Lecture 13

Introduction To Construction Health and Safety

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Outline

- Review Lecture 12
- Definitions
- Situation On Construction Site
- Types of hazards
- Types Of Accident Measurements
- Personal Protective Clothing And Eqiupment
- Causes Of Construction Accidents
- Reasons And Benefits To Improve Health And Safety In Construction
- Responsibility
- Costs Of Accidents Direct Costs And Indirect Costs
- Impact of overall performance

Definitions

- Safety is free from risk and danger.
- Accidents is defined as an unexpected and desirable event resulting in damage or harm.
- Hazards is an unsafe condition or activity, that if left uncontrolled can contribute to an accident.
- Risk is the assessment of ’probability of loss’ and ’potential amount of loss’.

Situation On Construction Site

- Construction work is dynamic and diverse.
- Multiple contractors and subcontractors
- Unskilled laborers
- Constantly changing relationships with other work groups
- Diversity of work activities occurring simultaneously
- Construction workers are at risk of exposure to various hazards and risks

Types of hazards

- Chemical
- Physical
- Biological
- Ergonomic

Chemical Hazards

Chemicals can exist in the form of

- dusts, fumes, fibers (solids)
- liquids, mists
- gases, vapors

Examples of chemical hazards found in construction work:	• asbestos • lead • silica • welding fumes • spray paints • cutting oil mists

Physical Hazards

Physical hazards are different types of energy which may be hazardous to workers.

- Noise
- Vibration
- Temperature extremes
- Radiation

Biological Hazards

Exposure may occur during demolition, renovation, sewer work, work on air handling systems, or other construction work from contact with contaminated or disease-carrying

- soil
- water
- insects (mosquitoes, ticks)
- bird, bat droppings
- animals
- structures

Ergonomic Hazards

Ergonomic hazards can cause painful and disabling injuries till example Musculoskeletal Disorders (MSDs) . This following situation may causes these injuries:

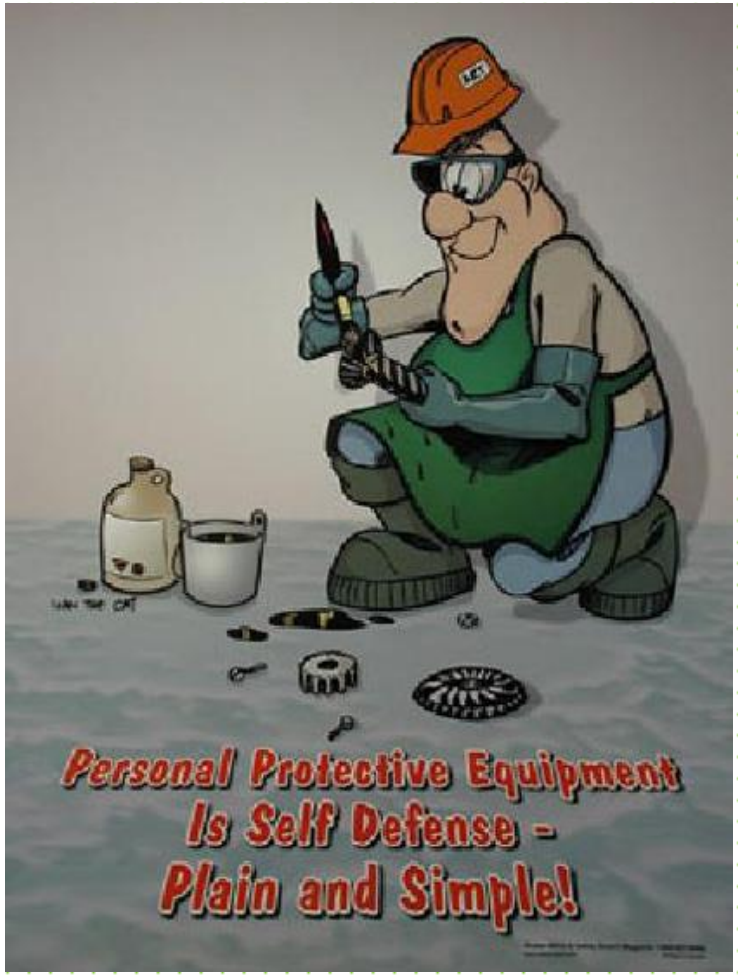
- heavy, frequent, or awkward lifting
- repetitive tasks
- awkward grips, postures
- using excessive force, overexertion
- using wrong tools for the job or using tools improperly
- using improperly maintained tools
- hand-intensive work

