Risk Management in Practice

Lecture Title:
Introduction to Risk Management in Occupational Health & Safety

Lecturer: Chris Camilleri

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Undergraduate Diploma in Occupational Health and Safety

Welcome and Objectives

- Learning Objectives.
- Understand the concept of risk and its relevance in OHS.
- Recognize the key components of a risk management framework.
- Appreciate the role of legislation, standards and organizational culture in managing risk.
- Begin to identify common workplace hazards and assess associated risks.

Module Roadmap

Lecture 1 — Introduction to Risk Management

Lecture 2 — Risk Assessment Methodolgies

Lecture 3 — Hazard Identification Techniques

Lecture 4 — Control Measures and Hierarchy of Controls

Lecture 5 — Legal and Ethical Responsibilities in Risk Management

Lecture 6 — Risk Communication and Stakeholder Engagement

Lecture 7 — Incident Investigation and Root Cause Analysis

Lecture 8 — Risk Management in High-Risk Industries

Lecture 9 — Psychosocial Risks and Mental Health

Lecture 10 — Emergency Prepardness and Response Planning

Lecture 11 — Monitoring and Review Risk Controls

Lecture 12 — Safety Culture and Organizational behaviour

Lecture 13 — Risk Management Standards and Frameworks

Lecture 14 — Risk Management for Emerging Workplace Hazards

Lecture 15 — Global Perspectives and Cultural Considerations

Lecture 16 — Capstone Lecture Integrating Risk Management in Practice

Types of Hazards in the Workplace

Physical Risks

Physical risks include hazards like noise and heat that can harm workers' health and safety.

Chemical Risks

Chemical risks involve exposure to toxins and fumes that can cause serious health issues.

Biological Risks

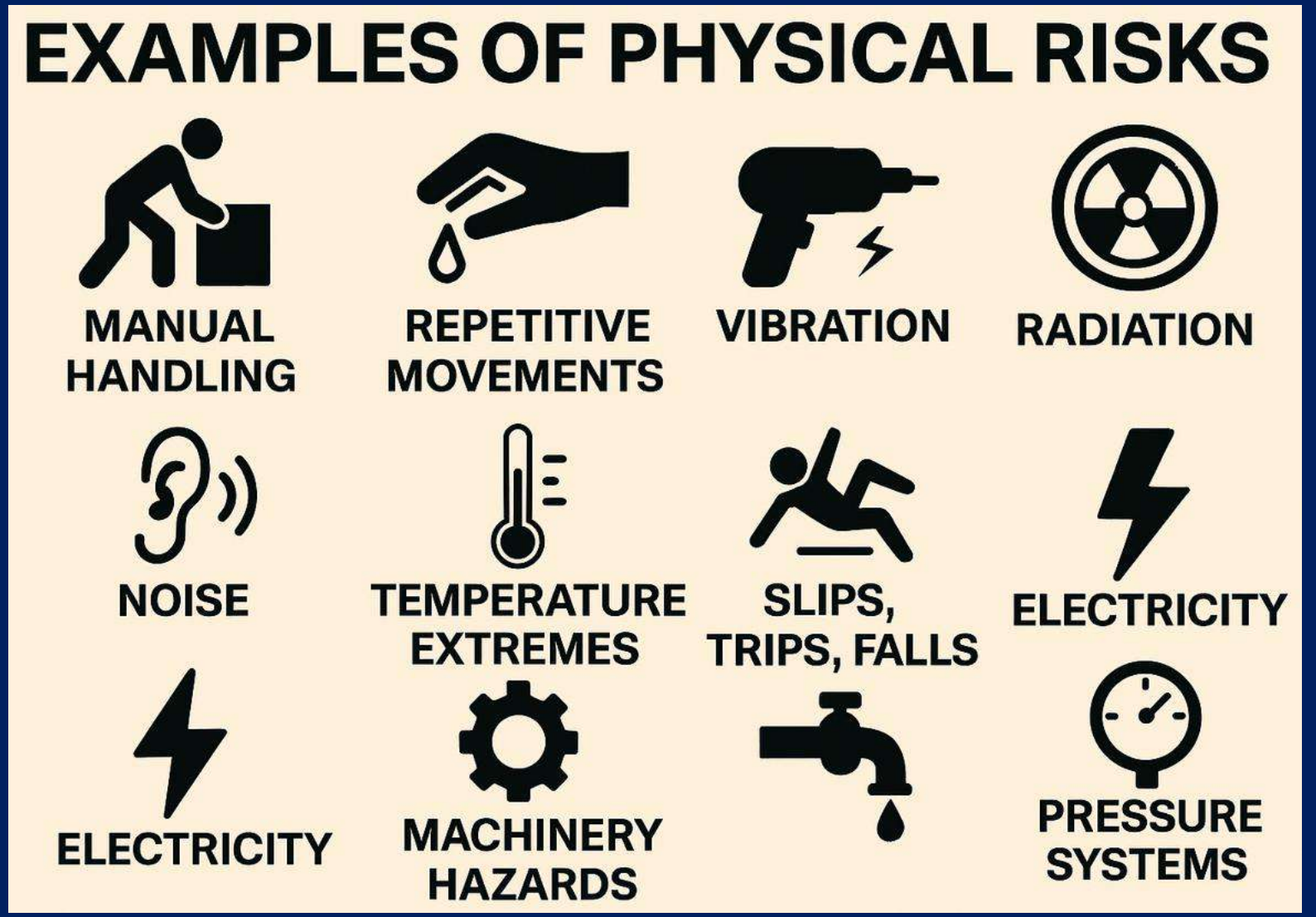
Biological risks cover viruses, bacteria, and other pathogens that threaten employee health.

