INTRODUCTION (ch-1).

3. April, 2024

(*) Occupational safety; health and environment Management

OSHEM

↓

① physical
③ mental

Management Components → safety management
→ physical health management
→ environment management

তিনটা interrelated, যেমন environment খারাপ হলে both physical and mental health harmed হয় আর এই জন্য workplace unsafe হয়ে যায়।
আবার workplace unsafe and risky হওয়া মানে environment খারাপ হওয়া — এটা health-কে negatively affect করে।
2types relations in environment: Vertical (Boss+employee); Horizontal (classmate, colleagues)

(*) Improvements, new inventions brought new hazards.

Agricultural Business → (Transformation starts from mid-eighteen century) → Industrial Business → started Harming → people, property, Environment

Effects of Industrial business (Machanization)

① Distributed population → concentrated population [মানুষ বেশি কেন্দ্রিক হয়ে যাচ্ছে]
② Nature-oriented system → Mechanized system [machine বেশি used হচ্ছে]
③ Free life → bound with rules and laws [স্বাধীনতা কমে যাচ্ছে। বেশি industrialized হওয়ার জন্য crime বাড়ছে — control-এ রাখতে ~~bound~~ rules, laws ও বাড়ছে]
④ Easy environment → Critical environment
⑤ Social attitude → Individual attitude [মানুষ selfish হয়ে যাচ্ছে]

⑥ Co-operative concept ⟶ competitive concept
[সব field-এ population বাড়ার জন্য competition-ও বেড়ে গেছে, একজন প্রফেসরের job করার instead-এ একটা job seat-এর জন্য 10-12জন competition করি ইত্যাদি etc.]

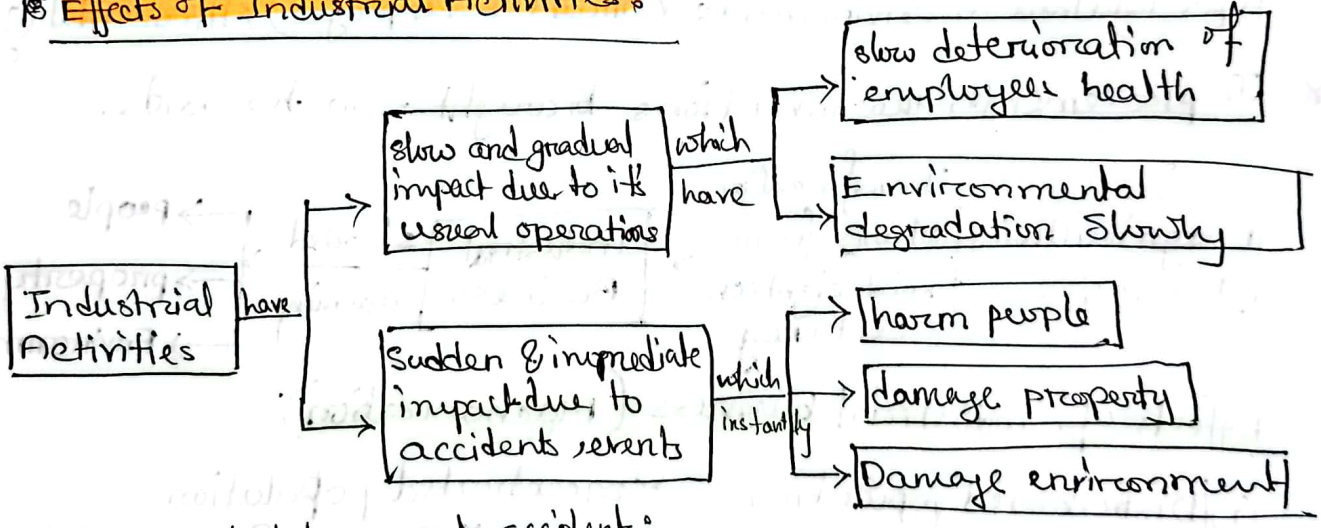
⑦ Hospitality behaviour ⟶ Hostile behaviour
[competition, selfishness বাড়াতে মনুষ্যত্ব লোপ পাচ্ছে দিন দিন। ~~কাজটা~~ কেও কারো দায়িত্ব নিতে চায় না]

15 April, 2024

FAILURE OF MANAGEMENT:

Machines replaced human — now operators need to know how to cope with machines. Serious workplace issues may take place or else.

Effects of Industrial Activities:



3 things needed to prevent accidents:
① physical fitness
② mental fitness
③ intellectual fitness.

KEY CONCEPTS:

