

Risk Management in Practice

Lecture 1 : Introduction to Risk Management in Practice

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**Undergraduate Diploma in
Occupational Health and Safety**

Lecture Aim

- Understand key risk management concepts and frameworks

Understanding key risk management concepts and frameworks enables the recognition of workplace hazards, assess potential risks, and apply effective control measures. It also provides insight into structured systems, such as international standards and models, that organisations use to manage safety, ensure compliance, and continuously improve performance.



What is Risk Management?

- Risk management is the systematic process of identifying hazards, assessing the likelihood and consequences of harm, and implementing control measures to reduce risk. It helps organisations prevent incidents, protect people and assets, maintain operational continuity, and meet legal and regulatory obligations.



Risk Management Action Plan Diagram



Why Risk Management Matters

- Protects workers from injury, illness, and fatalities
- Identifies workplace hazards before incidents occur
- Reduces accidents, downtime, and associated costs
- Ensures compliance with health and safety legislation
- Promotes a positive safety culture and worker confidence
- Protects organisational assets and reputation
- Supports business continuity and productivity
- Enables continuous improvement in workplace safety systems



Key Terminology Overview

- **Hazard** – Anything with the potential to cause injury, illness, or harm
- **Risk** – The likelihood and severity of harm occurring from a hazard
- **Exposure** – The extent to which a person comes into contact with a hazard
- **Risk Assessment** – The process of identifying hazards and evaluating risks
- **Control Measure** – Actions or systems used to eliminate or reduce risk
- **Hierarchy of Controls** – Ranked control methods from most to least effective
- **Residual Risk** – Risk remaining after controls are applied
- **Incident** – An unplanned event that results in, or could result in, harm
- **Near Miss** – An incident that did not cause harm but had the potential to do so
- **Personal Protective Equipment (PPE)** – Equipment worn to reduce exposure to hazards



What is a Hazard?

• A hazard is anything with the potential to cause injury, illness, damage, or harm to people, property, the environment, or a combination of these.

- Slips, trips, and falls
- Moving machinery and equipment
- Hazardous chemicals and substances
- Working at heights
- Fire and explosion risks
- Poor ergonomics and workstation design

Manual handling and lifting

Noise and vibration

Electrical hazards

Confined spaces

Biological agents (bacteria, viruses)

Psychosocial hazards (stress, fatigue, bullying)



What is Risk?

OHS risk refers to the combination of the likelihood of occurrence of a work-related hazardous event and the severity of injury and ill health that can be caused by the event. In general, it represents the chance of an adverse event or outcome in the workplace, such as injury, illness, or property damage



Risk vs Hazard

- Hazard = source of harm Risk = chance of harm

https://www.youtube.com/watch?v=BnTQHeL_2ww



What is Exposure?

- Exposure is the condition of a worker coming into contact with a workplace hazard, such as chemicals, noise, heat, or biological agents.
- The extent of exposure depends on how long, how often, and how intensely a person contacts the hazard.
- Safe exposure levels are defined by occupational safety standards to prevent injury or illness (ELVs - Exposure Limit Values)



Examples of Exposure?

1. Chemical fumes (factory work)

Duration: 8 hours per shift

Frequency: Daily

Intensity: High concentration without proper ventilation

2. Noise (construction site)

Duration: 6–10 hours

Frequency: Several days per week

Intensity: Very loud machinery above safe decibel levels

3. Dust (cement manufacturing work or quarring)

Duration: 4–8 hours

Frequency: Daily

Intensity: Moderate to high airborne dust levels

4. Heat (kitchen work)

Duration: Several hours continuously

Frequency: Daily

Intensity: High temperatures exceeding comfort and safety limits



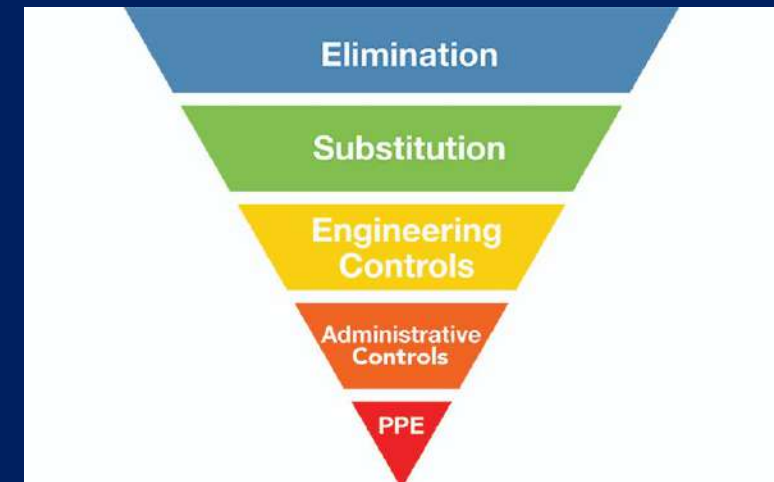
General Principles of Prevention

- **Avoid risks** by eliminating hazards wherever possible.
- **Evaluate risks** that cannot be avoided to understand their impact.
- **Eliminate risks at the source** rather than relying only on protective equipment.
- **Adapt work to the worker**, including workplace design and task allocation.
- **Take account of technical progress** and use safer, modern equipment.
- **Replace dangerous substances or processes** with less hazardous alternatives.
- **Develop a coherent prevention policy** covering technology, organization, and working conditions.
- **Give priority to collective protection measures** over personal protective equipment.
- **Provide clear instructions, information, and training** to ensure workers understand risks and controls.