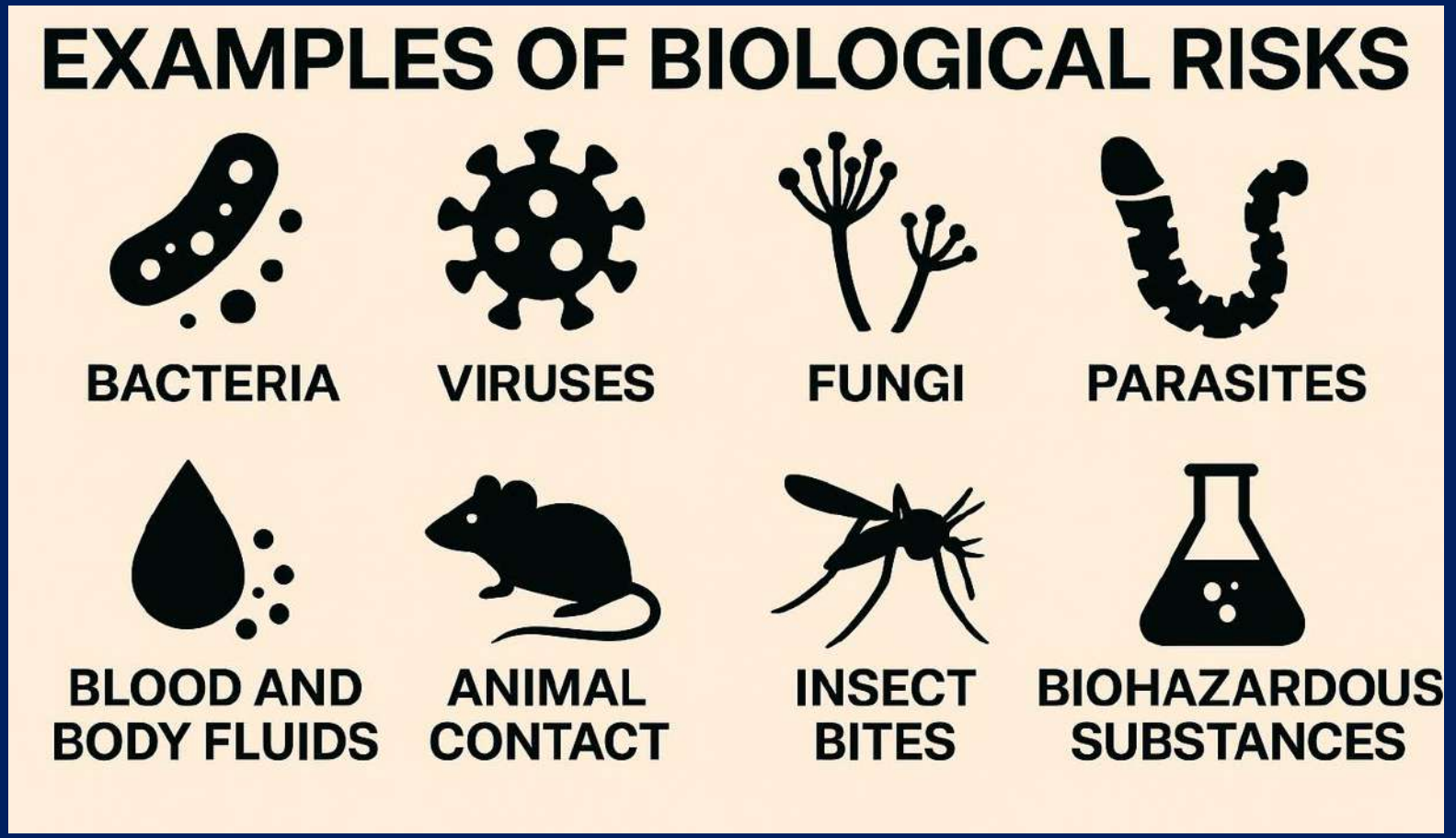
Ergonomic Risks

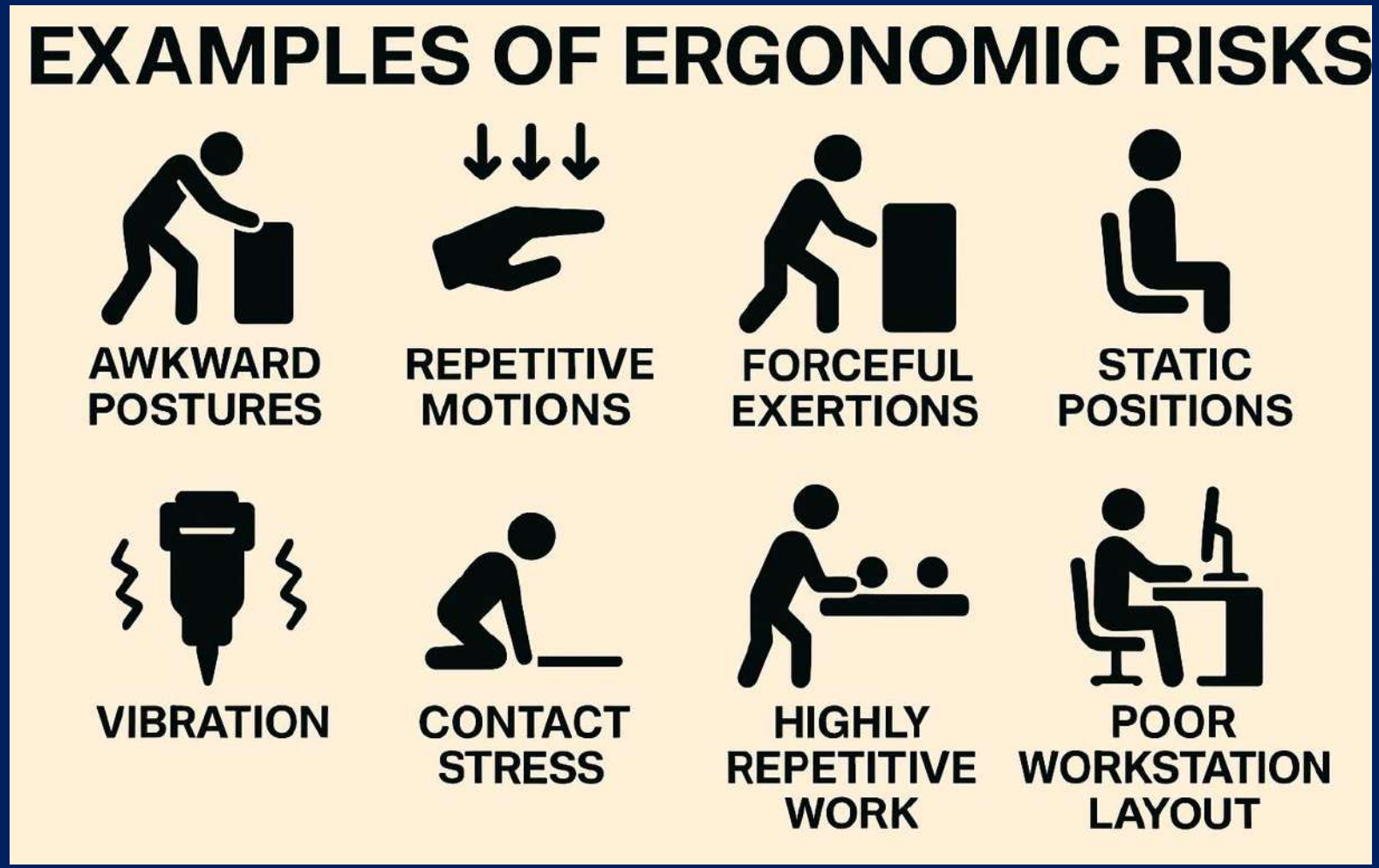
Ergonomic risks arise from repetitive strain and poor posture causing musculoskeletal problems.

Psychosocial Risks

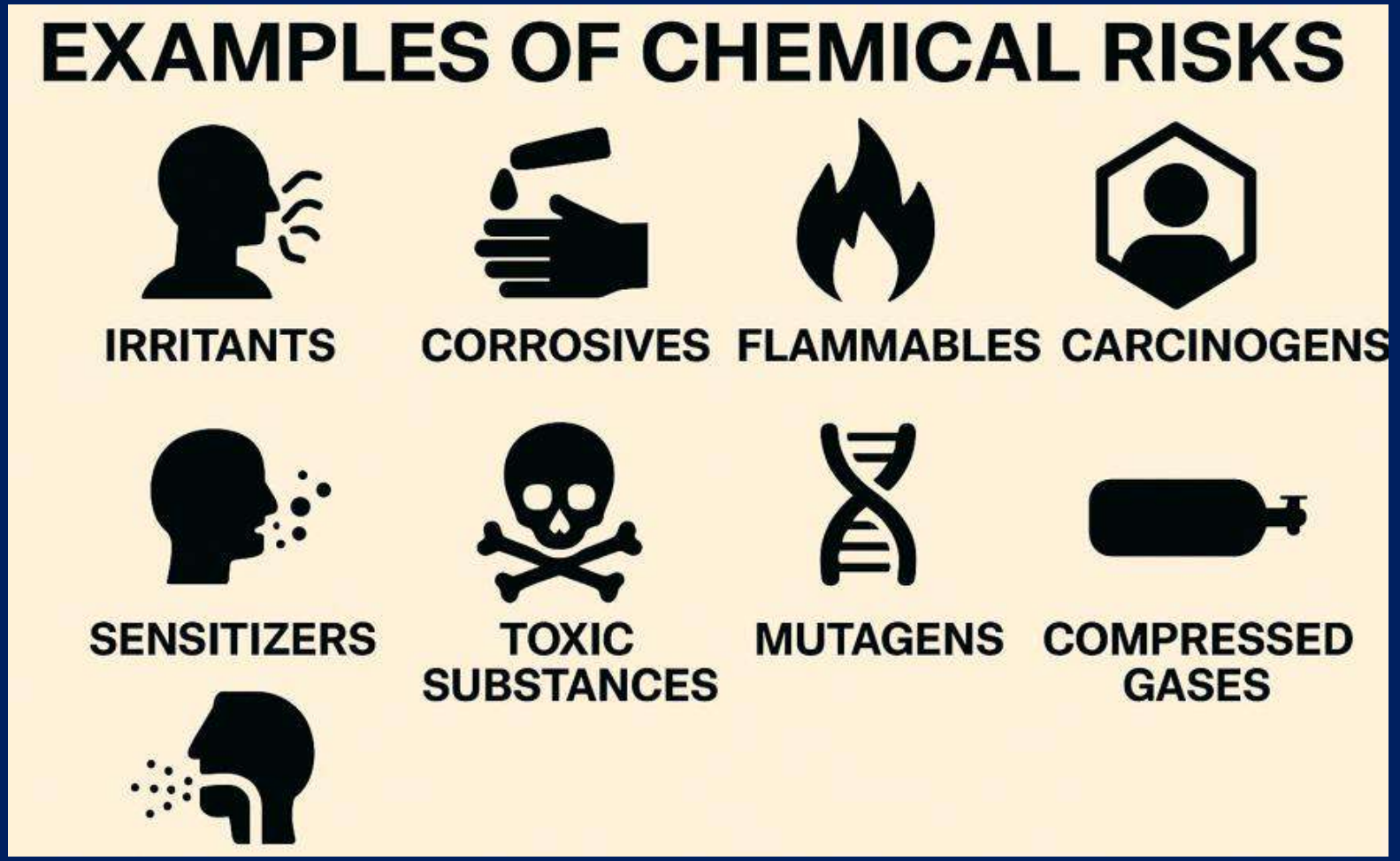
Psychosocial risks include stress and bullying, impacting mental wellbeing and productivity.