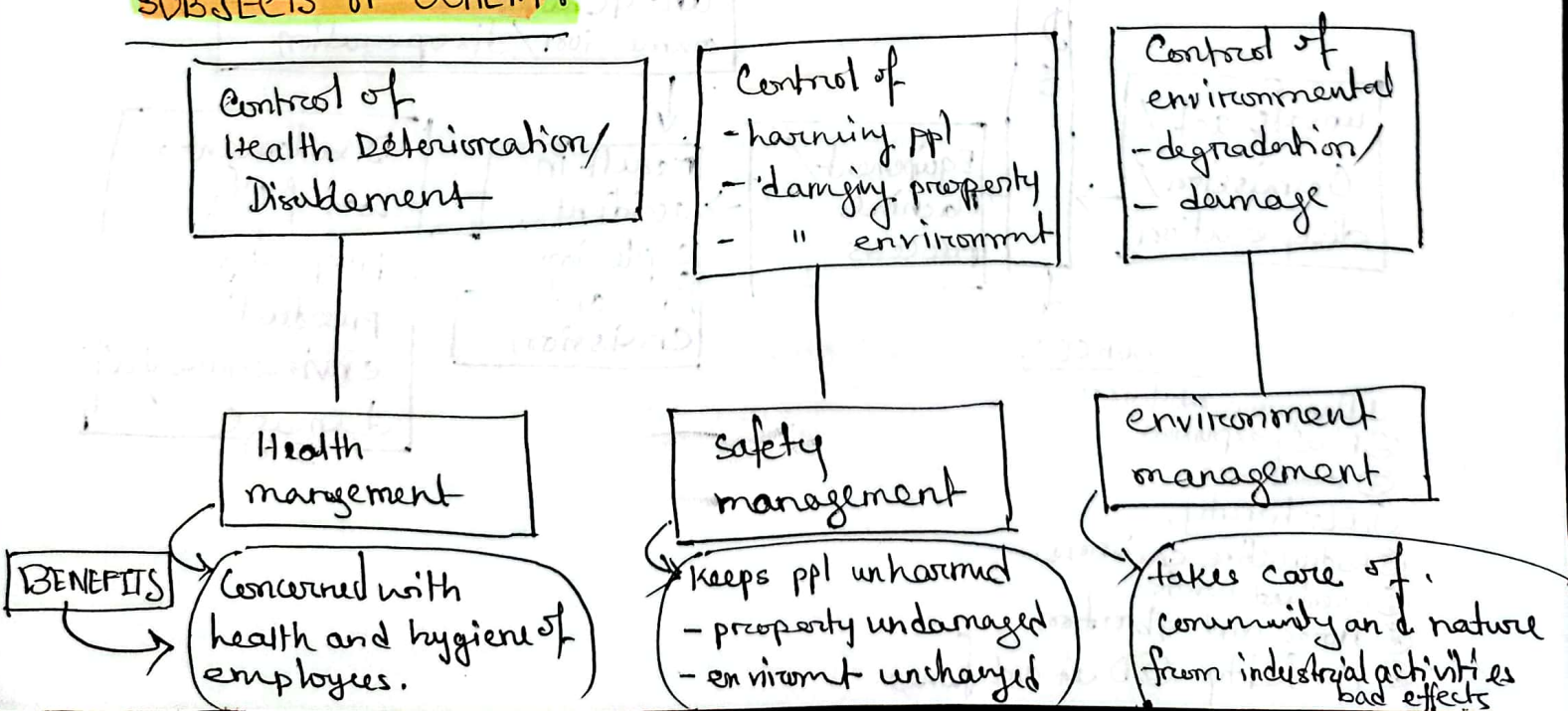
① Occupation: management of an individual — position earned by means of survival by his/her manual or intellectual service.

② Occupational safety: Employees must be aware of hazards growing with technology development and acquire ability to eliminate or handle them. ~~to avoid~~ They must not lack in proper knowledge, education and traing for operating the advanced new equipments, machines and processes to ensure the safety of workplace and others.

③ Occupational health: keeping the working conditions in such a CONGENIAL state that the workers do not fall to legal compensable illness. or out of lost time, or free from discomfort of working place. Longtime adverse working place will get employees sick.

④ Occupational environment: means working condition → related to health + safety of employees.
Relationship btw · living + non living · compartments around the industrial environment
In case of normal operation – effets are slow
" " " accidents – effects are immediate + wider + longer.

SUBJECTS OF OSHEM:



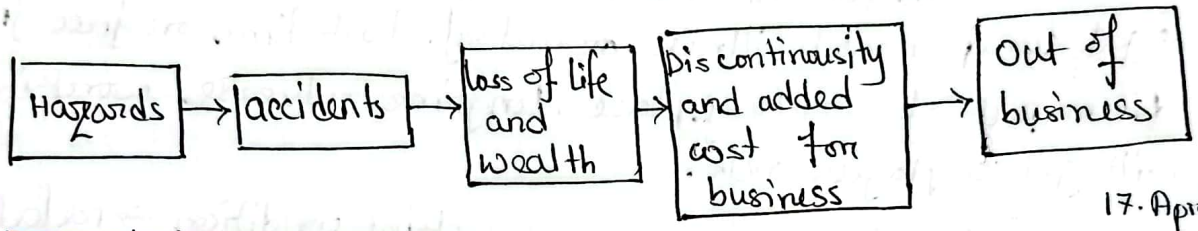
HAZARDS (Chapter-2). 15. April, 2024

↓

মানে risk/accidents/fear.

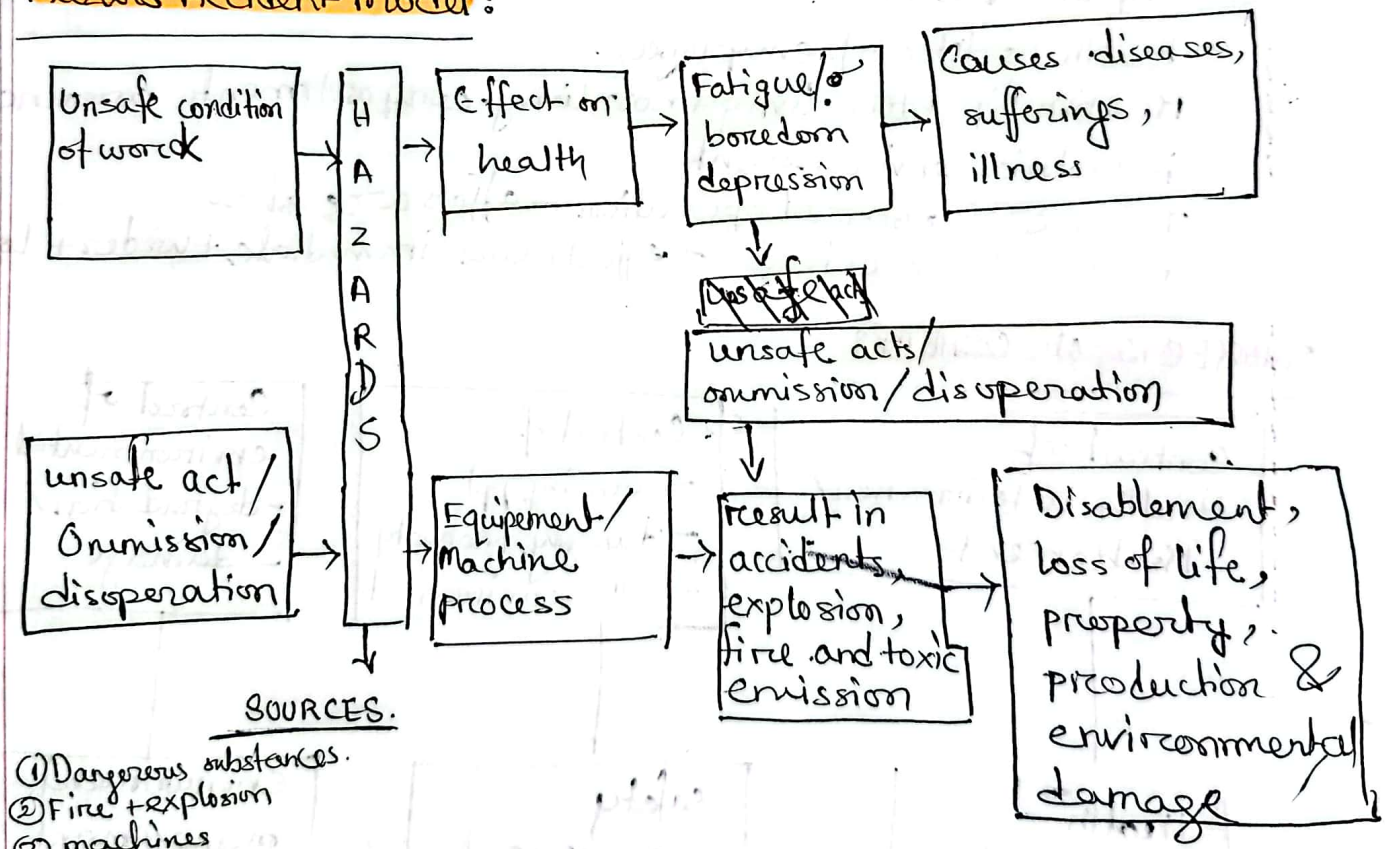
Hazadous → risky.