OHS Hierarchy of Control

- **Elimination** – completely remove the hazard from the workplace
- **Substitution** – replace the hazard with a safer alternative
- **Engineering controls** – isolate people from the hazard (guards, ventilation)
- **Administrative controls** – change work procedures, training, or schedules
- **Personal Protective Equipment (PPE)** – use protective clothing and equipment
- *(Elimination is the most effective control, PPE the least effective.)*
- <https://www.youtube.com/watch?v=ijXc7-XU4Eg>



(Hazard + Exposure = Risk)

- **Workplace Scenarios:**
- **Chemical plant**
Hazard: Toxic chemicals
Exposure: Inhaling fumes during handling
Risk: Respiratory illness or poisoning
- **Construction site**
Hazard: Working at height
Exposure: Standing on unguarded scaffolding
Risk: Falls causing serious injury or death
- **Manufacturing workshop**
Hazard: Loud machinery
Exposure: Continuous noise during shifts
Risk: Long-term hearing loss



Organisational Safety

Organisational Safety refers to the systems and practices an organisation uses to protect workers from harm.

1. It includes clear safety policies and procedures.
2. Management commitment and leadership are essential.
3. Regular risk assessments and inspections are conducted.
4. Training and supervision ensure safe work practices.
5. Employee participation in safety programs is encouraged.
6. Continuous monitoring and improvement help prevent accidents and occupational illnesses



Operational Continuity

- **Definition of Operational Continuity:** Operational continuity is the ability of an organisation to maintain its essential functions and services during and after disruptions, ensuring minimal downtime and sustained productivity. It focuses on planning, resilience, and rapid recovery from incidents that could interrupt normal operations.



Operational Continuity Disruption

- **How Operational Continuity Can Be Disrupted by Lack of OHS (Occupational Health and Safety):**

Occupational Health and Safety (OHS) practices are critical for protecting employees, equipment, and workplace processes. A lack of proper OHS can disrupt operational continuity in several ways:

- **Increased Workplace Accidents:**

Without safety protocols, accidents can injure employees, leading to absenteeism or loss of skilled labour.

- Example: A factory worker injury halts a production line, delaying product delivery

- **Equipment Damage or Malfunction:**

- Unsafe practices can damage machinery or infrastructure, causing operational downtime.
- Example: Ignoring maintenance schedules or safety checks leads to equipment failure.



Operational Continuity Disruption

Legal and Regulatory Interruptions:

Non-compliance with OHS regulations can result in fines, shutdowns, or legal actions, halting operations.

Low Employee Morale and Productivity:

Unsafe working conditions reduce motivation and efficiency, indirectly impacting continuity.

Reputational Damage:

Accidents due to poor OHS practices can harm an organization's reputation, affecting customer trust and business continuity.



Regulatory & Ethical Compliance

- Regulatory and ethical compliance in Occupational Health and Safety (OHS) ensures organisations follow legal requirements and moral obligations to protect their employees. Adhering to laws, guidelines, and ethical practices reduces workplace accidents, promotes a safe environment, prevents legal penalties, and fosters trust, accountability, and sustainable operational continuity.



Introduction to OHS Management System

A **Health and Safety Management System (HSMS)** is a structured framework that organisations use to manage workplace safety and ensure compliance with health regulations. It involves identifying hazards, assessing risks, implementing control measures, and monitoring performance. Key components include policies, procedures, training, incident reporting, and continuous improvement. The system promotes a proactive approach, preventing accidents, injuries, and illnesses, while fostering a culture of safety. By integrating safety into everyday operations, it protects employees, reduces operational risks, and ensures legal compliance. Ultimately, an HSMS enhances organizational efficiency and well-being by systematically managing workplace health and safety.



OHS Management System

1. ISO 45001

Overview: An international standard for occupational health and safety management systems.

Purpose: Helps organizations reduce workplace risks, improve employee safety, and comply with legal requirements.

Key Features:

- Risk identification and assessment.

- Leadership and worker participation.

- Continuous improvement through the Plan-Do-Check-Act (PDCA) cycle.

- Integration with other management systems like ISO 9001 (Quality) and ISO 14001 (Environmental).

Certification: Organizations can be certified to demonstrate compliance.