EXAMPLES OF PHYSICAL RISKS
MANUAL HANDLING
REPETITIVE MOVEMENTS
VIBRATION
RADIATION
NOISE
TEMPERATURE EXTREMES
SLIPS, TRIPS, FALLS
ELECTRICITY
ELECTRICITY
MACHINERY HAZARDS
PRESSURE SYSTEMS


EXAMPLES OF BIOLOGICAL RISKS
BACTERIA
VIRUSES
FUNGI
PARASITES
BLOOD AND BODY FLUIDS
ANIMAL CONTACT
INSECT BITES
BIOHAZARDOUS SUBSTANCES


EXAMPLES OF ERGONOMIC RISKS
AWKWARD POSTURES
REPETITIVE MOTIONS
FORCEFUL EXERTIONS
STATIC POSITIONS
VIBRATION
CONTACT STRESS
HIGHLY REPETITIVE WORK
POOR WORKSTATION LAYOUT

EXAMPLES OF PSYCHOSOCIAL RISKS
STRESS
BURNOUT
HIGH JOB DEMANDS
LACK OF CONTROL
HARASSMENT
VIOLENCE
POOR SUPPORT
JOB INSECURITY


EXAMPLES OF CHEMICAL RISKS
IRRITANTS
CORROSIVES
FLAMMABLES
CARCINOGENS
SENSITIZERS
TOXIC SUBSTANCES
MUTAGENS
COMPRESSED GASES

Hazard vs Risk

HAZARD

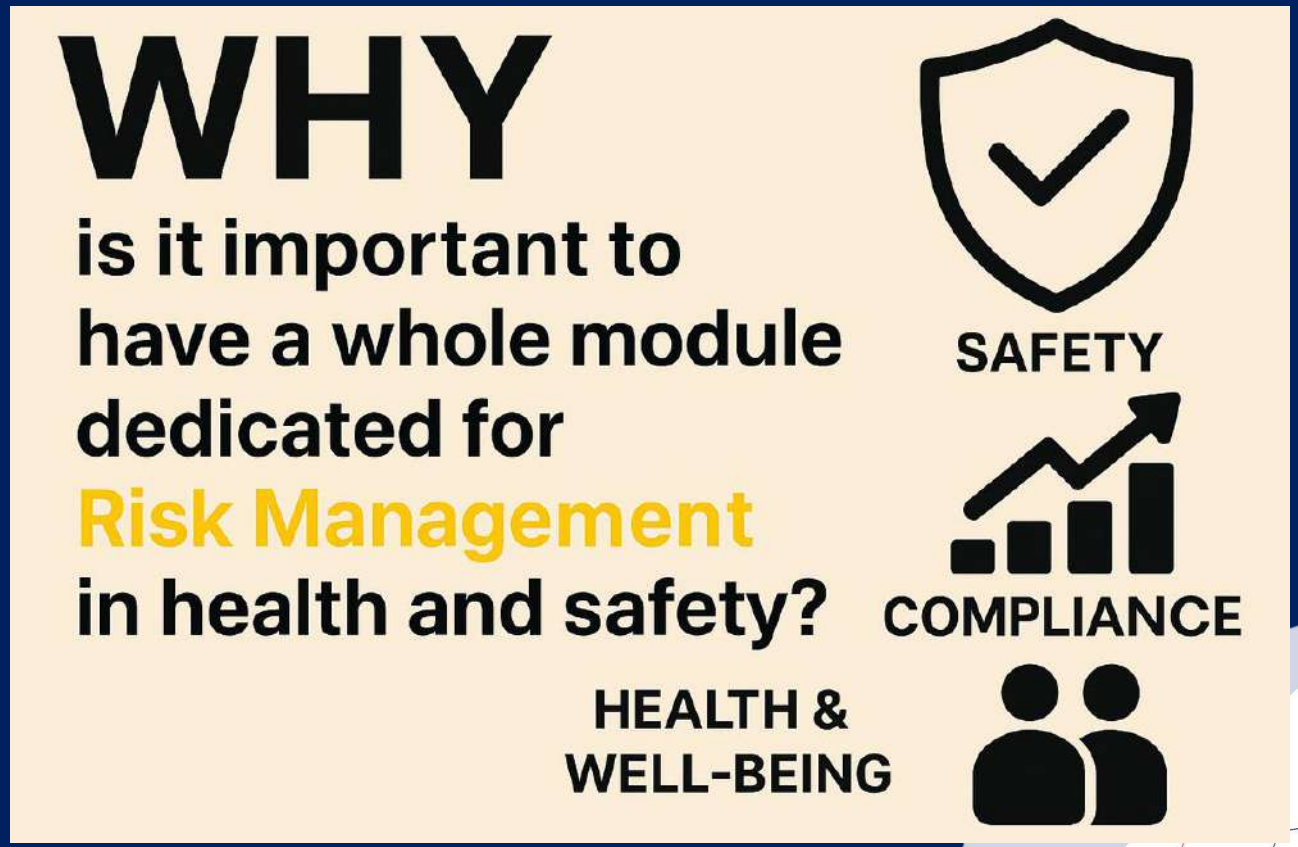
A source or situation with the potential for harm in terms of injury or ill health.

RISK

The likelihood that a person may be harmed or suffer adverse health effects if exposed to a hazard

Importance of Risk Management in HS

- Legal compliance
- Accident prevention
- Cost savings
- Employee well-being &
- Continuous improvement.



Foundations of Risk Management

- **Definition of Risk Management**

- Explain risk as the combination of the like likelihood of an occurrence and the severity of its consequences
- Define risk management as a systematic process for identifying, evaluating and controlling risks

- Core Principles
- Hazard identification – recognizing potential source of harm
- Risk Assessment – evaluating the likelihood and impact
- Risk Control –implementing measures to eliminate or reduce risks.

What Does Risk Mean to You?

Risk Perception Varies

- Different people perceive risk differently based on:
  1) Personal experience
- 2) Cultural background
  3) Values and beliefs
  4) Context and environment

What Does Risk Mean to You?
Threat
Consequence
Impact
Damage
Danger
Exposure
Injury
Safety
Concern
Exposure
Hazard
Probability
Probability
Volatility
Cost
Uncertainty
Risky
Chance
Risky
Loss
Vulnerability
Precaution
Problem
Crisis
Unpredictability

Risk Assessment

A risk assessment must lead to decisions and action, not only documentation.

Risk Rating

OVERALL RISK RATING
is measured by calculating
likelihood and severity
LIKELIHOOD
SEVERITY
OVERALL
RISK
RATING

Risk Rating: Likelihood vs Severity

- A risk matrix helps assess risk levels by combining likelihood and severity:

