

Risk Management in Practice

Lecture Title:

Introduction to Risk Management in Occupational Health & Safety

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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.**



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.

WHY
is it important to
have a whole module
dedicated for
Risk Management
in health and safety?

SAFETY

COMPLIANCE

HEALTH & WELL-BEING


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

	Skydiving: Thrill for some, danger for others
	Public Speaking: Opportunity vs. anxiety
	Workplace Hazards: Familiar vs. unknown risks

What Does Risk Mean to You?

Threat Consequence Impact
Damage **Danger** Exposure
Injury **Hazard** Safety Concern
Exposure Probability
Probability Volatility
Cost **Uncertainty** Risky
Chance Vulnerability
Precaution **Loss** Problem
Crisis Unpredictability

Risk Assessment



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:

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

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

Importance of Accountability

THE IMPORTANCE OF ACCOUNTABILITY

Jobs should be assigned to responsible persons with a **Deadline** set for completion.



LIKELIHOOD

×



SEVERITY



JOBS



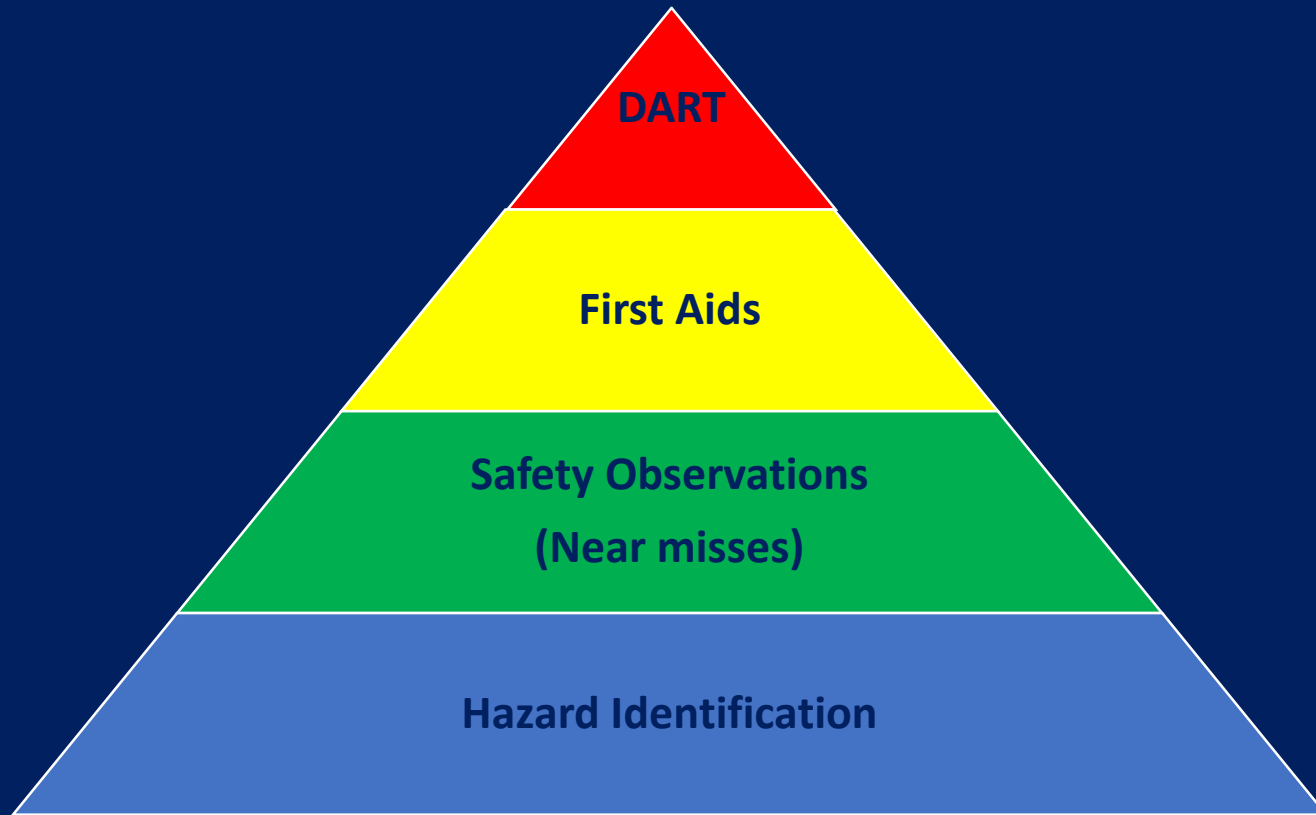
RESPONSIBLE



DEADLINE

Risk Index (RI)			
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



Facility Risk Assessments
Task Based Risk Assessments
Machine Risk Assessments

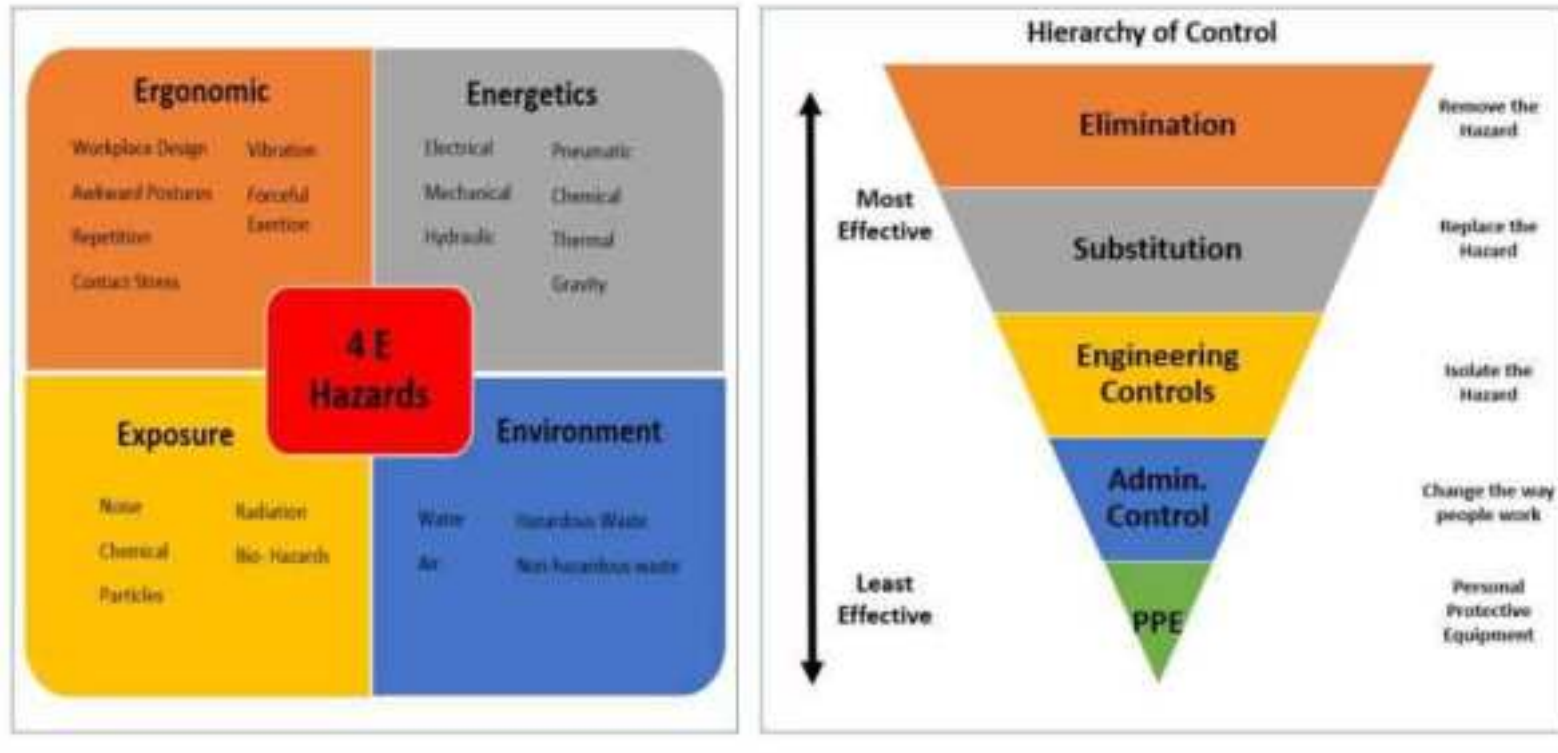
The 3 Major Risk Program

Safety Observation Improvement Report

Example of RA

4 E (Ergonomic, Energetics, Exposure, Environment)

4 E Hazards & Control