Types Of Accident Measurements

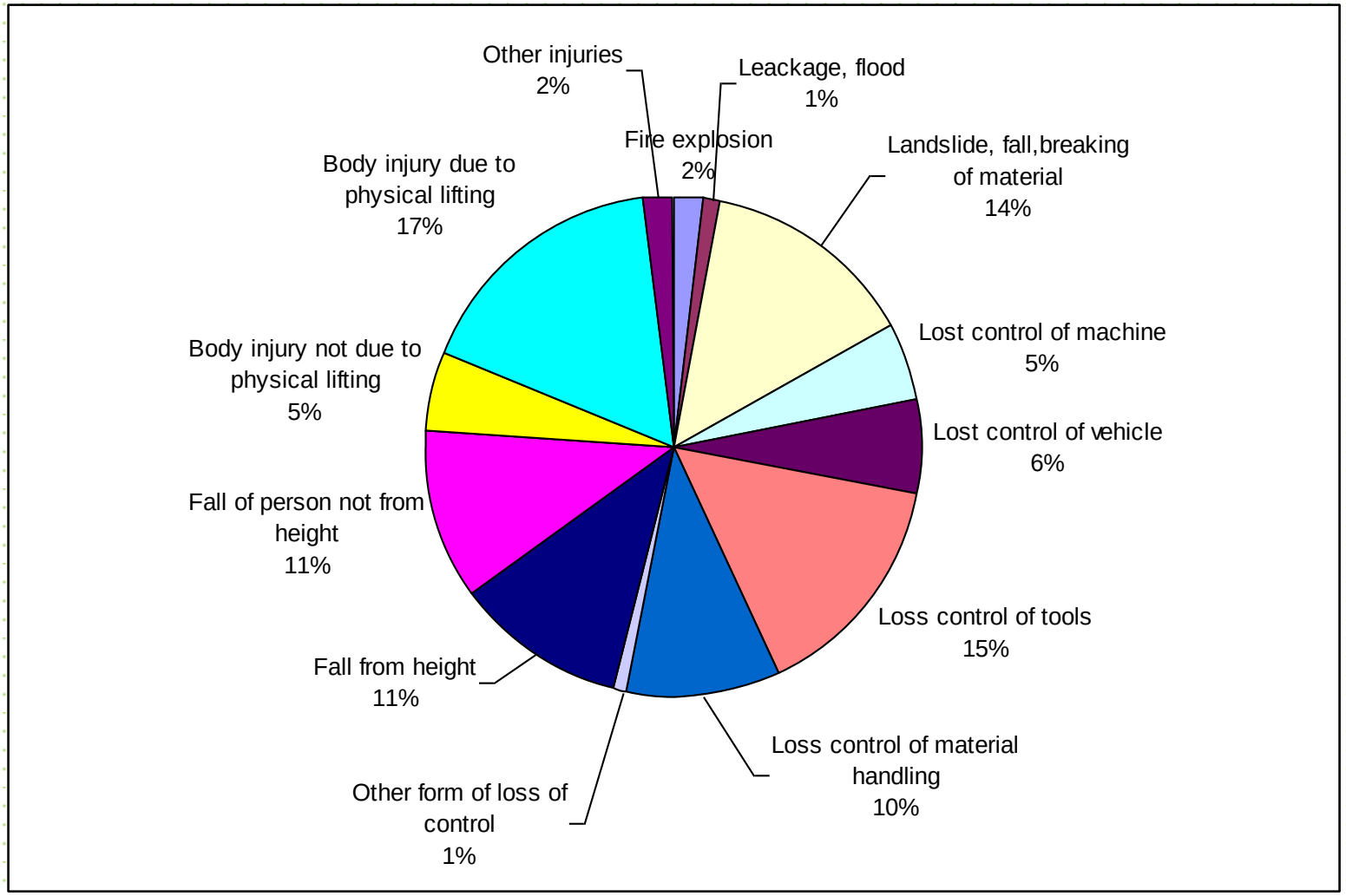
- Death
- Fatal injury (broken leg, hips, amputation)
- Non-fatal injury (finger cut)
- Occupational accidents (MSD, hearing loss)
- Absence from work (>1 day, > 3 days etc)
- Near misses
- Rate per 100 000 – number of injuries or causes of ill health per 100 000 employees.
- Working days lost – days off work due to workplace injuries & work-related ill health

