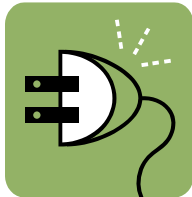


WORKPLACE HAZARDS



PREPARED BY:
SAFEREPS

DEFINITIONS OF HAZARDS

- Anything or condition with the *potential* to cause harm
- The *potential* of a substance, person, activity or process to cause harm (injury or illness)
- Anything (material/substance, machine, methods or matters) in the workplace that has the *potential* to cause harm

CATEGORIES OF HAZARD

- **Safety** – anything or condition that can cause physical injury
 - **Health** – any infective agent, substance situation or condition that directly attacks the body tissues causing occupational illness
- **Environment** – any pollution, waste including noise in any form or quantity that impairs the quality of the working environment, such as dust, smoke, gases, radioactivity and odors

TWO MAIN CLASSES

- **Natural** – (geological) a threat of a naturally occurring event that will have a negative effect on people or the environment. (flood, lightening, wildfires, earthquake, soil erosion, high winds, hurricanes, volcanic eruption, sink holes, tsunami, drought, famine, heat waves, climate change)
- **Manmade** - (sociological) threats having an element of human intent, negligence, or error; or involving a failure of a human-made system. It results in huge loss of life and property. It further affects a person's mental, physical and social well-being. (fire, flood, crime, arson, civil disorder, terrorism, war)

OTHER CLASSES OF HAZARD

Technology –

A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

**Structural collapse - Communication fallouts - Transportation
Electrical fallouts (explosions and outages) - Nuclear fallouts
CBRN warfare (chemical, biological, radiation and nuclear),
are threat of terror against a nation (mass destruction) -
Industrial Pollution - Fires**

OTHER CLASSES OF HAZARD

- **Behavioral** –This is a reaction by a person subjected to specific conditions of work and materials which result in physical harm (health and injury). How people behave at work can create hazardous conditions.
 - Irresponsible behaviour (horseplay, pranks, etc,)
 - Leaving objects in pathways that causes obstruction and tripping
 - Running and rushing to different points about the workplace
 - Using hazardous substances dangerously and carelessly

Specifics of hazards

- **Physical** – doors, stairs, platforms, ladders, fire, falling objects, manual handling, noise, vibration, temperature, radiation, lighting, air quality.
- **Mechanical** – electricity, machinery, equipment, pressure vessels, dangerous goods, forklifts, cranes
- **Chemical** – chemical substances, liquids, cleaning agents, dust and fumes from processes, acids, poisons, dangerous substances

Specifics of hazards

- **Biological** – bacteria, viruses, pathogens, mould, mildew, insects, vermin, fungi, animals
- **Psychological** – workplace stressors, ergonomics, strain, overexertion

MANAGEMENT OF HAZARDS

All aspects of the workplace should be covered by a general risk assessment process that will reveal the significant hazards present and the control measures in place

Risk is:

“The *likelihood* of a substance, person, activity or process to cause harm (injury or illness)”

Risk can be reduced, hazards are controlled by good management.

HAZARD REDUCTION STEPS

1. IDENTIFICATION

Look for the hazard

2. ASSESSMENT and EVALUATION

Decide who might be harmed, how and to what extent

3. CONTROLS

Decide whether the existing precautions are adequate or more should be done

5. MONITORING and REVIEWING

Periodic checking for continuous improvement

IDENTIFICATION OF HAZARDS

Information Sources

employees, unsafe acts, unsafe conditions, operators, investors, stake holders, suppliers, guides, MSDS, warnings, safety professionals, legislation, unions, training, discussions, complaints, interviews, inspections, accident/incident reports, investigations, quality control, process observation, house keeping observation, finish product, equipment manuals, magazines, reading, feedbacks, surveys, audits, records, common and natural senses, past experience, good judgment, etc,.

ASSESS AND EVALUATE THE HAZARDS

“consider its severity(consequences) probability and exposure”

Once identified, determine how harmful the hazard can be;

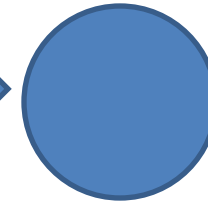
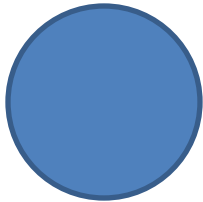
- The likelihood to cause harm
- Under what conditions it can occur?
- What type of harm can occur?
- Who or how many workers can be harmed?
- What may be the extent of the harm or injury?
- Is there a history of problem, accidents or dangerous occurrence from the hazard?
- What monitoring is needed to evaluate the risk?

