Risk Assessment Evaluation and Control

Lecture Title: The Hierarchy of Controls in OH

Lecturer: Ms. Mariella Camilleri

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Undergraduate Diploma in Occupational Health and Safety

Lecture Aim

- Understand of the Hierarchy of Controls in OHS.
- Learn how to assess risks and select suitable control measures.
- Understand the key elements of the Permit To Work (PTW)

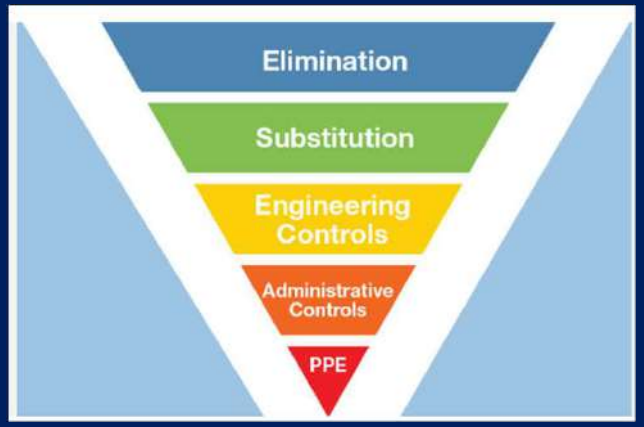
Risk Assessment – 5 Steps Process

Aim: To remove the risk or reduce it to a level that is As Low As Reasonably Practicable (ALARP).

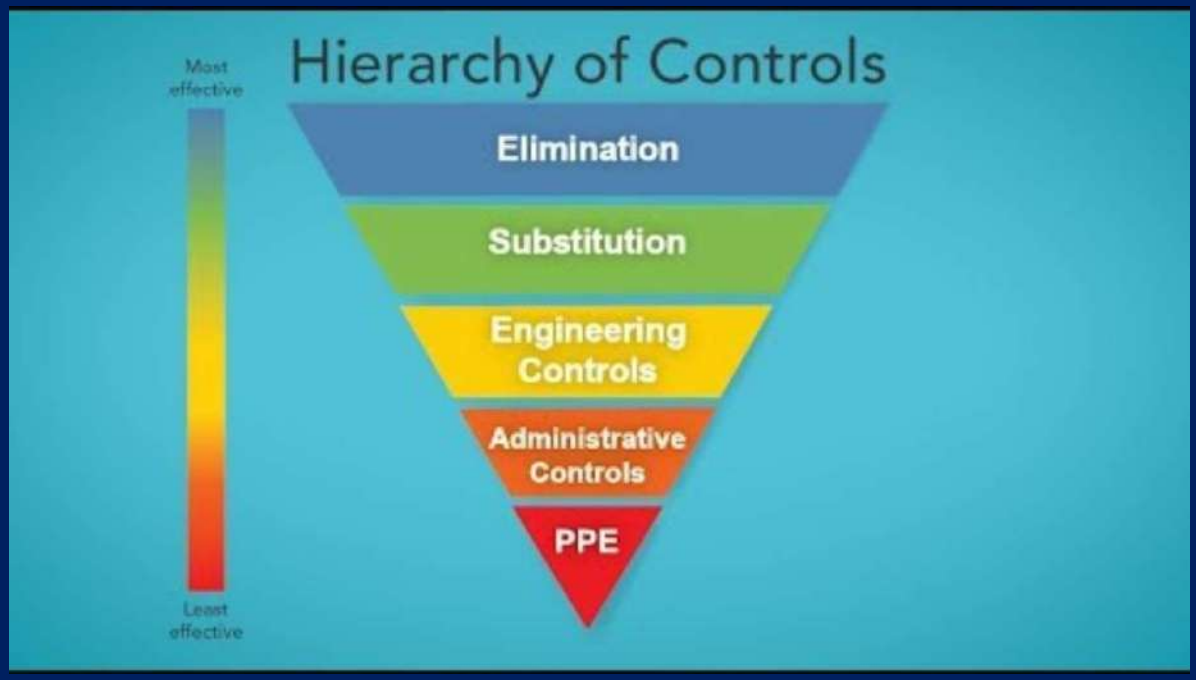
General Hierarchy of Control

When hazards are identified through the risk assessment process, it is necessary to decide on the precautions needed to control those hazards to an acceptable level.

