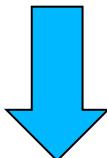




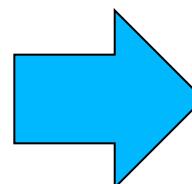
**HAZARD & RISK: e.g.  
SAFETY AND HEALTH  
IN HOSPITALS**



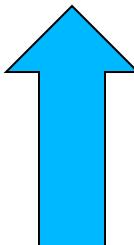
# Hazard



# Exposure



# Risk of Outcome/Effect



# Control Measures



[Return to Safety and Health Topic Pages](#)



**Hospital eTool**

- ▶ [Scope](#)
- ▶ [Site Map](#)
- ▶ [User Guide](#)
- ▶ [Expert Systems](#)
  - [Fire Safety](#)
  - [LOTO](#)
  - [Standards](#)
- ▶ [References](#)
- ▶ [Glossary](#)
- ▶ [Credits](#)

## Hospital eTool

Click on the area for more specific information.



# Hazard Classification

## ■ Physical

- Noise, Heat, Vibration, Ionizing radiation, Pressure, Poor lighting, Electricity

## ■ Chemical

- Solid/liquid/semisolid/gas
- Heavy metal, solvent etc

## ■ Biological

- Bacteria, Virus, Parasite

## ■ Psychological

- Stress

## ■ Ergonomic problem

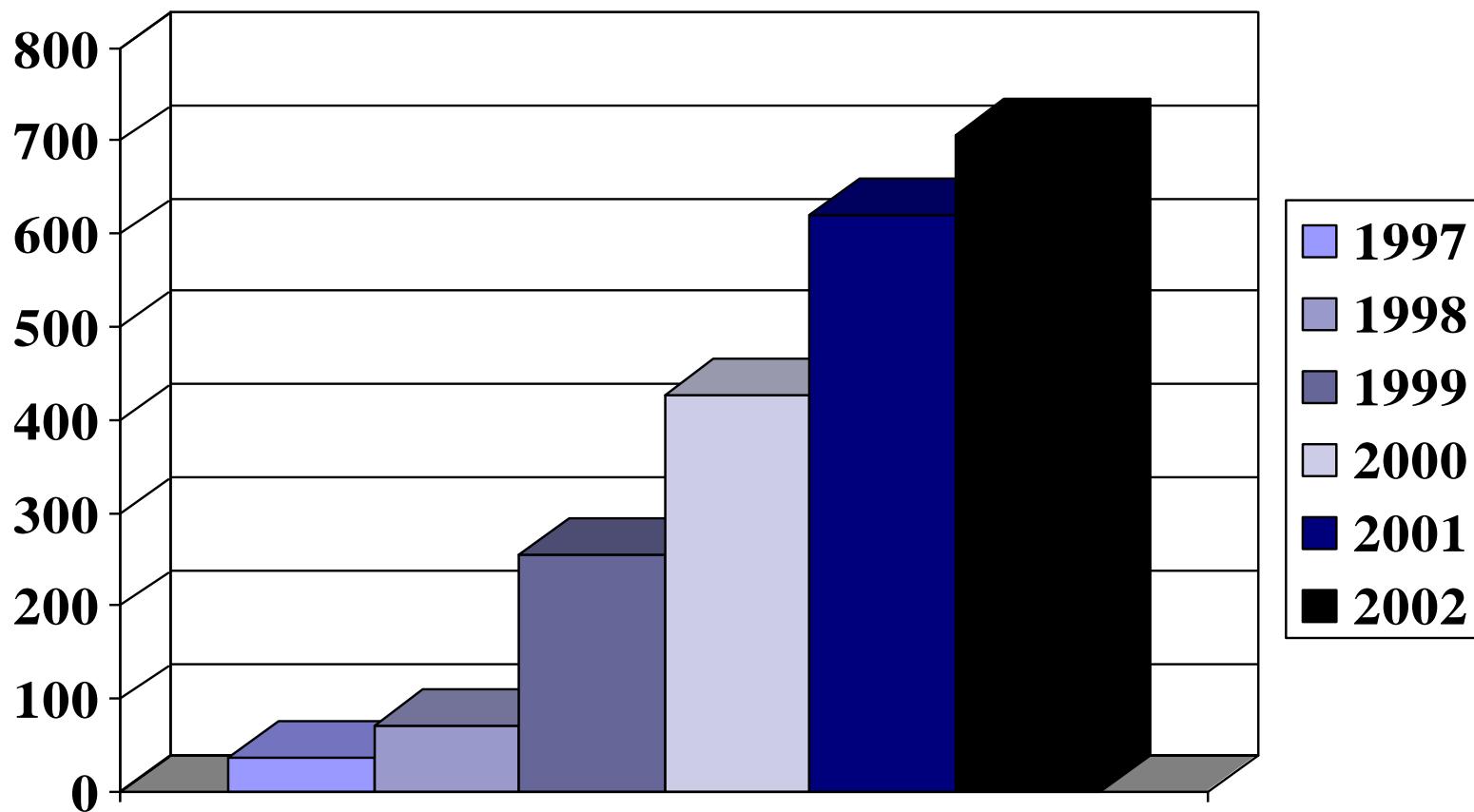
- Lifting heavy object, poor posture, repeated movements