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 0 - No Exposure (exposure never occurs) 1 - Low (occurs < 1x per month) 2 - Medium (occurs weekly to monthly) 4 - High (occurs daily to weekly)			Probability of Injury (% chance) 1 - Not likely to occur (0-10%) 2 - Possible, somewhat unlikely (10-50%) 6 - Possible and could occur (50-90%) 10 - Likely to occur (>90%)			Severity of Impact 0 - No injury (near miss) No environ. impact (near miss) 1 - Minor injury (first aid) Minor environ. impact (contained spill or release) 2 - Moderate injury (medical) Moderate environ. impact (limited to site premises) 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	S	Risk Rating	F	P	S	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	Bombus Walk N°	Areas	Status	EHS Team	MEMBER
	Week 38	19.09.2022 - 25.09.2022	22-Sep-2022	38.1	Fire Extinguisher Condition Inspection (Kitchen 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 Recirculation + QICs + 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	Rumba Accident Follow-up Finger Trapped	Done		
	Week 44	01.10.2022 - 06.11.2022	4-Nov-2022	44	Block B Ground Floor (Finishing + Casing + SPC)	Done		
	Week 44	01.10.2022 - 06.11.2022	2-Nov-2022	44.1	Inspection conducted to statutory requirements.	Done		
	Week 45	07.11.2022 - 13.11.2022	9-Nov-2022	45	Block B (VAULT + Granulator) + Perimeter + Electrical Transformer Rooms + WTS + Fire Pump Room	Done		
	Week 45	07.11.2022 - 13.11.2022	8-Nov-2022	45.1	Machine Shop - Lateral Guarding Assessment	Done		
	Week 45	07.11.2022 - 13.11.2022	9-Nov-2022	45.2	Roller Room - Lateral Guarding Assessment	Done		
	Week 45	07.11.2022 - 13.11.2022	11-Nov-2022	45.3	Pressing - Inaglio Hand Press Guarding Assessment	Done		
	Week 46	14.11.2022 - 20.11.2022	16-Nov-2022	46	Import + Export loading bays + Shipping Offices + Engineering Stores + Engineering workshop	Done		