This is the most important part of the risk assessment – *IDENTIFYING* the further action that is needed and taking that action.



General Hierarchy of Control



General Hierarchy of Control – Class Discussion

- Why is it important to take further action after identifying a hazard?
- What could happen if a workplace identifies hazards but doesn't take any action?

- Can you think of examples of common hazards in your daily environment? How could they be controlled?
- What does "acceptable level of risk" mean to you? Who decides what's acceptable?

General Hierarchy of Control – Class Discussion

- Why is it important to take further action after identifying a hazard?
  - Identifying a hazard alone does not remove the danger. Action must be taken to control or eliminate the risk.
  - Further action helps prevent accidents, injuries, illnesses, and possible fatalities. It ensures the workplace complies with occupational health and safety legislation and legal duties.
  - Taking action protects employees, visitors, contractors, and the general public.
  - It reduces costs related to accidents, compensation claims, downtime, and damaged reputation.
  - Implementing controls promotes a positive safety culture and employee confidence. Hazards can worsen over time if ignored, increasing the likelihood and severity of incidents.
  - Monitoring and reviewing controls ensures that the measures introduced remain effective.

General Hierarchy of Control – Class Discussion

- What could happen if a workplace identifies hazards but doesn't take any action?
  - Employees or third parties may suffer injuries, illnesses, or fatalities. Minor hazards can develop into serious accidents or emergencies over time.
  - The employer may face legal action, fines, penalties, or prosecution for failing to protect workers. Work may be disrupted due to accidents, investigations, or enforcement action.
  - Increased absenteeism, low morale, and reduced productivity may occur among employees. The organisation's reputation and public trust can be negatively affected.
  - Insurance and compensation costs may increase significantly. It creates a poor safety culture where workers may stop reporting hazards or unsafe practices..

General Hierarchy of Control – Class Discussion

- Can you think of examples of common hazards in your daily environment? How could they be controlled?

Common Hazard	Daily Environment Example	Possible Control Measures
Slips, Trips and Falls	Wet floors, loose cables, uneven stairs	Good housekeeping, warning signs, non-slip flooring, proper lighting
Electrical Hazards	Damaged plugs or overloaded sockets	Regular inspections, maintenance, avoid overloading sockets
Fire Hazards	Blocked exits, unattended cooking, faulty equipment	Fire extinguishers, emergency exits kept clear fire drills
Ergonomic Hazards	Poor sitting posture while using computers	Ergonomic chairs, adjustable screens, regular breaks
Manual Handling	Carrying heavy shopping bags or lifting boxes	Proper lifting techniques, use of trolleys, reduce heavy loads
Chemical Hazards	Cleaning products used at home or work	Proper storage, ventilation, reading safety labels, gloves
Noise Hazards	Loud music, machinery, traffic	Reduce exposure time, hearing protection, quieter equipment
Biological Hazards	Germs in shared spaces or food contamination	Hand hygiene, cleaning routines, safe food handling
Stress and Fatigue	Long working hours or lack of rest	Work-life balance, breaks, communication, workload management

General Hierarchy of Control – Class Discussion

- What does “acceptable level of risk” mean to you? Who decides what’s acceptable?
  - An “acceptable level of risk” means that the risk has been reduced to the lowest level reasonably practicable after appropriate control measures have been implemented. While some level of risk may still remain, it should not be likely to cause harm when proper precautions are followed.
  - An acceptable risk level is usually determined through:
    - Risk assessments carried out by the employer or competent person
    - Occupational health and safety legislation and standards
    - Industry best practices and guidance
    - Input from employees, supervisors, and health & safety representatives
    - The severity and likelihood of the hazard causing harm
    - Ultimately, the employer has the legal responsibility to ensure that risks are controlled and that the workplace remains safe for employees and third parties.
  - **Example:**
    - Using a ladder at work may still involve some risk, but if the ladder is inspected, used correctly, placed on stable ground, and workers are trained, the remaining risk may be considered acceptable.

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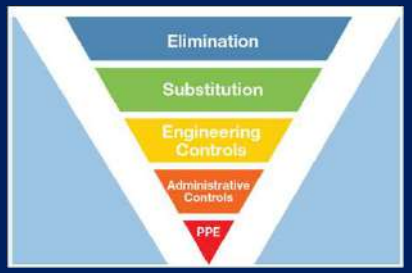
General Hierarchy of Control

Elimination - Remove the hazard entirely.