# Biological Hazards

- **Hepatitis B**
- **HIV/AIDS**
- **Tuberculosis**
- **SARS**
- **MERS-CoV**
- **Ebola**

# Needlestick Injuries, MOH (1997-2002)



# INCIDENCE RATE OF NEEDLESTICK INJURIES 2002

CATEGORY	NO OF CASES	NO. AT RISK	INCIDENCE RATE/1,000
DENTAL OFFICER	17	687	24.7
ATTENDANT	31	2,512	12.3
DOCTOR	165	6,836	24.1
MEDICAL ASSIST.	45	4,535	9.9
JM/MIDWIFE	50	6,823	7.3
NURSE	181	21,104	8.5
MLT	9	2,153	4.1





# **Hepatitis B and Health Care Workers**

- Prevalence among blood donors : 1.55% HBsAg positive (45124 screened in 1993)
- Liver cancer - 70% of cases are due to HBV
- Prevalence among HCW are 3-5 times higher than the general population
- Risk associated with :
  - ✓ Higher frequency of exposure to blood, body fluid and contaminated sharps
  - ✓ Longer duration of work- in contact with high risk groups
  - ✓ High prevalence of Hepatitis B among patient



# Severe Acute Respiratory Syndrome

## ■ Issues arise:

- Case management- specific protocols
- Appropriate personal protective equipments: mask, respirators, gowns, gloves
- Efficient ventilation system

# HAZARDOUS CHEMICALS

detergents

pesticides

formaldehyde

pharmaceuticals

toxic  
wastes







2005.01.12

**Designated area for chemical carcinogens**



DERMATITIS DUE TO DETERGENT EXPOSURE



# Case report: Allergic Contact Dermatitis (Latex allergy)

- A trainee staff nurse complained of skin lesion on both hands - worse after using latex glove
- Patch test: positive to latex allergen
- Use alternative glove: latex-free glove



# Physical hazards

- Ionizing Radiation
- Noise
- Vibration
- Heat

# Ionizing Radiation- Results of injury:

- Nucleic Acids: Damaged chromosomes
- Acute effects: damaged bone marrow
- Chronic effects: cancer, thyroid damage, cataracts, sterility, growth and developmental defects, and decreased life expectancy