নতুন নতুন Hazards produce হচ্ছে with the advancement of technology. Exple— steam powered engine থেকে electricity তে more বিপদ ঘর নতুন hazards আসছে আগের গুলা overcome করে. যেমন combustion engine আসায় নতুন hazards add হয় এবং বর্তমানে atomic power + radition.....



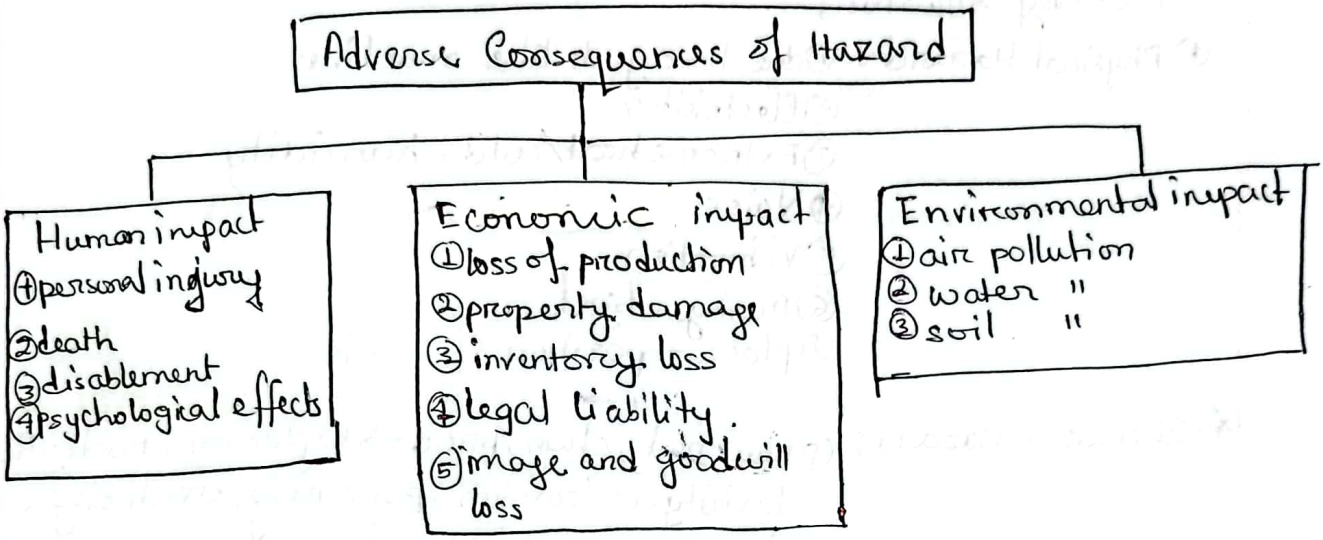
17. April, 2024

Hazard Accident Model:



SOURCES.

① Dangerous substances.
② Fire + explosion
③ machines
④ Electricity.
⑤ Radio active emissions.
⑥ Overhead work
⑦ Noise and vibration
⑧ Humidity ⑨ Dust and fumes



CATEGORIES OF HAZARDS: (in working Situation)

① physical hazards → extreme heat, gas, poor humidity, electricity etc.
② chemical hazards → dye, explosion, toxicity, irritation, oxidization, SO_2, H_2S
③ Biological hazards
④ Psychosocial hazards →
⑤ Human factor failure hazards → exple – AC-র outer part লাগায়
এ যারা দাবিতে ফ্যান বুলে পরে গিয়ে injured হতে পারে

HAZARD CLASSFICATION (4 types) (considering adverse consequences)

① Catastrophic hazards (results in severe illness, death, closure of process/productivity)
② Critical hazards (some death, some injury, property damage)
③ Marginal " (illness, nausea, respiratory problems, mild irritation slight property damage)
④ Negligible " (minore injuries – not so serious, not so serious property damage)

For working situations:

* Physical Hazard: ① due to agents like machines
② Electricity
③ Extreme heat/cold, humidity
④ Noise.
⑤ vibration
⑥ Moving object.
⑦ place – position of work.

* Chemical Hazard: ① raw mat, chem, prod → explosion, radiation, toxicity, corrosion, poisoning, oxidizing, irritation, carcinogenic.
② Agents like: acids, bases, dyes, paint, solvent, dust, gasoline, welding fumes, H_2S, SO_2 chlorine, chromium, lead etc.