OHS Management System

2. OHSAS 18001 (Now replaced by ISO 45001)

Overview: The predecessor to ISO 45001; widely used before 2018.

Purpose: Provided a framework to manage OHS risks and improve safety.

Key Features:

- Risk assessment and hazard control.
- Policies and objectives for safety management.
- Employee involvement.

Transition: Most organizations have moved from OHSAS 18001 to ISO 45001.



OHS Management System

3. ANSI/ASSP Z10 (U.S.)

Overview: American standard for occupational health and safety management.

Purpose: Guides U.S. organisations in improving workplace safety.

Key Features:

- Emphasises employee participation.

- Focus on continuous improvement.

- Integration with existing quality or environmental management systems.



OHS Management System

4. ILO-OSH 2001

Overview: Developed by the International Labour Organization.

Purpose: Promotes occupational safety and health management practices worldwide.

Key Features:

- Framework for OHS policy and planning.

- Hazard prevention and risk control.

- Emphasis on consultation, participation, and continuous improvement.

Global Focus: Especially useful for countries with less formalized national OHS standards.



OHS Management System

5. BS 8800

Overview: British standard for OHS management.

Purpose: Provides guidance for establishing, implementing, and improving an OHS management system.

Key Features:

- Focus on risk management.

- Encourages proactive safety measures.

- Basis for developing ISO 45001 compliance.



OHS Management System

6. Workplace-Specific / Industry Standards

Examples:

NEBOSH (National Examination Board in Occupational Safety and Health) Guidance: For training and workplace safety implementation.

ANSI standards in construction or manufacturing.

API (American Petroleum Institute) standards for oil and gas.

Purpose: Tailored approaches for industry-specific hazards and regulatory compliance.



OHS Management System

7. Vision Zero

Overview: A global strategy aimed at **eliminating all work-related injuries and fatalities**, rather than just reducing risks.

Origin: Developed in Sweden in the 1990s and adopted internationally by various organizations and governments.

Core Principle: “**No loss of life is acceptable**” — safety is a moral imperative, not just a compliance issue.

Key Features:

- Focus on **leadership commitment** and safety culture.
- Proactive **hazard identification and elimination**, not just control.
- Engagement of **all employees** in safety decisions.
- Continuous **monitoring and learning** from incidents.
- Promotes **systemic change** in workplace safety processes.

Approach vs. Standards:

Vision Zero is more of a **philosophy or culture-driven approach** rather than a certifiable standard like ISO 45001. It can be implemented alongside other OHS management systems.



Key Differences between Different OHS Management Systems

Feature	ISO 45001	OHSAS 18001	ANSI Z10	ILO-OSH 2001
International Recognition	High	Moderate	Low (U.S.-centric)	Moderate
Certification Available	Yes	Yes (legacy)	Optional	No
Continuous Improvement	PDCA	PDCA	Emphasized	Emphasized
Legal Compliance Focus	Yes	Yes	Yes	Guidance only
Employee Involvement	High	High	High	High



Risk Assessment

An OHS Risk Assessment (Occupational Health and Safety Risk Assessment) is a systematic process used to identify hazards in the workplace, evaluate the risks associated with those hazards, and implement control measures to reduce or eliminate the risk of injury, illness, or damage. It's a key part of workplace safety management and is often required by law in many countries (including Malta) *LN 36/2023 – SL 646.11*



Risk Assessment

1. Identify Hazards

A hazard is anything that **could cause harm**, such as:

- Physical hazards: machinery, slips, trips, falls
- Chemical hazards: solvents, fumes, dust
- Biological hazards: bacteria, viruses
- Ergonomic hazards: repetitive strain, poor posture
- Psychological hazards: stress, workplace violence

2. Assess the Risks

This step evaluates:

Likelihood: How likely it is that the hazard could cause harm

Severity: How serious the potential harm could be

Risk level: Combining likelihood and severity to prioritize which hazards need attention first

A common method is the **Risk Matrix**, which categorizes risks as Low, Medium, High, or Extreme.

Risk Matrix		Consequence				
		Insignificant	Minor	Moderate	Major	Severe
Likelihood	Almost Certain	Medium	High	Very High	Very High	Very High
	Likely	Medium	High	High	Very High	Very High
	Possible	Low	Medium	High	High	Very High
	Unlikely	Low	Low	Medium	Medium	High
	Rare	Low	Low	Low	Low	Medium

Risk Assessment

3. Implement Control Measures

Controls are measures to **eliminate or reduce risk**. The hierarchy of controls is typically:

Elimination – Remove the hazard completely

Substitution – Replace it with something safer

Engineering controls – Isolate people from the hazard

Administrative controls – Change the way people work (training, procedures)

PPE (Personal Protective Equipment) – Last line of defense (gloves, masks, helmets)

4. Monitor and Review

Risks and controls should be **regularly reviewed**, especially when:

New equipment or processes are introduced

An incident or near-miss occurs

Laws or standards change





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