# Case Report: Noise Induced Hearing Loss

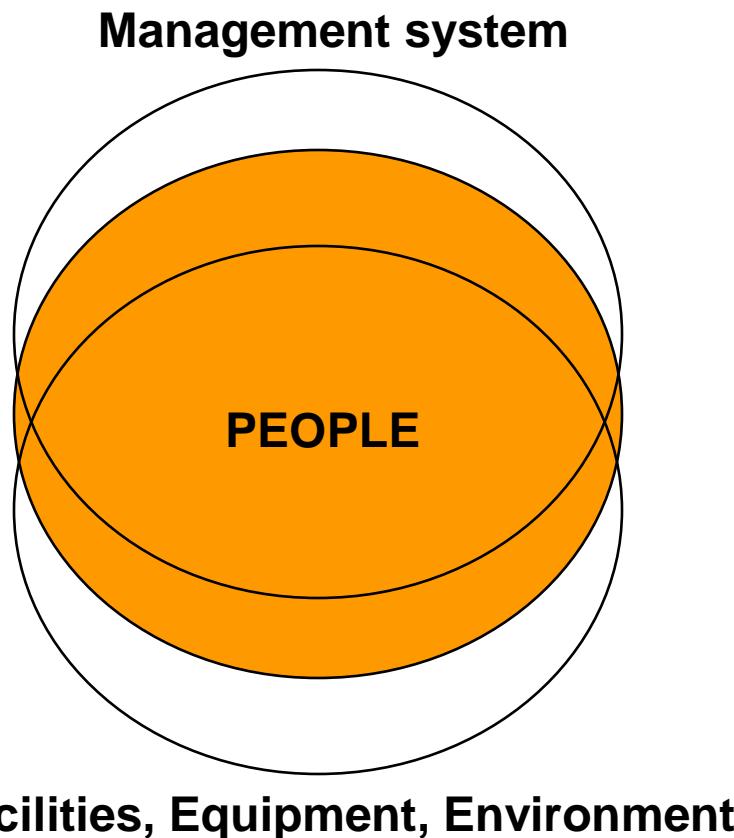
- A 55 year old medical assistant, worked at POP Room & Orthopaedic OT
  - Presented with progressive and marked hearing loss, associated with depression
  - 30 years exposure to noise (85-100 dBA)