* Biological Hazard:
① Bacterias in drains consumes sulfur and release H_2S.
② Viruses, parasites transmitted via animal products – Anthrax, tuberculosis, HIV, Hepatitis B, Bird flu, Mad cow, swine flu etc.

* Psychosocial Hazard:
① working relationship/situational factors create mental pressure.
② Monotony of work, fatigue.
③ Brain fag
④ Irritation

* Human factors failure:
① Human faults, lagging.
② unsafe work practice
③ Ergonomic factors
④ lack of communication + co ordination
⑤ poor training.
⑥ improper manning.
⑦ accident proneness.
⑧ negligence of management.

FPDRI

Probability of Hazard OCCURRENCE

① Frequent : occur virtually every time
② Probable : " most of the time
③ Occasional : " sometimes
④ Remote : very unlikely to occure
⑤ Improbable : no chance of occurence.

Hazard CONTROL

① Identification
② Inventory
③ Ranking
④ Assessing probability of OCCURRENCE
⑤ RANK Assessment
⑥ Elimination/Reduction/control.

Maths:

Hazard Assement Formula:

Rating range = Hazard category rate × Frequency of ocurance

	Frequency of ocurance	Hazard Category			
		Catastrophic 20	Critical 15	Marginal 10	Negligible 3
Frequent	10	10×20 = 200	10×15 = 150	10×10 = 100	10×3 = 30
Probable	8	8×20 = 160	8×15 = 120	8×10 = 80	8×3 = 24
Occasional	6	6×20 = 120	6×15 = 90	6×10 = 60	6×3 = 18
Remote	4	4×20 = 80	4×15 = 60	4×10 = 40	4×3 = 12
Improbable	2	2×20 = 40	2×15 = 30	2×10 = 20	2×3 = 6

(Calculate করবে)

Hazard Assesment Table:

Rating range	Status	Criteria
100-200	Unacceptable	Design chng./modification is must
60-90	Undesirable	Design modification needed
20-50	Conditionally acceptable	May be accepted with change
6-18	Acceptable	Accepted anyway/No need of change

Definition related to Hazards:

* **HAZARD RATE (H):** Rate at which hazards occur.
* **A PROTECTIVE SYSTEM:** A device installed to prevent hazards occurance, i.e. relief valve or high level trip.
* **TEST INTERVAL (T):** Systems should be tested at regular intervals.
  ↳ The time between successive tests.
* **Demand Rate (D):** Rate at which a protective system is called on to act. (exple → rate - pressure to relief valve set pressure)
* **FAILURE RATE (F):** The rate at which a system develops faults. most failures are random.

Maths from PDF:

Formulae: Fractional Dead Time (FDT) $= F \times T/2$

Hazard rate $= D \times FDT$

Example-1

Given, $F = 0.1/\text{year}$

$T = 1$ year (checked once a yr)

$D = 10^4/\text{year}$

$FDT = F \times T/2$

$= \frac{0.1 \times 1}{2} = \frac{0.1}{2}$

Hazard rate $= D \times FDT$

$= 10^4 \times \frac{0.1}{2}$

$= 500/\text{year}.$

Example-2

Given, $F = 1/2 \text{ years} = \frac{1}{2 \times 365} = \frac{1}{730} \text{ days}.$

$T = 1$ week in once every 2 years.

$= (7 \times 0.5) \text{ days} = 3.5 \text{ days}$

$D = 1/\text{year}$

$\therefore FDT = 3.5 \times \frac{1}{730} = 4.79 \times 10^{-3}.$

$\approx 0.005/\text{year}.$

Hazard rate $= 1 \times 0.005/\text{year}$

$=$ ~~200~~ Once in 200 years

ACCIDENT

ACCIDENT: An event that damaged property, environment or injured personnel. It is unplanned, uncontrolled, action-reaction of objects, radiation results

4 ELEMENTS: (which? action-reaction-? accident ???)
- HUMAN activities
- Equipment/machines
- materials/substances
- Process/System

Results in → loss/harm of life
→ property/environment damage

CAUSES:

The Domino theory: developed in mid 1920. (most accepted theorem) about Accident prevention.

Shows → Industrial injuries results ONLY from accidents.

Accidents are directly caused :- ① Unsafe acts of persons.
② Exposure to unsafe mechanical conditions.

Unsafe actions and conditions are caused due to a ~~human~~ person's fault.

Faults of a person is created by environmental or acquire by inheritance.

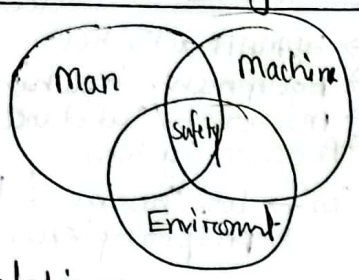
"Accidents do no hapen – it is caused" – Mr. Heinrich (US safety expert)

Analysis on 75000 accidents: 88%. (unsafe acts)
10% (" work condition)
2%. (beyond human control)

Unsafe Acts WHY?
→ ① Ignorance
② Carelessness
③ Over confidence
④ Inherited shortcomings

Unsafe work condition WHY?
→ ① improper work environment
② No safe work procedure.
③ No safety regulation.
④ Improper plant layout
⑤ Lack of safety equipments
⑥ No safety protection system in the plant operation.

Basic element of Accident:



3 relations:

(1) Man to Man:

Worker's/staff's relationship → with his → -Manager -Supervisor -Peers -family -neighbour → if not proper will make → Psychological impact/depression

accident ← result in ← unsafe act ← will do

Remedies:
- bi lateral agreement
- prompt dues payment
- workers participation in decision making + implementation
- welfare measures (insurance, housing ... etc)

(2) Man And Machine:

Relationship with working machine equipment tool & power source → if not proper due to →
- physical fitness
- mental "
- technical knowledge
- machine/equipment requirements
- Process Operation knowledge
- awareness
- Training

will cause → unsafe act/ condition of work → result in → Accident

Remedies:
- proper selection of manpower
- proper consideration of transfer/ promotion
- periodical fitness & attitude test
- procure quality of machines + equipments
- Condition monitoring
- data processing, periodic maintenance.
- reliability of equipment

③ Man & Environment :

Relation of worker with environment if not proper because of

- unfavourable noise, heat, sound, light
- humidity, machine & guarding
- no safe procedure of work.
- no incentive plan/punishment
- no cleanliness attitude
- no insurance
- hazardous/risky materials products
- no safety regulations or culture.