HAZARD ELIMINATION AND CONTROLS

At the source

The Worker

Along the path



1. Elimination
2. Substitution
3. Redesign
4. Isolation
5. Automation

Barriers
Absorption
Dilution
Guards
Screens
Exhaust systems

Automated or remote controls
Rotation or Rescheduling
Personal Protective Equipment

ENGINEERING CONTROLS

“Removing the hazard from the worker”

Designing the workplace and process, also ensure professional installation of machine and equipment.

(isolation, lockouts, design, monitoring and warning equipment, process and procedural changes)

- **Knowledge**
- **Maintenance**
- **Plant and equipment**

ADMINISTRATIVE CONTROLS

“Removing the worker from the hazard”

- Accident/Incident reporting procedures
- Effective safety policy
- Develop rules, standards and safe systems of work
- Performance measurement
- Training and education
- Good communication
- Use of job safety analysis
- Housekeeping and maintenance
- Monitor performance and follow-up short comings
- Quality assurance and safety
- Purchasing

Personal Protective Equipment

“Protecting the worker from the hazard”

- Insulate the worker.
- Use only when all options are exhausted, and the hazard cannot be corrected through substitution or design.

Selection:

- 1. Where there is no immediate way to control the hazard by more effective means.*
- 2. When employed as a temporary measure, while more effective solutions are being installed.*

Its short comings:

It cannot eliminate or reduce the hazard

If it fails the worker is exposed to the full destructive effects of the hazard

It may be too cumbersome and can interfere with the worker's ability to perform the task, thus compound the problem

PRINCIPLES OF PREVENTION

“HIERACHY OF CONTROLS”

- 1. AVOIDANCE**
- 2. EVALUATING THE RESIDUAL HAZARDS**
- 3. COMBATING AT THE SOURCE**
- 4. ADAPTING THE WORK TO THE INDIVIDUAL**
- 5. ADAPTING TO TECHNICAL PROGRESS**
- 6. SUBSTITUTION**
- 7. DEVELOP A COHERENT INVOLVING ALL ASPECTS AT WORK**
- 8. COLLECTIVE PROTECTION OVERRIDES INDIVIDUAL PROTECTION**
- 9. APPROPRIATE INSTRUCTIONS TO ALL EMPLOYEES**

MONITORING AND REVIEWING

Controls must be reviewed periodically

- Monitor and review when condition changes;
 - New machinery
 - Change in process
 - New hazards
 - New information
 - Change in legislation
 - Change in workforce
 - New employees
 - Post accident risk assessment

EFFECTIVENESS OF CONTROLS

- Where hazards cannot be eliminated, control measures must be implemented to reduce it to an acceptable level.
- Hazards should be controlled by applying contemporary, comprehensive and proactive management systems than reactive responses.

Effectiveness must meet these standards;