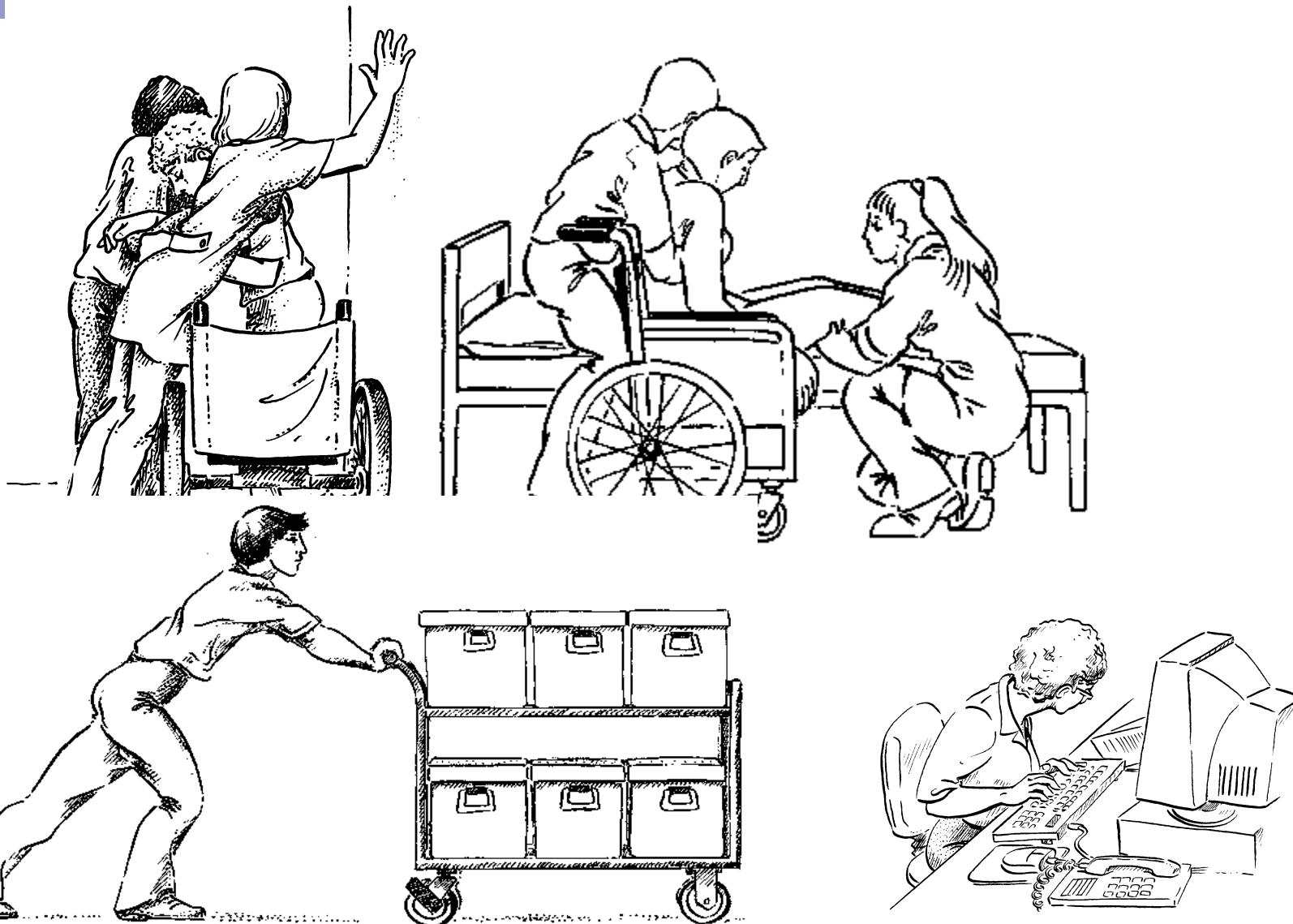
# Ergonomic Problems

- **Lifting heavy objects/patients**
- **Awkward posture**
- **Static posture-prolonged standing**

# Ergonomics: People-centered



- Fitting workplace conditions and job demands to the capabilities of the working population
- Through a process of identifying and controlling job risk factors