- **Hazard:**
  - A machine in a factory emits harmful fumes.
- **Action:**
  - Replace the machine with a more modern one that does not emit harmful fumes.



General Hierarchy of Control

Substitution – Use a safer alternative.

Hazard:

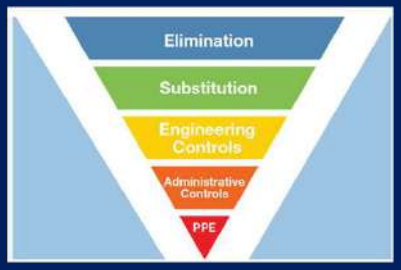
- Using a toxic solvent in a cleaning process.

- **Action:**
  - Substitute the toxic solvent with a non-toxic, biodegrade cleaner.

General Hierarchy of Control

Engineering Controls – Isolate People from the Hazard

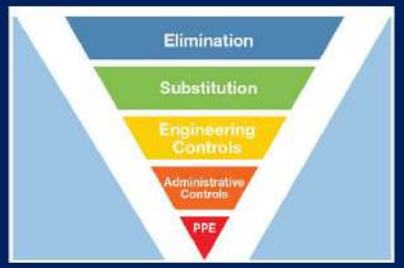
- **Hazard:**
  - Noise from machinery in a manufacturing plant.
- **Action:**
  - Install soundproof enclosures around the noisy machinery.



General Hierarchy of Control

Administration Controls – Change the Way People Work

- **Hazard:**
  - Exposure to hazardous chemicals in a laboratory.
- **Action:**
  - Implement a rotating schedule to limit the time any one worker is exposed to the chemicals
  - Reduce time of exposure.
  - Supervision



General Hierarchy of Control

Administration Controls – Permit to Work (PTW)

Permit to Work Form to Include:

- Permit Title.
- Permit Number.
- Job Location.
- Plant Identification.
- Description of work (& limitations).
- Hazard Identification.
- Precautions.
- Protective Equipment.
- Authorization Signature (isolations/precautions/date, time, duration of permit).
- Acceptance.
- Extension / shift hand-over procedures.
- Hand back.
- Cancellation.
- Signature.

General Hierarchy of Control

Administration Controls – Permit to Work (PTW) 1of2

WHY we require the Permit To WORK (PTW)

- To ensure workers are not exposed to hazards and safety devices are placed before work can commence
- Employees do not cause hazardous conditions for others.
- Ensure personnel have understood what work need to be carried out.

General Hierarchy of Control

Administration Controls – Permit to Work (PTW) 2of2

WHY we require the Permit To WORK (PTW)

- Faulty equipment is removed or repaired.
- Safety devices are replaced after work is completed.
- Normal work can resume.

General Hierarchy of Control

Administration Controls – Permit to Work (PTW)

Permit no. (To be filled in by H&S)	
List other permits in use at same time & location (To be filled in by Permit Authoriser)	

WORK AT HEIGHT PERMIT

Section 1 – Basic Permit Information – To be filled in by permit Authoriser prior to commencing work

Location:		
Description of Work:	**High Hazard Area:**	Yes ☐ No ☐

Potential Hazards:

☐ Electrical ☐ Mechanical ☐ Hazardous Energy ☐ Fire / Heat	☐ Explosion ☐ Lighting ☐ Noise ☐ Work equipment	☐ Material Handling & Ergonomics ☐ Biological ☐ Fall from height	☐ Falling objects ☐ Slips, trips & falls ☐ Traffic movement ☐ Hazardous substances	☐ Environment comfort factors ☐ Others. Specify:
Date & Time Permit applies:	____ / ____ / ____ (day / month / year)	____:____ hrs (time)	____ (authorised duration)	
Working Team			Are workers trained to carry out this work? Yes ☐ No ☐	
GSD Employees ☐ *Contractor Employees ☐		*Name of Contracting Company:		
Name & Surname & signature that permit contents are understood:		Name & Surname & signature that permit contents are understood:		