Accident → results in → unsafe acts and unsafe condition of work → will make → (- exhaustion, - fatigue, - boredom, - carelessness, - disregard to safety, - rules, - risk) → will results in ...

Remedies :

- Analyze Piping & Instrumentation diagram, process flow diagram, plant layout, machines etc.
- proper selection of manpower
- proper work place, condition of environment
- Frame safety rules.
- make safety ~~adults~~ audits + review
- Grow cleanliness attitude + safty culture.

Implications of accidents : (loss)

Economical loss :

1. Production loss (repair - সময় time লাগে তাই)
2. machinery damage (ভেঙে যায় - নষ্ট হয়)
3. Costly product remains (আবার ফিনা লাগে)
4. Wage + utility loss. for idle time.
5. Compensation for injury/death
6. loss of manpower due to serious injury/death.
7. Cost of adding new manpower.

8. Cost of training new people
9. Extra investment for recovery.
10. Insurance premium gay high.
11. Loss of fame of orgnization.

Social Loss:

* দুর্ঘটনা unemployed হয়ে গেলে লোকজন অতিরিক্ত হয়
→ 1. undesired shutdown = unemployment
2. Disabled person → burden to his/her family.
3. Source of earning of the family — ceased.
4. Higher product cost and general consumers have to pay this extra cost.

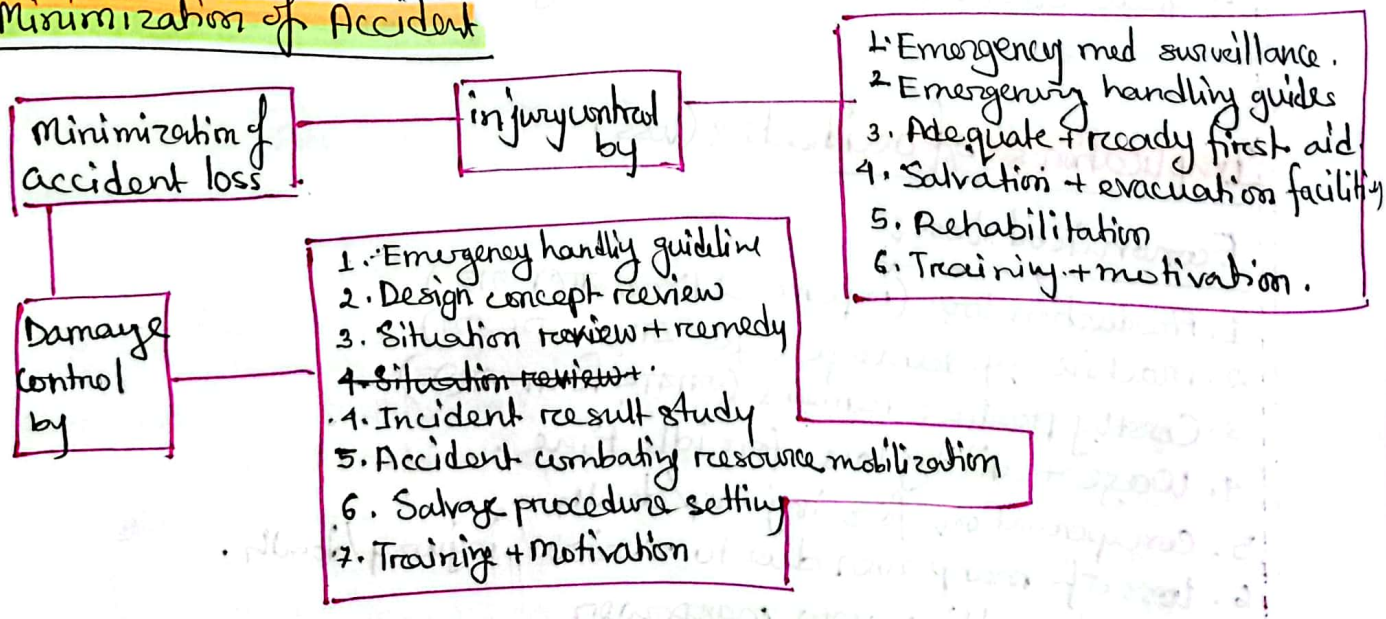
Legal loss:

1. Injured/death-হওয়াতে worker-রা একত্র হয়ে protest করতে পারে
2. Employent of the dependant

Psychological loss:

1. Workers morral goes down due to serious injury or death of colleague
2. Relation btw employee and manegment becomes strenous.
3. Mistrust btw workers & management.

Minimization of Accident



SAFETY MANAGEMENT.

Basic : Earlier Agricultural society but now mechanized so hazards + accidents → thus safety is a major issue.

WHAT is Safety?

① Safety of a person : minimization of contact between human and hazard.

② Safety of the plant : · safe operation of all equipment, safe activities of working persons, safe storage of raw materials + products.

③ Safety Refers to guidelines and efforts to keep people unharmed, secure assets, to have uninterrupted productions & to protect environment.

Importance of Safety:

① Moral/Ethical :
- Employees + management are integral part of organization
- It should be a part of morale and responsibilities of authority, employees and management to feel for each other and safeguard themselves from hazards.

② Legal :
- govt has introduced laws and acts for safty of citizens working in industries + enterprises.
- govt agencies impose + monitor the rules.
- " " fine on unsafe activities.

③ Financial :
- No safty → accidents, loss of property assets, medical expense, employee compensations, downtime of production. — huge investment.
- Its better to invest in effective safety programs that frequent accidents.

④ Corporate Reputation :

- safe & uninterrupted business ensures steadiness & peace of organization + confidence in consumers, stakeholders, employees.
- Reputation + image damage will lead to loose place in market.