2005.01.12

**Rubber flooring for the slope and metal rail**



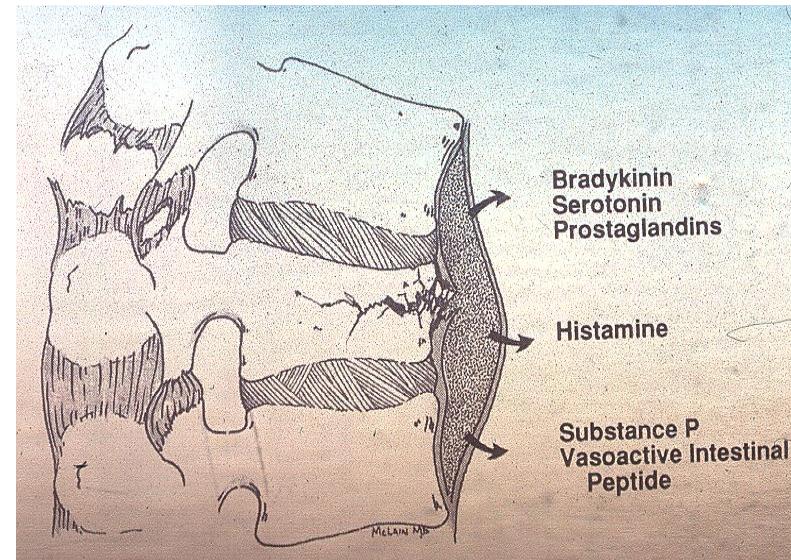
**Congested work stations**



**Non-ergonomic chairs**

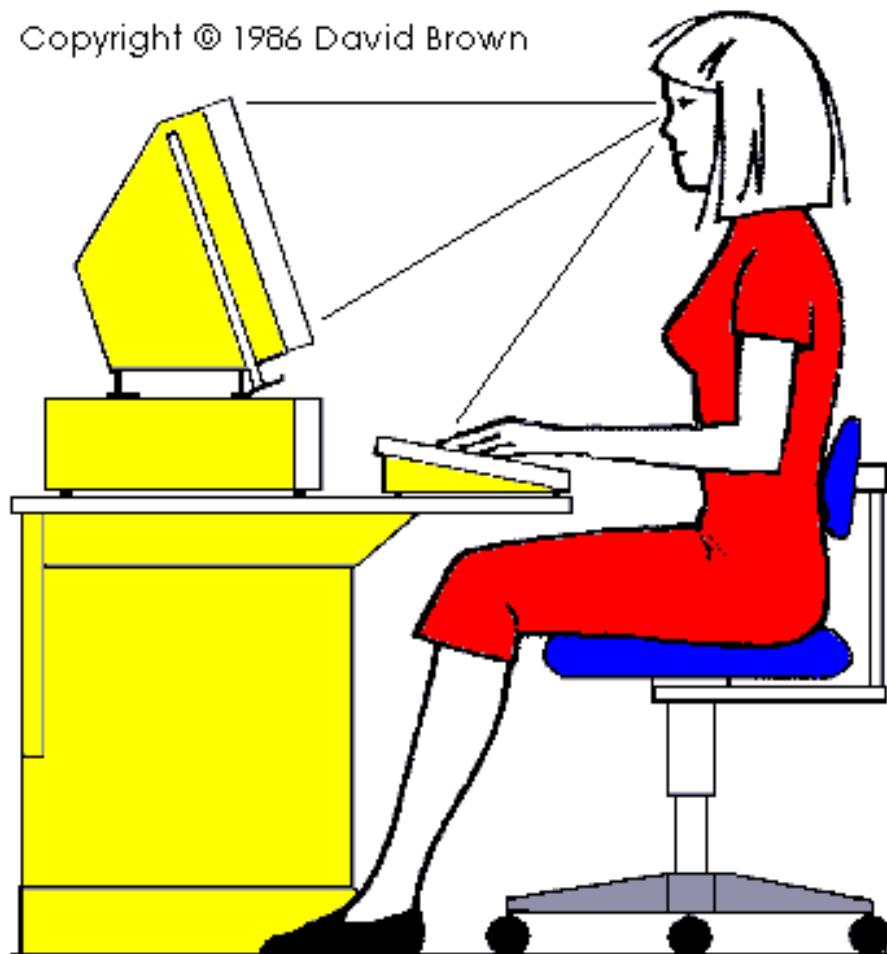
# Case Report: Injury while manual handling

- 55 y.o staff nurse @ Ortho Ward
- c/o: Acute, severe pain at lower back while transferring an obese patient from bed
- Diagnosis: Compression Fracture L1



# Computer Work Station

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- ‘Typing Injuries’
- Eye Strain
- Back Pain
- Psychological Stress



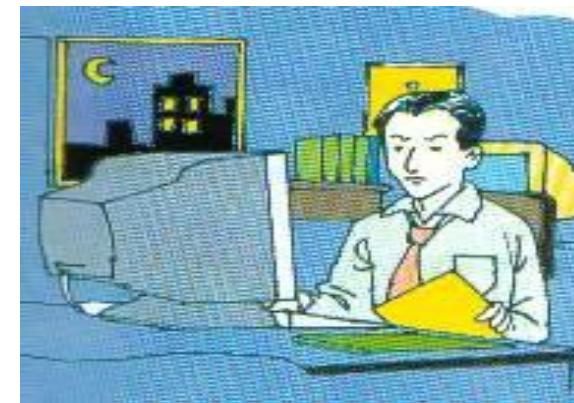


# Psychosocial factors

- Stress
- Depression
- Anxiety
- Burnout
- Shift work

# Stressor at Workplace

- S- Support
- T-Task
- R-Role
- E-Environment
- S-Shift work
- S-Superior
- O-Organization
- R-Reward not sufficient