- Green: Low Risk
- Yellow: Medium Risk
- Red: High Risk

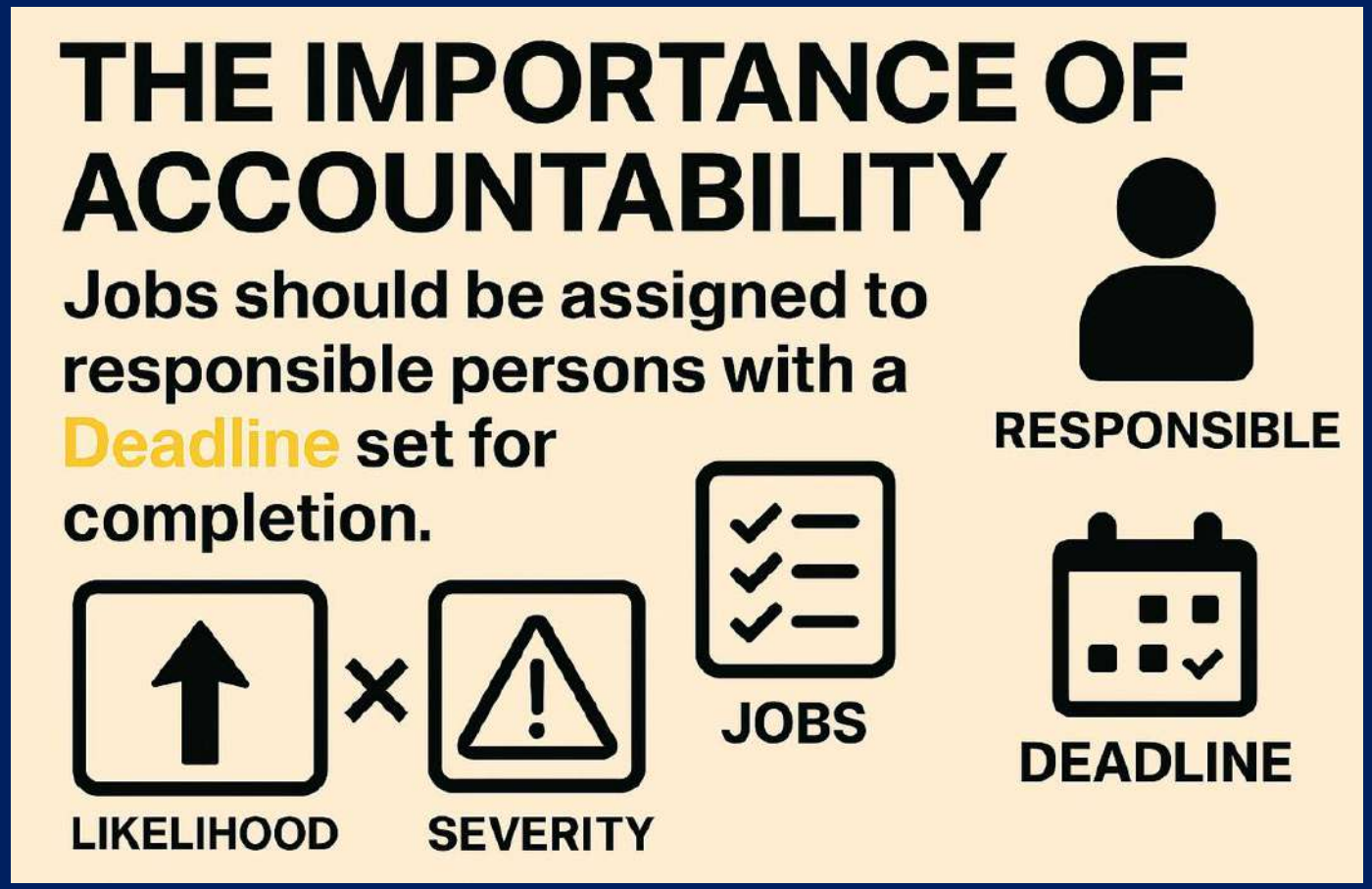
Likelihood (L)

Rating	Level	Description
1	Unlikely	But could occur
2	Possible	But unusual
4	Even chance / Probable	Could happen / not surprised
8	Likely / Certain	To be expected / no doubt

Severity (S)

Rating	Level	Description
1	Low	Scratch or bruise
2	Modest	Laceration or mild ill health effect Break of a minor bone or minor illness (temporary)
3	Serious	Break of a major bone or permanent minor illness. Serious illness of a temporary nature
4	Extremely Serious	Loss of limbs or eyes. Serious illness of a permanent nature. Fatality

