational hazard or environmental hazard. Physical hazards include ergonomic hazards, radiation, heat and cold stress, vibration hazards, and noise hazards. Engineering controls are often used to mitigate physical hazards.

Physical hazards are a common source of injuries in many industries. They are perhaps unavoidable in certain industries, such as construction and mining, but over time people have developed safety methods and procedures to manage the risks of physical danger in the workplace. Employment of children may pose special problems.

**Falls**

Falls are a common cause of occupational injuries and fatalities, especially in construction, extraction, transportation, healthcare, and building cleaning and maintenance. Circumstances like floor holes and wall opening, misused fall protection, slippery, cluttered, or unstable walking surfaces, unprotected edges and unsafely situated ladders associated with occupational fall injuries

**Machines**

Commonplace in many industries, including Machines are manufacturing, mining, construction and agriculture, and can be dangerous to workers. Many machines involve moving parts, sharp edges, hot surfaces and other hazards with the potential to

crush, burn, cut, shear, stab or otherwise strike or wound workers if used unsafely. Various safety measures exist to minimize these hazards.

**Confined spaces**

Confined spaces also present a work hazard. The National Institute for Occupational Safety and Health (NIOSH) defines "confined space" as having limited openings for entry and exit and unfavorable natural ventilation, and which is not intended for continuous employee occupancy. Spaces of this kind can include storage tanks, ship compartments, sewers, and pipelines. Confined spaces can pose a hazard not just to workers, but also to people who try to rescue them.

**Noise**

Noise also presents a fairly common workplace hazard: occupational hearing loss is the most common work-related injury.

**Temperature**

Temperature extremes can cause a danger to workers.



Cold Stress

Overexposure to freezing conditions or extreme cold can result in a risk to many workers. Employees who work outdoors in the winter months such as fishers, hunters, divers, hydro and telecommunications linemen, construction workers, transportation workers, military personnel, emergency response workers, and those work in the refrigerated warehouse are especially vulnerable to cold.

Effects of extreme cold working conditions include:

◦ Nonfreezing injuries – chilblains, trench foot

◦ Freezing injuries – frostbite and frostnip

*Hypothermia*

◦ Lower work efficiency
◦ Higher accident rates
◦ Impaired performance of complex mental tasks
◦ Reduced muscular strength and stiffened joints
◦ Reduced mental alertness
◦ Impaired manual tasks because of sensitivity and dexterity of fingers

Use of personal protective equipment such as insulating clothes, gloves, boots, and masks, radiant heaters as a part of engineering controls and safe work practices are **used to minimize the risk of cold injuries.**

Heat stress

Workers who are working in laundries, bakeries, restaurant kitchens, steel foundries, glass factories, brick-firing and ceramic plants, electrical utilities, smelters, and outdoor workers such as construction workers, firefighters, farmers, and mining workers are more vulnerable to exposure to extreme heat.

Effects of heat stress include:

◦ Increased irritability
◦ Dehydration
◦ Heat stroke

◦ Chronic heat exhaustion
◦ Cramps, rashes, and burns
◦ Sweaty palms and dizziness
◦ Increased risk of other accidents
◦ Loss of concentration and ability to do mental tasks and heavy manual work

◦ Sleep disturbances, sickness, and susceptibility to minor injuries

Engineering controls such as air conditioning and ventilation, training to build up a level of tolerance to work in extreme heat conditions and use of cooled protective clothing can help to reduce heat-related illnesses.