Personal Protective Clothing And Eqiupment (PPE)

- Legal requirements
- Eye protection
- Respiratory protection
- Ear protection
- Face protection
- Head protection
- Hand protection
- Foot protection
- Body protection
- Fall protection



Causes of construction accidents 2006



Samuelson & Lundholm, 2006

Reasons and benefits to improve health and safety in construction

- Responsibility;
- Economic reasons;
- Impact of safety on overall performance;
- Contractor’s performance;
- Control of accident causes.

Responsibility

- Safety is everyone's responsibility.
- It is a moral and legal obligation of employers to provide a safe working place and of employees to work safely.
- Employer's duty of care to employees as covering the following areas:
  - safe system of work;
  - a safe place of work;
  - plant and machinery that is safe to use;
  - competent supervision and/or suitable training; and
  - care in the selection of fellow employees.

Costs of accidents – direct costs and indirect costs

Direct costs

The direct costs are insurance. These include medical costs and others workers' compensation insurance benefits as well as liability and property-damage insurance.

Indirect costs

Below are the lists of indirect costs:

Transportation costs – include the cost of emergency transportation, together with the cost of other personnel that were necessary to get to the injured worker to proper medical facilities

Wages paid to injured worker for time not worked – include all the time in which the worker was not actually doing his or her job and for the wages paid.

Cost incurred because of delays which resulted from accident – other crews affected or delayed; equipment idled; duration of project lengthened; plus all wages, rental fees and indirect supervision costs that occurred as a result of the accident.

Costs of overtime necessitated by accidents – overtime occurred because of the accidents

Loss of efficiency of crew – decrease of crew efficiency due to low morale or reshuffling that might occur to replace an injured worker.

Cost to break in and/or teach replacement worker – hiring new worker would include training and orientation

Costs for clean-up, repair or replacement and stand-by costs – normally accidents involves spillage, cave-ins vehicle damage, material wastage or site clean-up

Extra wage costs, slower returned worker – normally when a worker return to the job site and is partially and/or temporarily disabled, the worker is probably working at a different, less demanding job or less efficient at the former job.

Costs to reschedule work – include time spent to review and reschedule the project due to investigations or project being temporarily suspended by the authorities.

Costs of wages for supervision as a result of the accidents – include all time spent on the accident and its results: caring for the worker's medical treatment, investigation, completing forms, disseminating information, visiting the worker, planning to prevent recurrence, appearance in court

Impact of overall performance

- Time
- Budget
- Accident statistics
- Absentism
- Low morale

Contractor’s performance

- Studies have proved that there is an adverse effect on a contractor’s reputation and unfavourable image for the client when the project suffers high accident rates.

Control of accident causes

- Safety performance measurement enables behaviours and conditions to be identified that have the greatest potential in contributing to an accident.
- It also forms a basis to predict future accident problems and enables management to control the causes of accidents on site and establish long-term accident control.
- These measurement techniques provide continuous information concerning changes in the safety state within an organisation in operation.

How to improve health and safety on construction sites?

- Reactive measures
  - Accident recording & reporting
  - Accident investigations
- Proactive measures
  - H & s safety policy
  - H & s safety programme/plan
  - H & s safety induction/training
  - Tool-box talk
  - Others

Stay Safe Guys!