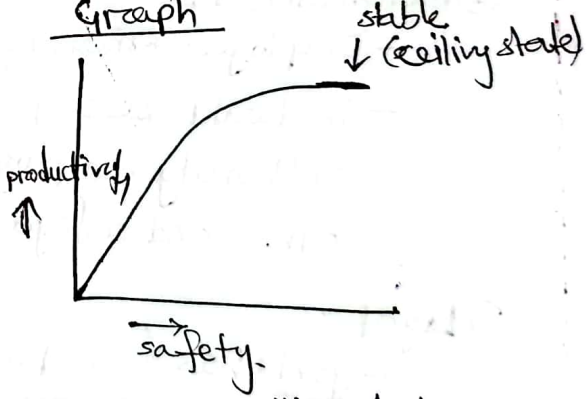
⑤ Buyer's Requirement :

- Buyers have conditions for safeworks for manufacturing their products.
- If those aren't fulfilled market-loss happens. (Ex (square-pharmacy —)).

⑥ Safety promotes Productivity :

- uninterrupted production
- people moral stay high
- no unplanned shutdown
  ↳ no production loss
- better labour management

Graph



একবার stable-ceiling state-এ reach করার পর training off করে দিলে নেমে যায়।
That's plateo of learning.

আরো ভাবা হতো বেশি জানলে labour-রা কাজ করবে না - so safety training দিত না। বেশি safety measures expose করলে protest ও করতে পারে - যার যার safety-র দায়িত্ব তার তার ছিল।

Recent developments : - "Human factors" / "behavioral approach".

① Managerial position-এ যারা - safety তাদের দায়িত্ব
- setting goals
- planning
- organizing
- motivating
- implementing
- monitoring - etc.

② Certain ঝুঁকির activities চিহ্নে avoid করব, as :
- unusual / non routined.
- non productive.
- construction + unscheduled maintanence.

③ Proactive approach → root cause খুঁজা
→ possible accidents-এর knowledge gather.

④ যা হয়ে যাওয়া কিছু যাতে আর না ঘটে।

⑤ 3 essential elements of employee safety system :
1. Physical. (equipments, tools, machines, personnel, facilities, office must be reliable and safe)
2. Managerial Cultural. (safety culture ensure, practice, training, plans etc)
3. ~~Cultured~~ Managerial (যে যেই level-এ আছে সেই level থেকে monitor করবে + committed থাকবে + positive attitude রাখা).

⑥ No single correct ways but some aspects :
1. Involve supervisors + make them accountable
2. " management at all levels
3. Seniors " must show commitment.
4. Be flexible.
5. " positive.

Safety Aspects: Where to stand?

Management এর decision নেওয়ার ক্ষেত্রে "ECONOMICS" is first priority → told by Peter Ducker.
Safety management can be justify its existence + authority only by economic results.

Intention: successful financial performance +
desires to save life, property & environment with efforts.

Efforts to eliminate potential hazards but সব hazards সরানো possible না so minimize করা যায় (or control) by ↓

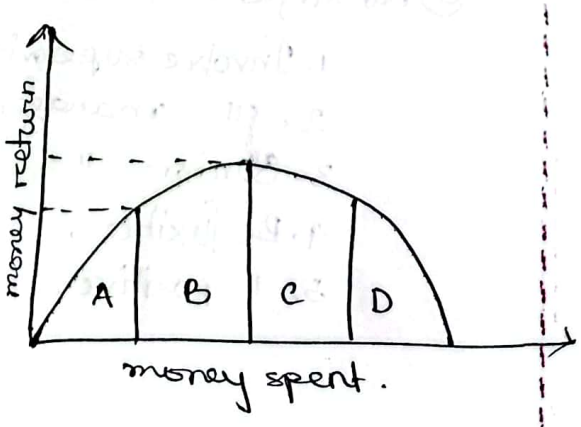
- * good design
- * reliable procurements
- * proper installation
- * expert operation
- * justified maintenance
- * modifying plant installing more safety devices.

Again product cost, economic liabilities ~~is~~ ~~are~~ increases this way
Better safety management - সব ভালো - plant may operate at lower maintenance + compensation etc.
Thus safety measures has both positive + negative implications.

A graph of relation between money return/profit of business and money spent on safety guides us to a safety program.

Investment in safety is Good.

(A) When plant has no safety measures:
- puts efforts in implementing safety program which returns good money to bussiness.
- major accidents বন্ধ হয়ে ok বাঁচিয়ে ~~is~~.



(B) Investment in safety is prior to business

- আরও accident prevent করতে invest করতে থাকলে খুব একটা return rate বাড়বে না
- Curve is not being steeper like before
- হয়তো ঠিক বাঁচানো সম্ভব but not so much like the invested amount.

(C) Bad business but Good Humanity

- Accident loss prevention will not return investment for safety
- but sometime safety is prior than business
- Not hurting people is important
- company do not ~~want~~ expect that investment back.

(D) Results in "out of business".

- safety - তে খরচ করতে করতে main business - এর কথা ভুলে গেছে।
- thus - no profit = organization closure

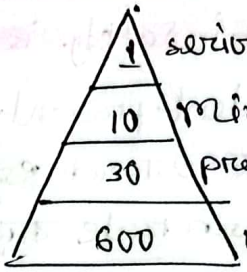
Thus, reasonable return should be considered too.

Safety Management Definition:

Defined as a concern for ① safe equipement, ② process and layout design, ③ safe work methods design, ④ recruitment and retaining of competent employees, ⑤ promotion of safety awareness from an individual and organizational stand point, ⑥ education in safety at all levels in the org, ⑦ managerial & financial support for the moral and ethical responsibility that underline any successful safety programs.