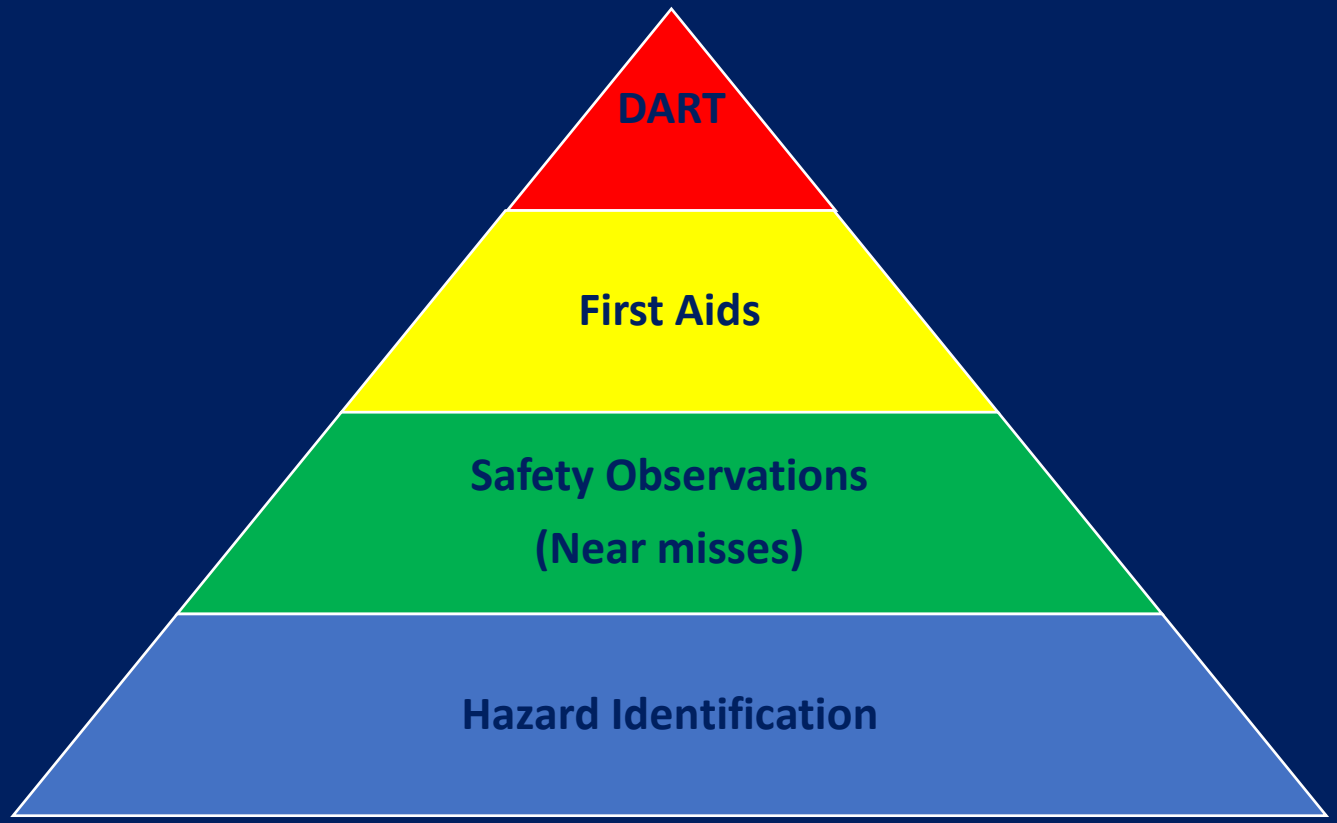
Importance of Accountability



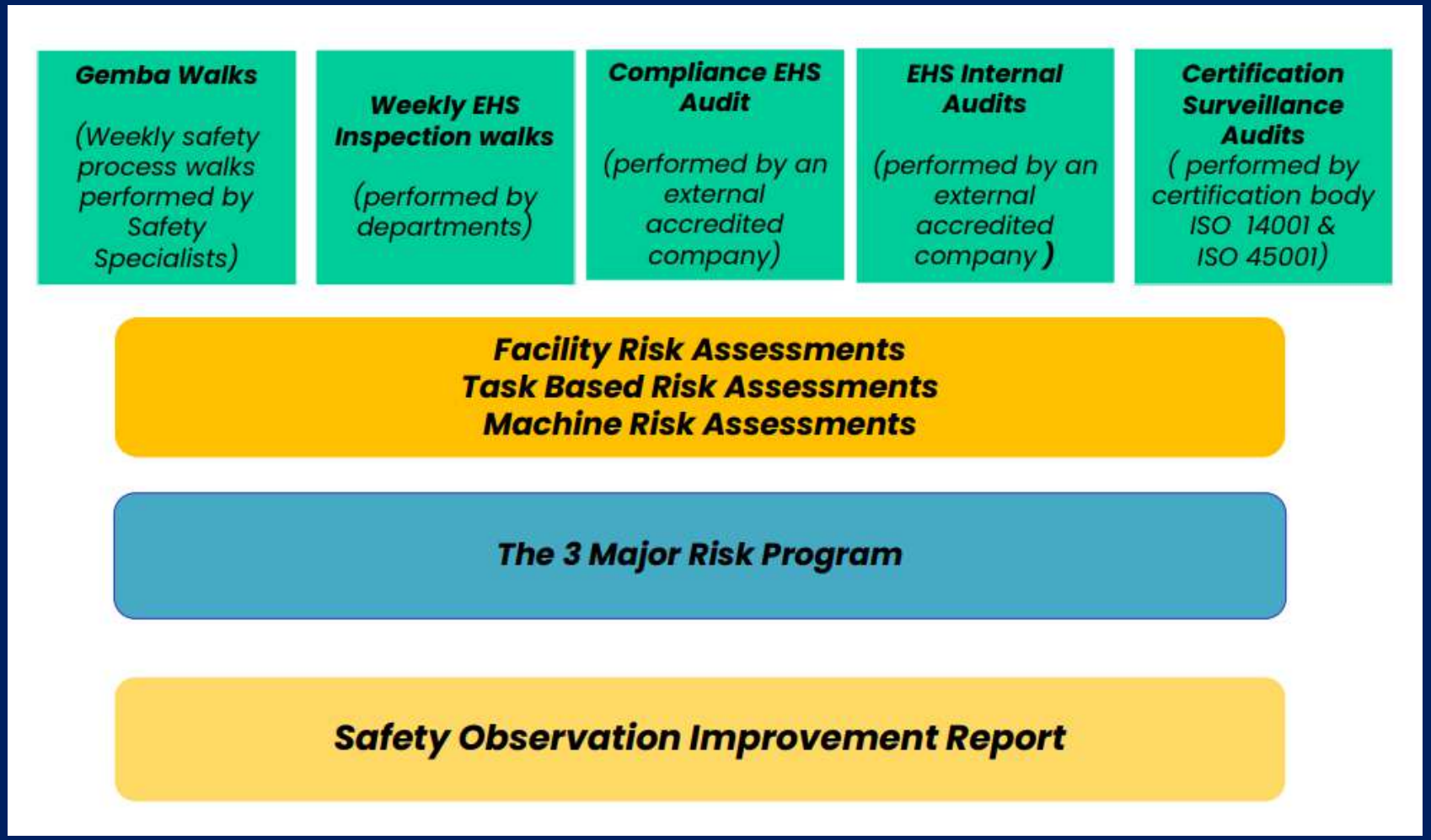
Risk Index (R)

Risk	Index	CA Time Frame	Verification of Closure CA.
Low	1 - 3	6 months	Through the Safety Inspection "Gemba" walk 6 months
Medium	4 - 9	3 months	Through the Safety Inspection "Gemba" walk 6 months
High	>10	24 hours	After 24 hours

Safety Triangle



Hazard Identification Risk Program



Example of RA

Facilities

Risk Source ✓ present * not applicable	Description & Safety Hazard	Description of Risk(s) and Impact(s) that include current controls	Significant Risk Potential	Risk Evaluation prior CA				Recommendations to reduce risk.	Residual Risk after CA				Preventive action
				L	S	R	Risk level		L	S	R	Risk level	
✓ Fire	**Fire extinguishers:** Checking of fire at your area. **Training:** Are employees trained and aware of procedures? **Storage:** Flammable materials are stored in suitable areas? **Information:** Fire plans and fire signage are visible at your section.	Fire detection system present in various locations in the export loading bay and loading dock. All associates are trained in basic fire awareness No flammable chemicals are stored in the area. Site plan evacuation route is present in the area, escape routes are visible and loading area is at the vicinity of the outdoor area. Fire extinguishers are available in the export area. Fire signage present and visible.	Risk of fire or failure to use proper extinguishing media. Risk of equipment system failure. Lack of awareness. Burns/ injury to personnel.	1	3	3	Low	To set-up a plan and implement measures in order to align with statutory requirements. **Such requirements can be:** • Check all systems for state of repair and operation. • Checks, repair or replace defective units. • Test operation of systems, self-contained alarms and manually operated devices. **Annually:** • Full check and test of the system by a competent person i.e. engineer. • Clean self-contained smoke alarms and change of batteries. **Action by who:** Jonathan Briffa **Action by when:** Being done throughout the year	1	3	3	Low	Will be monitored during annual RA reviews, departmental weekly checks, safety inspection tours, H&S audits. **Action by who:** Crane Associates **Action by when:** Throughout the year