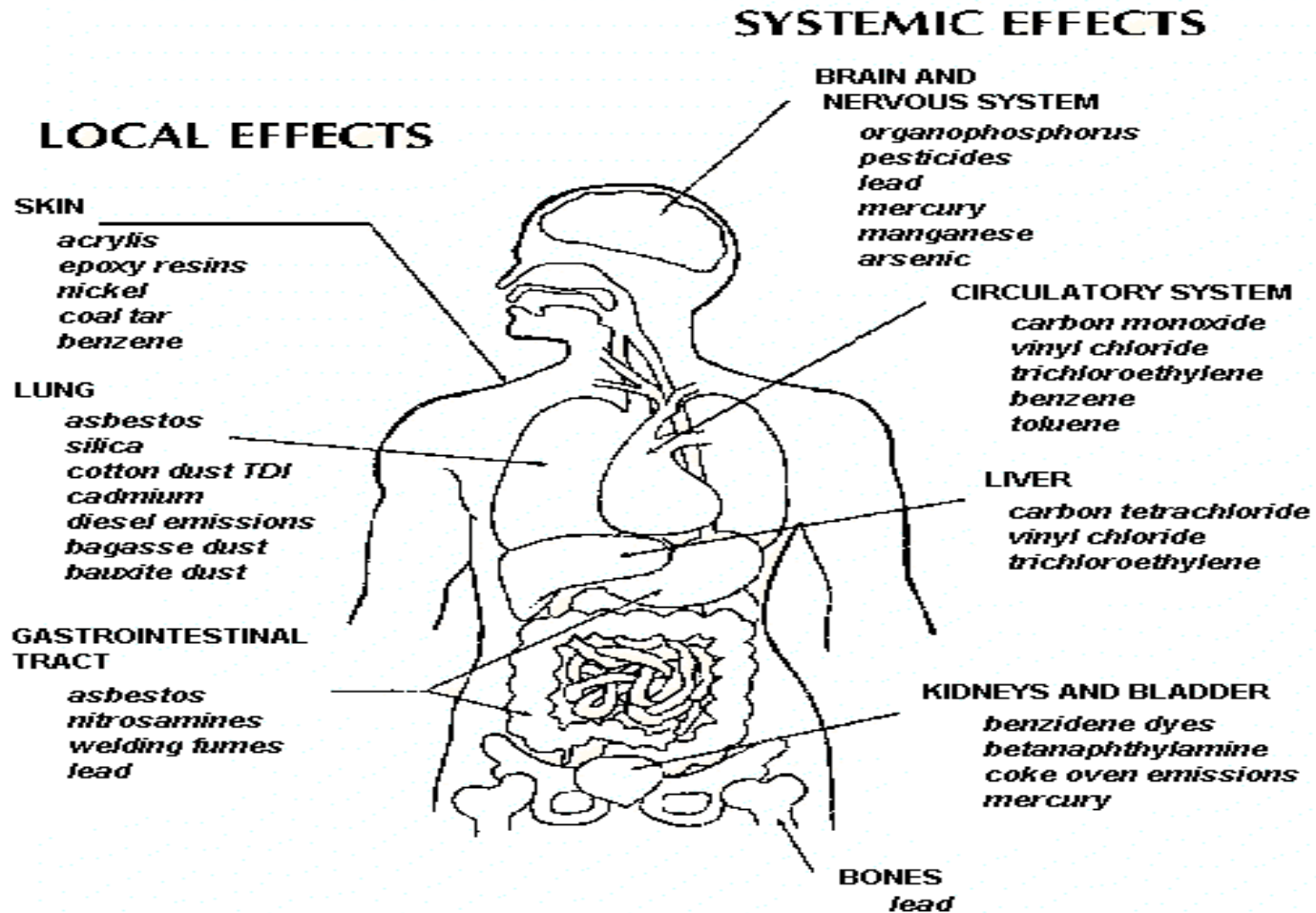
1. It must be sufficient to prevent the hazard from causing harm
2. It must protect everyone who can be harmed from the hazard
3. It must not create new hazards, or production and quality control problems
4. It must not create a hazard to the environment or the community of the workplace situation

ROUTES OF ENTRY

Chemical and biological hazards can be transported into the human body by various agents, pathogens and other forms, through the four main routes of entry;

1. **Inhalation** – taken into the body through the lungs
2. **Absorption** - taken into the body through the skin
3. **Ingestion** - taken into the body orally
4. **Injection (direct entry)** - taken into the body through broken skin

ROUTES OF ENTRY



ROUTES OF ENTRY

The *most common route of entry* is inhalation since all organisms must breathe in oxygen to live.

Hazards that cause immediate harm such as an injury from an accident are termed “*acute*”, while “*chronic*” hazards where the harm is not experienced immediately due to prolonged exposure to the health hazards.

BODY DEFENSES

Responsibility and Support

Prevention is the first and safest and also the most effective measure of control for safety, health and environment hazards.

Safety professionals must become familiar with health and safety issues in the workplace because its their responsibility to manage the safety and health matters, or **solicit the services of specialist** of specific safety situations for successful safety management.

Questions

- What is the difference between acute hazards and chronic hazards?
- What are the steps to controlling hazards?
- Explain in order of priority hazard reduction
- Explain risk and hazard



THANK YOU

NEXT DISCUSSION



ACCIDENT CAUSATION AND PREVENTION