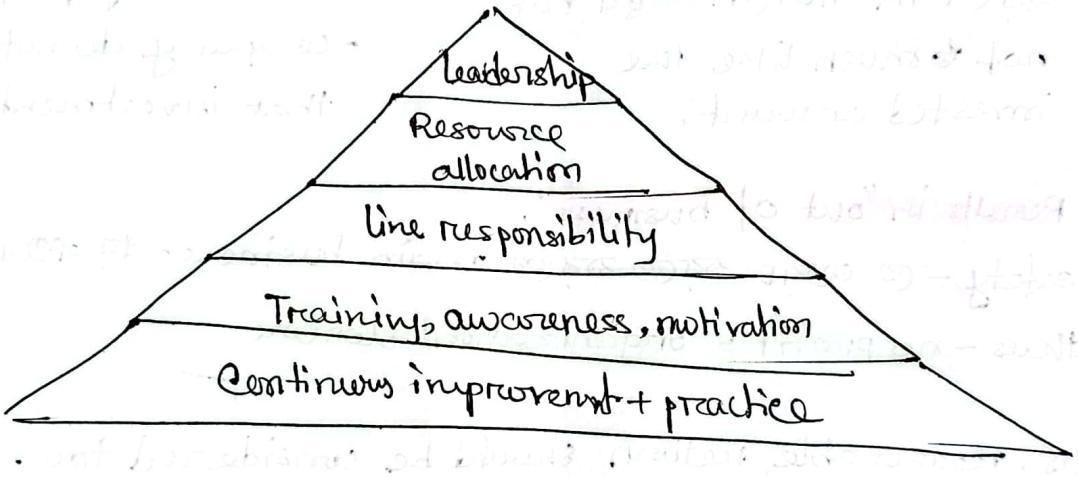
আরও term আছে → accident prevention, loss prevention, loss control, safety engineering.

Minor accidents alarms, major accidents arrival. by a safety Triangle.



1 serious/disabling injury.
10 minor injuries
30 property damage
600 no visible injury/damage

(5)
(*) Elements and characteristics of safety management:



Chapter-23 Occupational Health management

multidisciplinary approach:

(i) recognition: মানুষ অসুস্থ হলেই যাবে মেনে নেওয়া
(ii) diagnosis:- কি হইছে
(iii) treatment: ওষুধ, চিকিৎসা সুযোগ দেওয়া
(iv) prevention: রোধ করা
(v) control disease: বাকিদের যাতে না হয়

Aim/Obj/purpose :

① **Prevent communicable disease :**
- ছোঁয়াচে রোগ : TB, typhoid, viral HB, amobiasis, intestinal parasites, dengue, malaria, venereal etc.
- must have adequate immunization program.

② **Environmental Sanitation :**
- hygienic water supply for both drinking + utility purpose.
- balanced food, toilet
- general plant cleanliness
- sufficient space
- proper lighting, aeration, humidity, temp.
- If possible housing too.

③ **Mental Health :**
- promote health + happiness.
- detecting emotional stress.
- offer relief :
- treatment.
- rehabilitation

④ **Measures for women + children work :**
- avoid tough + tedious work
- restricted working hrs
- maternity leave
- " facilities.

⑤ **Health Education :**
- basis health need.
- all levels of managing need setting
- supervisory staff, worker, trade union leaders etc সবার জানতে।

⑥ **Family planning :**
- Smaller = better.
- a decisive factor for the quality of life.

Prevention of occupational diseases.

*Medical measures:

① **Preplacement exam:**
- must take physical, pathological radiological, electrocardigram vision test of employers.
- যারা fit না must be rejected.
- promotion-transfer - এর time - 3 বছর পরপর test.
- a benchmark to compare with future health deterioration

② **Periodic exam:**
- periodic checkup helps in early detection.
- periodic checkups depends on exposure of occupation
- frequency + content
- যারা ordinary will have once a year checkup.

③ **Medical + Healthcare service:**
- basic service
- need adequate first aid.
- immunization is needed too.
- need insurance schemes from companies.

④ **Notification:**
- initiates measures for prevention + protection
- effective application of laws
- helps to investigate working condition that has caused disease

⑤ **Supervision of working environment:**
- periodic inspection will provide info on preventions
- physician must visit themselve frequently
- check + monitor: light, noise, temperature, sanitation etc
- also must check — fatigue, night work, weight carry etc.

⑥ **Maintenance and analysis of records:**
- helps in decision making + planning.
- must collect health records of who retired or left services.
- enables to assess hazards which have long term effect.

⑦ **Health education & counseling:**
- কাজ করার আগে health education দেওয়া নিতে হয়।
- Risks + protective measures must be explained.
- Must use charts, handbills, posters for awareness.

* Engineering measures:

① **Plant layout & design:**
- main factors of safety + health: Civil structures, machine, equipment, tools etc.
- proper space, ventilation, floor condition, lighting, aeration, machine guarding, cleanliness, use of safety gears.

② **Good house keeping:**
- Equipment, tools etc must be kept systematically and orderly. so less time and effort needs to use it.

③ **General ventilation:**
- Each worker should have a minimum 5sqft. ventilation opening. for air to pass.
- Must have 500 c.ft. of air space for each worker.

④ **Local exhaust ventilation:**
- to ventilate dusts, fumes and other substances.
- Harmful matters must be trapped by enclosure & extracted at source before any time of contamination
- dust can be controlled by water spray at origin.

⑤ **Mechanization and substitution:**
- plant must be mechanized
- replacement of harmful materials by harmless ones. or lesser toxicity.

⑥ **Isolation:**
- critical + offensive operations isolated রাখে করব + not directly ও in contact with employees.
- must be done in absence of staffs on holidays or night.

⑦ **Protective device:**
- protective gears → provide

⑧ **Statistical monitoring & research:**
- reviews at regular intervals.
- collect data
- monitor rate of increase of dose levels of victims.
- research will give disease control program.

*Legislation:

employees are more important than machines.
In Bd we have Labour Act-2006 that is a compilation of:

① Factories act 1965
② Factories rules 1979.
③ Meternity Benefit act 1939
④ Workmen's compensation act 1923, rules 1924.
⑤ Children act, employment 1938, rules 1955.
⑥ Maternity benefit act (Tea Estates) 1950.

Chapter-26 (National OSH of Bd).

Importance of OSH policy:

① ILO-এর মতে 12K workers suffer from accidents.
24K die from work diseases in Bd.

~~② BM worker suffer~~

② Initiatives নিলে preventable, but bd-তে অনেক কম initiatives নেওয়া হচ্ছে

③ অনেক worker-এর risk নিয়ে idea নাই।

④ Deaths, disability etc. worker এর family-তে distress condition এ poverty-তে ফেলে।

⑤ safe working conditions give ~~ease~~ peace, better understanding at work places,

⑥ These prevents unexpected expenses, raise productivity, build business reputation.