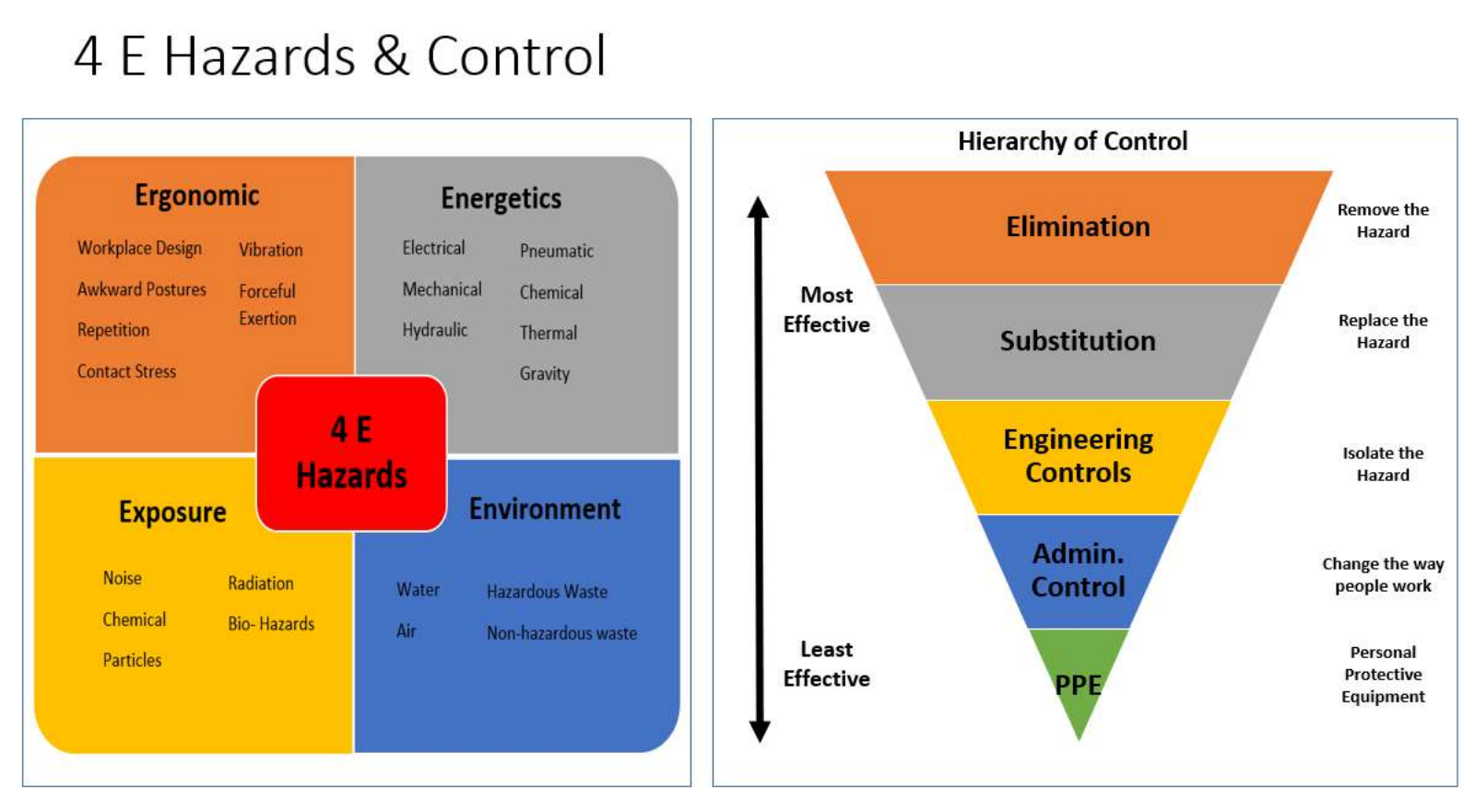
Example of RA

Task Based

1	2	3	4	5				6	7				8
Task	Hazards Identified	Risks	Existing control	Risk Evaluation prior Corrective Action				Recommendations to reduce / eliminate the risk	Risk Evaluation if recommendation is implemented				Preventive Action recommendation
				Likelihood	Severity	Risk Rating	Risk level		Likelihood	Severity	Risk Rating	Risk level	
Trailer arriving at our facility	Lack of pedestrian and signage identification. Pedestrians crossing to exit / enter into block D. 	Hits by moving vehicles	Security from the control room identifiy the trailer from the CCTV system. Primary gate opens, trailer enters into Crane facility between the primary gate and secondary gate. Security closes the primary gate and then opens the secondary gate so that the trailer can enter into the facility. Security gives signal to other security personnel through VHF radio to open the the shutter door of the loading bay so that the trailer can be parked inside the garage. Control of traffic by security and simple administrative control signage. In order to control the pedestrians from crossing whilst the truck is manoeuvre both forward and reverse into the export station, 2 banksmen 1 at the main entrance and 1 near the turnstiles are to be stationed. Banksmen are to wear high visibility vest. Security personnel is to ensure that before opening the secondary gate no pedestrians are crossing the front patio.	1	3	3	Low	No actions required at this point in time.	1	3	3	Low	Will be inspected following implementation of corrective actions. Also it will be monitored during safety inspection tours, safety audits, departmental weekly checks. **Responsible person:** All Associates **Target Date:** Throughout

Example of RA

4 E (Ergonomic, Energetics, Exposure, Environment)



Example of RA

4 E (Ergonomic, Energetics, Exposure, Environment)

4E Risk Assessment Form

Department:		☐ INITIAL ASSESSMENT	☐ UPDATED ASSESSMENT	(choose one)	
Area:		Date:			
Supervisor:		Assessment Participants:			
Assessment Prompted by an Incident?	☐ NO	☐ YES	(choose one)		
Is the Task Being Assessed Routine?	☐ NO	☐ YES	(choose one)		
Task Description		Current Control Measures	ENGINEERING: ADMIN: PPE:		

Frequency of Exposure	Probability of Injury *(% chance)*	Severity of Impact	
0 - No Exposure *(exposure never oc*	1 - Not likely to occur *(0-10%)*	0 - No injury *(near miss)*	No environ. impact *(near miss)*
1 - Low *(occurs < 1x per month)*	2 - Possible, somewhat unlikely *(10-5*	1 - Minor injury *(first aid)*	Minor environ. impact *(contained spill or release)*
2 - Medium *(occurs weekly to month*	6 - Possible and could occur *(50-90%*	2 - Moderate injury *(medical)*	Moderate environ. impact *(limited to site premises)*
4 - High *(occurs daily to weekly)*	10 - Likely to occur *(>90%)*	3 - Serious injury *(lost time)*	Serious environ. impact *(beyond the site premises)*
		4 - Severe injury *(disability)*	Severe environ. impact *(fines, forced shut down)*

Risk	*Initial Assessment*					*Updated Assessment (w/ corrective actions)*				
	F	P	$	*Risk Rating*		F	P	$	*Risk Rating*	
Ergonomic - *(Lighting, movement, material handling, tools)*										
Workplace design				0					0	
Repetition				0					0	
Contact Stress				0					0	
Forceful Exertion				0					0	
Awkward Position				0					0	
Vibration				0					0	
Energetic - *(Burn/cold by, Cut by, Caught In/On/Between; Pinch Points, Slips/Falls, Striking Against, Struck by or load movement of object)*										
Moving Parts				0					0	
Electrical				0					0	

3 Major Risk Program

Criteria used to establish 3 Major Risks
- Residual Risk After Corrective Action
- Severity Rating (# of Obs reported * Gemba walks * accidents)

Overall Severity Rating

Controlled Risks established from the Risk Assessment Program → Determine Criteria → Prioritize

	The 3 MAJOR TASKS IDENTIFIED (To date)
A	OFFSET 1 MACHINE
1	CHANGE OVER REMOVING OF WOODEN PLANK FROM FEEDER HOIST TRACK
2	CHANGING OF INK ROLLERS AND USE OF FORKLIFT
3	WASHING AND CLEANING OF INK ROLLERS
B	NOTA SCREEN 1 MACHINE
1	HANDLING OF FEEDER TROLLEYS
2	CLEANING THE LINE PRESS CYLINDER ON TOP OF MACHINE
3	SPARK CYLINDER REPLACEMENT & USE OF LIFTING JIB

3 Major risks identified during the specific tasks assessment

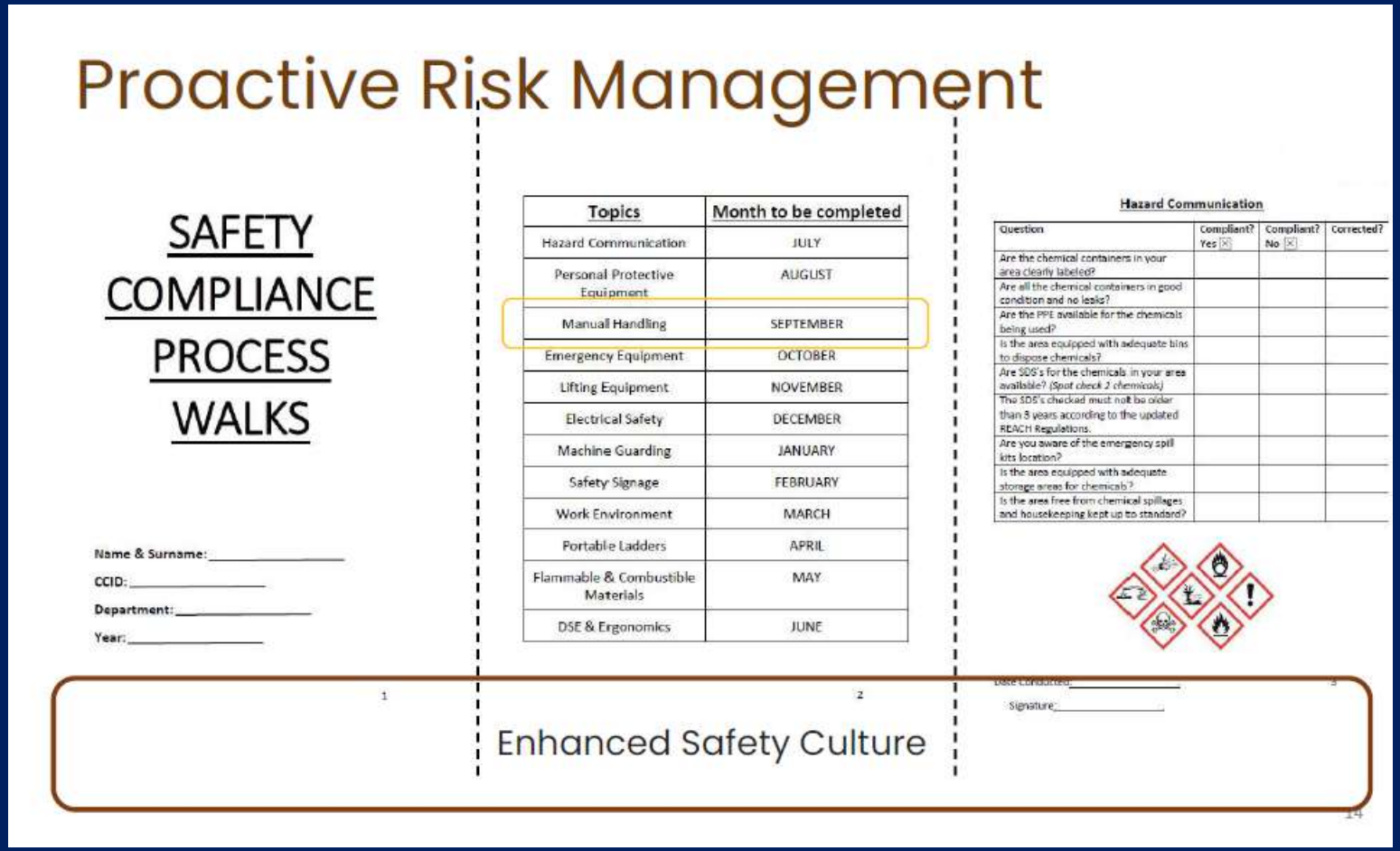
Suspended Loads
Pinch Points
Manipulation of inks