SAFETY COMPLIANCE PROCESS WALKS

Topics	Month to be completed
Harassment Communication	JULY
Personal Protective Equipment	AUGUST
Manual Handling	SEPTEMBER
Emergency Equipment	OCTOBER
Lifting Equipment	NOVEMBER
Electrical Safety	DECEMBER
Machine Guarding	JANUARY
Safety Signs	FEBRUARY
Work Environment	MARCH
Portable Ladders	APRIL
Flammable & Compressible Materials	MAY
DOT & Engineering	JUNE

Question	Completed Yes (2)	Completed No (1)	Current Yes (3)
Are the dependent components in your area clearly labeled?			
Are all the electrical components in your cabinet and in tests?			
Are the PCB numbers for the electrical testing used?			
Is the area equipped with adequate lighting for testing?			
Are PCB's for the field tests in your area available? (What about if necessary?)			
Has the test circuit board not been tested 8 years according to the control system regulations?			
Are you aware of the time going and test location?			
Is the area equipped with adequate storage space for components?			
Is the area free from electrical pollution and is everything kept in the cabinet?			



Enhanced Safety Culture

CAPA Management & Accountability

ID	Classification	Description / Observation	Reported / Reported by	Date Reported	Person Responsible for the action	Last updated / to be closed on	Risk Evaluation prior CA			Risk Rating	Corrective Action	Residual Risk after CA			Status
							Likelihood	Severity	Overall Risk Index			Likelihood	Severity	Overall Risk Index	
001-2020	Safety Suggestion	Proper use of machines and find safe method	Thomas Thompson	14 April 2020	Workers	14 April 2020	2	3	6	Low	Proper use of machines and find safe method	2	3	6	Closed

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

Rating	Level	Description
1	Low	Scratch or bruise
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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 Rating
Likelihood x Severity = Risk Index (H/M/L)

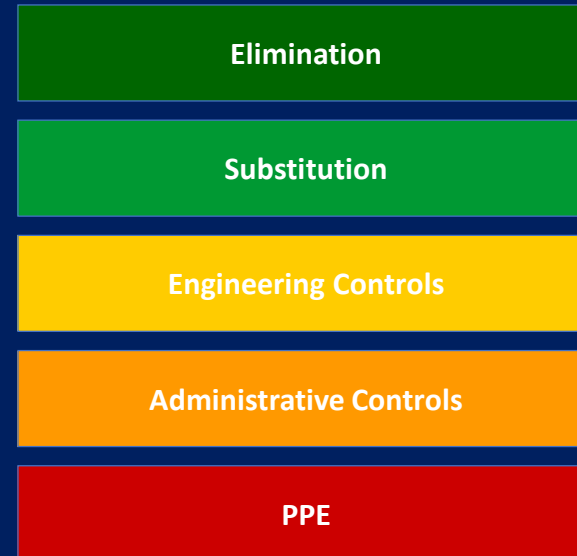
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All observations/deviations are registered and given target date for closure according to the risk rating

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

**THE IMPORTANCE
OF
RISK
COMMUNICATION
and
STAKEHOLDER
ENGAGEMENT
in health and safety**



COMMUNICATION



STAKEHOLDERS



HEALTH & SAFETY

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 $\text{Risk} = \text{Likelihood} \times \text{Severity}$.

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.

Types of Risks 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



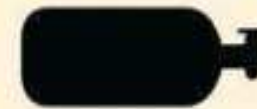
SENSITIZERS



TOXIC
SUBSTANCES



MUTAGENS



COMPRESSED
GASES



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.



Understanding Risk: Concept and Examples

- **Definition: Risk is the effect of uncertainty on objectives, often measured as Likelihood × Severity.**
- **Examples:**
 - - **Slippery floor → Risk of falls**
 - - **Loud machinery → Risk of hearing loss**
 - - **Poor lighting → Risk of eye strain or accidents**



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

3. 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.

4. Risk Management Frameworks

Typical steps:

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



Summary

5. 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)

6. 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.**





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