⑦ With healthy working condition social justic + sustainable economic growth not possible.

⑧ OSH issues are widely + seriously affecting people.

Objective of OSH policy.

To improve OSH conditions of workers to reduce deaths, injuries, diseases etc.

Role of Stakeholders :-

* **Government :**
  - formulated OSH with others
  - implemented action programs.
  - improve OSH issues.
  - revise National OSH policy.

* **Employers & Management :**
  - ensure legislation compliance.

(BLA) labour act 2006 + Bd national Building Code.

  - provide proper training, instruction, equipment, PPE.
  - establish safe work practices.
  - Form safty ~~committees~~ committees.
  - Carry out activities of OSH,
  - initiatives in formulating implementing

* **Trade Union :**
  - ensure OSH rights and laws.
  - persuade union members to comply OSH
  - participate is training mangemnt
  - set up units to update info of OSH
  - corporate in bipartite tripartite discussions.
  - carry out activities of OSH policy

* **Employees**
  - comply with employer's instruction
  - take personal care
  - take interest in OSH issues
  - apply OSH policy.

26.5.2 Ensuring Competent and Effective Inspection Bodies

Background: The Department of Inspection for Factories and Establishments (Department of Inspection) is the state body with responsibility for enforcing the BLA 2006. There is no state organisation at present responsible for the enforcement of the BNBC 2006. The Boiler Act and Rules are enforced by the Boiler Inspectorate.

Department of Inspection is currently under-staffed, lacks technical equipment, and has very limited transport facilities. In addition, its working practices need to be modernised, and changes made that will ensure that the organisation has the respect of employers and worker organisations.

Proposed Action To achieve this objective, the government will:

- Appoint an expert committee to review the present structure, working practices and facilities of the inspectorates and suggest changes in respect of manpower, work procedure, equipment, laboratories, transport and other physical facilities. This committee should

consider computerisation of the Inspectorate's system of registration and inspection, allowing public access on the internet to completed inspections and investigations. In addition, the committee should consider whether the Inspectorate should develop policies that: priorities inspections in those sectors known to have the most hazards; require inspectors to focus on those issues which can cause the most risk of harm; require inspectors to focus on assisting employers in complying with the law – through the provision of advice and guidance; requires inspectors to investigate all deaths and serious injuries reported to it; requires prosecution to take place when there is evidence that death or serious injury is a result of a criminal offence; and requires it to provide more detailed information of its activities to the tripartite council. The Government may also seek assistance of the International Labour Organisation (ILO) for establishing sufficient and effective inspectorates and regulatory authorities.

- Formulate an incentive scheme for inspectors and other members of inspectorate to ensure proper performance and commitment.
- Make provision for the recruitment of competent people and arrange proper training for them.
- Strengthen record keeping of deaths, serious injuries, health deterioration and catastrophic incidence and will develop of an effective investigation and reporting procedure.
- establish Labour Courts in different parts of the country so that workers and trade unions have access to enforce the OSH obligations.

26.5.3 Development of Sector-based Plans

Background: There are currently no plans or guidance on how businesses in the more hazardous sectors (construction, re-rolling, ship-breaking, rice mills etc.) can make health and safety improvements at the working place, and provide health and safety training to their working force.

Proposed Action: To achieve this objective, the government will work with the relevant stakeholders but in particular professional technical associations (the BUET, Institute of Engineers, Institute of Architects, BMA, Public Health Associations, NGO's etc.), and employer and union representatives in each sector to develop sector plans which will (a) identify specific hazards and risks in each sector (b) practicable technical measures that can be taken to reduce these hazards and risks, and (c) how employers need to change the way they manage health and safety and (d) what health and safety training needs should be provided by employer bodies and trade unions to current workers and new recruits.

These sector plans will be developed on the basis of research into a cross-section of working places in each of these sectors – and will be assisted by the survey work into health effects which has been carried out by the Ministry of Health.

Each sector's employer representatives will take responsibility for the implementation of the sector plan amongst its member employers and set up mechanisms to ensure that the implementation of these plans are monitored. This will include the development of safety manuals relevant to each sector.

26.5.4 Development of Incentive Schemes for Employers

Background: It is accepted that all sort of incentives – financial and non-financial, can ensure that programmes operate effectively and successfully. However, employers at present have few incentives to be motivated towards the improvement of the OSH condition at their business enterprises.

Proposed Action: To achieve this objective, the Government will:

i. amend government procurement policies so that only employers capable of, and willing to, comply with the OSH law are more likely to obtain contracts;
ii. along with other stakeholders establish safety prizes and competitions in different sectors to develop and celebrate best practice;
iii. work with large companies to encourage them to consider the safety practices in their supply chain;
iv. consult with banks and other lenders about whether they can provide improved financial assistance to companies who observe OSH Laws and Practices for Health & Safety improvement;
v. consider a development of tax exemptions for selected safety equipment;
vi. support the development of a local industry able to provide to employers reasonably priced safety equipment and services;
vii. consider whether requiring ISO certification should become a mandatory requirement for certain companies tendering for certain contracts.

26.5.5 Education & Training for Employers and Workers

Background: The Government considers that it is important that employers, contractors and others in control of working places understand their OSH obligations and have access to proper advice and guidance on what actual steps they need to take to comply with them. It is also important that workers are informed about their rights relating to OSH under labour law, and what role they can play to improve the OSH conditions.

Proposed Action: Government may take the following actions as a part of the awareness program:

- celebrate "National Safety and Health Day";
- publicity in the public and private TV channels and other media;
- place billboard in important and relevant places;
- recognise and award best contributors to OSH activities;
- arrange training and motivation of workers and staffs;
- distribute safety & health handouts, policy book, festoons, banners etc in different business occupation and public gatherings;
- include OSH subjects in course curriculum at all levels of education;
- establish in-house training facilities;
- facilitate management staffs for higher education and training;
- engage trade unions and other labour organization about OSH issues.