Manual Handling
Slips, Trips and Falls
Suspended Loads

Proactive Risk Management

	Planned Date	Date Period	Date Performed	Gemba Walk N°	Areas	Status	EHS Team	MEMBER
	Week 38	19.09.2022 - 25.09.2022	22-Sep-2022	38.1	Fire Extinguishers Condition Inspection (Admin Areas)	Done		
	Week 39	26.09.2022 - 02.10.2022	26-Sep-2022	39	Block C and Block D (Ground Floor + First Floor + Second Floor)	Done		
	Week 40	03.10.2022 - 09.10.2022	5-Oct-2022	40	Block B (First Floor)	Done		
Group 5	Week 41	10.10.2022 - 16.10.2022	13-Oct-2022	41	Block A (Printing presses + Sheeting + Waste Reconciliation + QC's + Secure Cages)	Done		
	Week 42	17.10.2022 - 23.10.2022	17-Oct-2022	42	General Stores + Flammable + NON - Flammable + Oil Store	Done		
	Week 43	24.10.2022 - 30.10.2022	24-Oct-2022	43	Ink Mill + Roller Room + Numbering Boxes + Hazardous Waste Store + Toilets	Done		
	Week 44	31.10.2022 - 06.11.2022	31-Oct-2022	43.1	Tumba Accident Follow-up Finger Trapped	Done		
	Week 44	31.10.2022 - 06.11.2022	4-Nov-2022	44	Block B Ground Floor (Finishing + Casing + BPS)	Done		
	Week 44	31.10.2022 - 06.11.2022	2-Nov-2022	44.1	Inspection dedicated to statuary requirements.	Done		
	Week 45	07.11.2022 - 13.11.2022	8-Nov-2022	45	Block B (VAULT + Granulator) + Perimeter + Electrical Transformer Rooms + WTG + Fire Pump Room	Done		
	Week 45	07.11.2022 - 13.11.2022	8-Nov-2022	45.1	**Machine Shop** - Lathe Guarding Assessment	Done		
	Week 45	07.11.2022 - 13.11.2022	9-Nov-2022	45.2	**Roller Room** - Lathe Guarding Assessment	Done		
	Week 45	07.11.2022 - 13.11.2022	11-Nov-2022	45.3	**Proofing** - Intaglio Hand Press Guarding Assessment	Done		
	Week 46	14.11.2022 - 20.11.2022	14-Nov-2022	46	Import + Export loading bays + Shipping Offices + Engineering Stores + Engineering workshop	Done		

Proactive Risk Management



CAPA Management & Accountability

CAPA EHS Safety Register (EHS Observations & Improver

EHS ID	Classification by EHS	Description / Observation	Area/ Department/ Location	Highlighted By	Date Issued	Person Responsible in executing the action	Communicated to Manager on	Risk Evaluation prior CA			Root Cause Analysis	CORRECTIVE ACTION	Residual Risk after CA			Target Date	Closed on time	Status
								Likelihood	Severity	Overall Hazard Index			Likelihood	Severity	Overall Hazard Index			
[illegible]	Safety Suggestion	Passages next to machines are filled with finished product	Storage Department	Clinic Cancillari	5-Apr-2021	Porters	5-Apr-2021	0	4	6	Unsafe storage / Obstructions	Person writing report advised porters to be extra careful when driving. During the morning meeting area managers were advised to start sorting pallet storage in a safe manner.	1	3	3	10-Apr-2021	Yes	Closed

Likelihood (L)

Rating	Level	Description
1	Unlikely	But could occur
2	Possible	But unusual
4	Even chance / Probable	Could happen / not surprised
8	Likely / Certain	To be expected / no doubt

Risk Rating
Likelihood x Severity =
Risk Index (H/M/L)

Severity (S)

Rating	Level	Description
1	Low	Scratch or bruise
2	Modest	Laceration or mild ill health effect Break of a minor bone or minor illness (temporary)
3	Serious	Break of a major bone or permanent minor illness. Serious illness of a temporary nature
4	Extremely Serious	Loss of limbs or eyes. Serious illness

Risk Index (R)

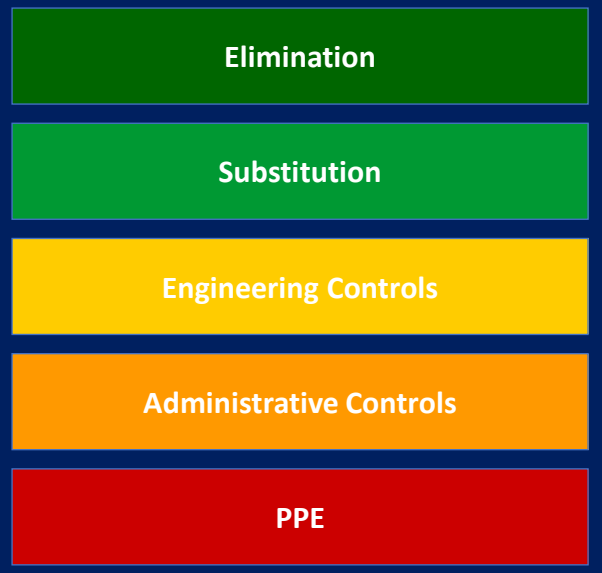
Risk	Index	CA Time Frame	Verification of Closure CA.
Low	1 - 3	6 months	Through the Safety Inspection "Gemba" walk 6 months
Medium	4 - 9	3 months	Through the Safety Inspection "Gemba" walk 6 months
High	>10	24 hours	After 24 hours

All observations/deviations are registered and given a target date for closure according to the risk rating

Hierarchy of Controls

The hierarchy of controls ranks risk control strategies from most to least effective:

1. Elimination
2. Substitution
3. Engineering Controls
4. Administrative Controls
5. Personal Protective Equipment (PPE)



Risk Communication and Stakeholder Engagement

Roles of Stakeholders in Risk Management

Employer Responsibilities

Employers ensure safe work environments, conduct risk assessments, and implement control measures, fostering a culture of safety.

Employee Participation

Employees adhere to safety procedures, report hazards, and engage in training to maintain workplace safety.

Safety Officers and Health Professionals

Safety experts identify hazards, assess risks, and develop safety protocols to protect workers effectively.

Regulatory Bodies' Role

Regulatory agencies enforce safety standards, conduct inspections, and provide guidance to organizations.

Key Risk Management Terminology

Definition of Hazard

Hazard means any source that can cause harm or adverse health effects to individuals. It includes physical, chemical, biological, ergonomic, and psychosocial types.

Risk Concept

Risk combines the likelihood of a hazardous event and the severity of harm, often expressed as Risk = Likelihood × Severity.

Control Measures

Control involves steps to reduce or eliminate risk, including elimination, substitution, engineering, administrative controls, and PPE.

Understanding Uncertainty

Uncertainty refers to limited knowledge about events, distinguishing it from risk which can be quantified or estimated.

Definition and Scope of Risk Management in OHS

Systematic Risk Management Process

OHS risk management involves identifying, evaluating, and controlling hazards to prevent workplace injuries and illnesses.

Scope of Risk Management

Covers all activities and systems that might cause harm to employees, contractors, or visitors at work.

Proactive and Reactive Strategies

Includes strategies to mitigate risks proactively and reactively, ensuring dynamic management of workplace risks.

Legal Compliance and Safety Culture

Risk management aligns with legal requirements and fosters a culture of safety awareness and responsibility.

Importance of Proactive Risk Identification

Early Hazard Anticipation

Proactive risk identification anticipates hazards before incidents occur, enabling preventive safety measures.

Enhancing Workplace Safety

This approach improves safety, operational efficiency, and employee morale by addressing risks early.

Tools and Techniques

Using safety audits, employee feedback, and predictive analytics helps identify emerging risks effectively.

Culture of Continuous Improvement

Fosters ongoing safety awareness, employee ownership, and alignment with international safety standards.

Historical Development of Risk Management

Early Industrial Safety Challenges

In early industrialization, workplace safety was often neglected, causing frequent accidents and occupational diseases.

Introduction of Safety Regulations

High-profile disasters and workers' rights awareness led to safety regulations and the creation of national safety agencies.

Historical Development of Risk Management

Shift to Proactive Risk Management

Risk management evolved from reactive compliance to a proactive, systematic discipline integrated into organizational strategy.

Performance-Based Safety Frameworks

The move towards performance-based frameworks emphasizes continuous improvement, stakeholder engagement, and data-driven decisions.