# Signs of Stress



## ***How you feel (emotion)***

- Anxious
- Depressed
- Angry/frustrated
- Bored

## ***How you think (cognition)***

- Poor concentration & memory
- Poor organization and decision making
- Less creative in problem solving
- Hypersensitive to criticism

## ***How you behave***

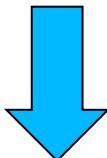
- Accidents/mistakes
- Sleeping problems
- Take drugs
- Problematic social behavior

## ***Your Body***

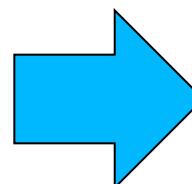
- Aches and pain
- Sweating, dizzy, breathless
- Frequent infections
- Asthma, cardiac problems, hypertension



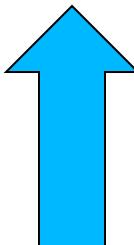
# Hazard



# Exposure



# Risk of Outcome/Effect



# Control Measures



## STEPS OF RISK ASSESSMENT

1. Look for hazards
2. Decide who might be harmed and how
3. Assess the likelihood of exposure
4. Evaluate risks from hazards
5. Decide whether existing precautions adequate or more should be done
6. Record findings
7. Review assessment periodically.

# Hazard Classification

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## ■ Biological

- Bacteria, Virus, Parasite

## ■ Psychological

- Stress

## ■ Ergonomic problem

- Lifting heavy object, poor posture, repeated movements



<b>Hazard Rating</b>	<b>Definition in Terms of Potential to Cause Harm to People</b>
1	<b>No injury/slight injury/illness – not affecting work performance or causing disability</b>
2	<b>Minor injury/illness – affecting work performance such as restriction of activities or need a few days to recover</b>
3	<b>Major injury/illness – result in permanent partial disability or affecting work performance in the long term</b>
4	<b>Permanent total disability or fatality</b>
5	<b>Multiple fatalities (large exposed population)</b>

<b>Exposure Rating</b>	<b>Definition</b>
<b>Improbable (1)</b>	<b>Exposure less than one per year</b>
<b>Remote (2)</b>	<b>Exposure greater than one time per year</b>
<b>Occasional (3)</b>	<b>Exposure greater than one time per month</b>
<b>Probable (4)</b>	<b>Exposure greater than one time per week</b>
<b>Frequent (5)</b>	<b>Potential exposure one or more time per shift or per day</b>

# Exercise in Risk Characterization

HR \ ER	Very low (1)	Low (2)	Medium (3)	High (4)	Very high (5)
No/slight injury (1)	Dark Blue	Light Blue	Medium Blue	Light Blue	Pink
Minor injury (2)	Light Blue	Medium Blue	Pink	Pink	Red
Major injury (3)	Medium Blue	Pink	Pink	Red	Red
Fatality/ permanent disability (4)	Light Blue	Pink	Red	Red	Orange
Multiple fatalities (5)	Pink	Pink	Pink	Orange	Orange

HR= Hazard Rating

ER= Exposure Rating

Risk rating = HR x ER

# Adequacy of Control Measures

- Suitable for protecting employees
- Effective in preventing or minimizing exposures
- Properly maintained

# HIERARCHY OF CONTROL MEASURES

- a) Elimination
- b) Substitution
- c) Total enclosure of process and handling systems
- d) Isolation
- e) Modification of the process parameters
- f) Engineering control
- g) Administrative
- h) PPE (Personal Protective Equipment)





Fire extinguisher

Eye wash station

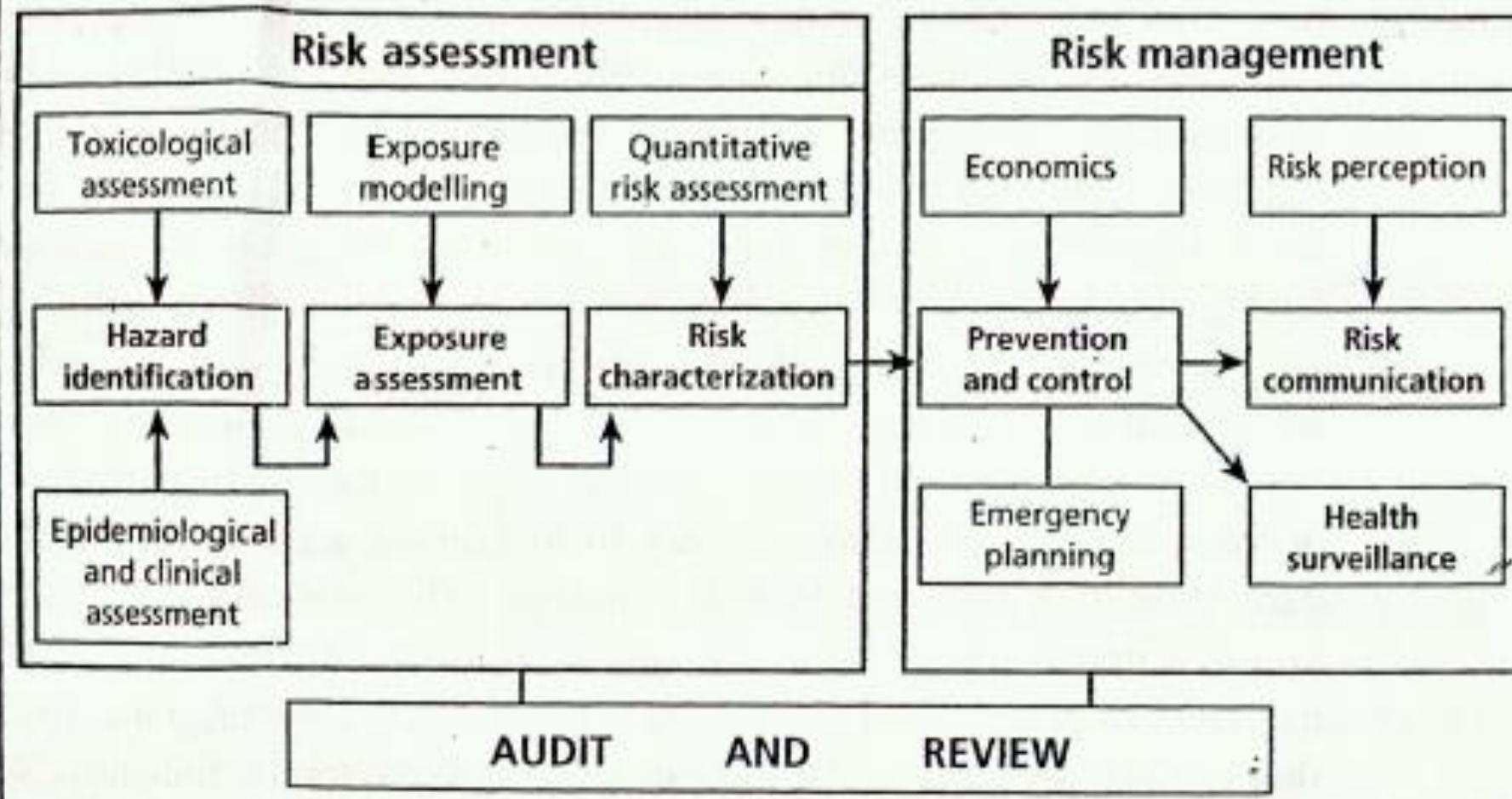
First Aid box

# RISK DECISION

1. RISK NOT SIGNIFICANT
2. RISK SIGNIFICANT & ADEQUATE CONTROL MEASURES
3. RISK SIGNIFICANT & NOT ADEQUATE CONTROL MEASURES,
4. UNABLE TO ASSESS THE RISK

## Health and Safety Management

## Occupational health risk assessment and management



# THANKS

- ASSALAMU'ALAIKUM WT. WBT.