ISO 31000 Process Overview

Key Risk Management Steps

ISO 31000 framework includes establishing context, identifying, analyzing, evaluating, and treating risks systematically.

Monitoring and Reviewing

Continuous monitoring and reviewing ensure risk treatments remain effective and adapt to changes over time.

Communication and Consultation

Effective communication and consultation engage stakeholders throughout the risk management process for better decisions.

Roles and Responsibilities

Employer Responsibilities

Employers must provide safe systems and environments to minimize workplace risks and protect employees.

Employee Duties

Employees are required to follow established safety procedures to maintain a secure workplace.

Safety Officers' Role

Safety officers monitor, advise, and ensure adherence to safety standards to prevent workplace hazards.

Regulator Enforcement

Regulators enforce legal standards and conduct inspections to uphold workplace safety laws under Maltese legislation.

Case Examples

Construction Site Risk

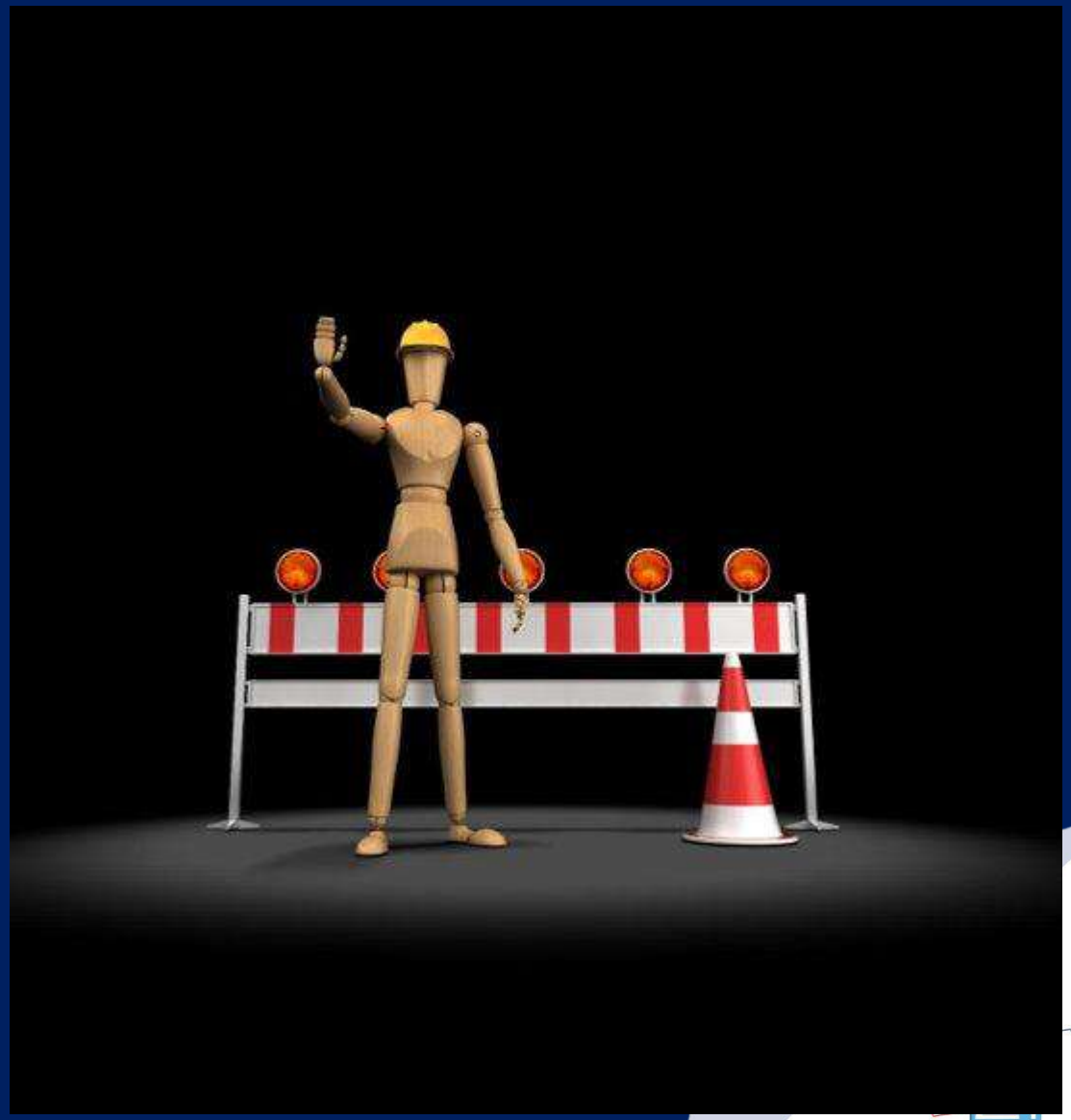
A fall from height at a construction site highlights hazards and the need for safety controls.

Healthcare Needle-stick Injury

A needle-stick injury scenario in healthcare demonstrates biological hazard risks and prevention.

Office Ergonomics Risk

Poor office ergonomics case shows risks of musculoskeletal disorders and ergonomic improvements.



Construction Site – Fall From Height

- Scenario: A worker falls from scaffolding due to missing guardrails and lack of harness.
- Hazard: Working at Height
- Risk Management Failure:
    1) Inadequate fall protection
    2) Poor supervision and risk assessment
- Control Measures:
    1) Use of guardrails, harnesses and fall arrest systems
    2) Toolbox talks and site-specific risk assessments

Learning:

1) High risk activities require strict controls and continuous monitoring

Healthcare – Needle-stick Injury

- Scenario: A nurse sustains a needle-stick injury while disposing of a used syringe.
- Hazard: Exposure to bloodborne pathogens
- Risk Management Failure:
    1) Improper disposal technique
    2) Lack of training or awareness
- Control Measures:
    1) Use of safety-engineered sharps
    2) Clear protocols and training on disposal

Learning:

1) Biological hazards require both engineering controls and behavioral reinforcement

Office – Ergonomics Risk

- Scenario: An employee develops back pain due to workstation setup.
- Hazard: Poor posture and repetitive strain.
- Risk Management Failure:

    1) No ergonomic assessment.

    2) Lack of adjustable furniture.

- Control Measures:

    1) Ergonomic chairs, monitor stands, and keyboard placement.

    2) Training on posture and movement breaks,

Learning:

1) Even low-risk environments need proactive risk management to prevent long-term harm.

Summary and Key Takeaways

Importance of Risk Management

Risk management is essential for identifying, assessing, and controlling workplace hazards to ensure safety.

ISO 31000 Framework

The ISO 31000 framework provides guidelines for effective risk management processes and principles.

Types of Workplace Risks

Workplace risks include physical, chemical, biological, and psychosocial hazards affecting employee wellbeing.

Stakeholder Responsibilities

All stakeholders must collaborate to implement risk controls and maintain a safe working environment.

Summary

1. What is Risk Management? Definition: Systematic process of identifying, evaluating, and controlling risks.
2. Purpose: Minimize harm, ensure compliance, and promote a safe working environment.
3. Key terms and concept

Term	Definition
Hazard	Anything with the potential to cause harm.
Risk	Likelihood that a hazard will cause harm and the severity of that harm.
Control	Measures taken to reduce risk.
Uncertainty	Lack of complete certainty about outcomes or risk levels.

Summary

4. Risk in the Context of OHS: Importance of risk management in preventing workplace injuries and illnesses. Legal and ethical responsibilities of employers and safety professionals.

5. Risk Management Frameworks

   Typical steps:
   Hazard Identification, Risk Assessment, Risk Control, Monitoring & Review, Hierarchy of Controls

Summary

6. **Common Workplace Hazards**
   Physical (e.g., noise, heat)
   Chemical (e.g., solvents, fumes)
   Biological (e.g., bacteria, viruses)
   Ergonomic (e.g., repetitive strain)
   Psychosocial (e.g., stress, bullying)

7. **Assessing Risk**
   Qualitative vs. Quantitative methods
   Risk matrix: Likelihood × Severity

Next: Lecture 2: Risk Assessment Methodologies

Lecture Summary:

A range of risk assessment methods, including qualitative, quantitative approaches, providing foundational insight into how risks are evaluated in different workplace contexts.

Learning Objectives:

- Differentiate between types of risk assessments.
- Apply appropriate methodology to workplace scenarios.
- Interpret risk assessment outcomes.