Section 2 – Safety Instructions

Safety instructions to be followed	To be filled out by Permit Authoriser prior to commencement of works		To be completed by worker at start of works	Inspection by Supervisor during works
	Comments	Instruction applicable? (Y / N/A)	Instructions followed? (Y / N / N/A)	Instructions followed? (Y / N / N/A)
Equipment and systems inspected and are appropriate to use in work environment – **Specify type of equipment in comments**				
If equipment is a mobile scaffolding please refer to checklist GSD/H F0379. Inspect and document prior use.				
Inspect, anchor, assemble, and use fall protection and rescue equipment safely.				
Illumination appropriate				
Energy sources locked out				
In case of hot work combustibles within 15.2m are moved or covered				

General Hierarchy of Control

Administration Controls – Permit to Work (PTW)

Permit no. (To be filled in by H&S)

List other permits in use at same time & location (To be filled in by Permit Authoriser)

PPE provided and inspected – specify PPE in comments				
Identified fall hazards. Conduct fall protection and rescue procedures.				
Warning signs / barricades placed				
Name of rescuer responsible for the ABOVE:				
Safety instructions to be followed (continued)	**To be filled out by Permit Authoriser prior to commencement of works**		**To be completed by worker at start of works**	**Inspection by Supervisor during works**
	Comments	**Instruction applicable? (Y / N/A)**	**Instructions followed? (Y / N / N/A)**	**Instructions followed? (Y / N / N/A)**
Other persons affected by the work removed from area				
Tie-off points identified				
All equipment is inspected prior to use				
Section 3: Permit Authorisation & Signing Off on Safety Checks:				
Work authorised?	**Permit Authoriser Name & Surname:**		**Signature:**	**Date:** ___ / ___ / ___
Safety Instructions check (section 2) completed at start of works	**Worker carrying out checks - Signature:**		**Date:** ___ / ___ / ___	**Time:** ____:____hrs
Safety Instructions Inspection (section 2) completed by supervisor during works	**Supervisor Name, Surname & Signature:**		**Date:** ___ / ___ / ___	**Time:** ____:____hrs
Section 4 – To be filled in only in case of an Emergency stop to works				
Works stopped due to emergency situation	**Name of person stopping works:**	**Signature:**	**Date:** ___ / ___ / ___	**Time:** ____:____hrs
Reasons for stopping works & measures taken:				
Section 5 – To be filled in after work is completed				
Checks after completion of works	**To be completed by worker at end of works (Y / N / N/A)**	**To be completed by Supervisor at end of works (Y / N / N/A)**	**Work completion Date & Time:** ____ / ____ / ____ (day / month / year) ____:____hrs (time)	
All equipment removed				
All lockouts and tag outs removed			**Worker Signature:** _____	
Area cleaned				

ON COMPLETION OF WORK KINDLY FORWARD THIS FORM TO THE H&S OFFICE

General Hierarchy of Control

Administration Controls – Permit to Work (PTW)

Ref to LN 41/2004 (Work Places Regulations Confined Spaces) - The Importance of carrying a RA and PTW.

https://legislation.mt/eli/sl/646.19/eng

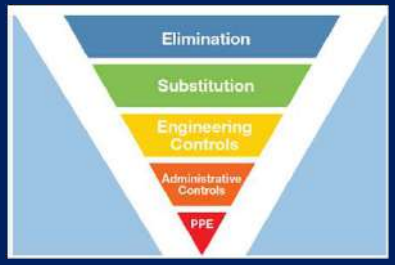
To access and discuss

General Hierarchy of Control

Personal Protective Equipment (PPE) – Under the Maltese Law S.L. 646.13 (Legal Notice 121 of 2003).

https://legislation.mt/eli/sl/646.13/eng

To access and discuss



General Hierarchy of Control

Scenario: Hot Work in a Confined Space

Task: A worker needs to weld inside a storage tank.

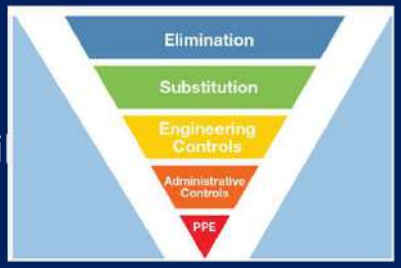
Hierarchy of Controls Application:

- Elimination: Can the welding be avoided (e.g., replace with bolted joints outside the tank)?
- Substitution: Use a cold bonding method instead of welding.
- Engineering Controls: Ensure mechanical ventilation to remove fum
- Administrative Controls:
  - Issue a Hot Work Permit and Confined Space Entry Permit.
  - Assign a fire watch and continuous gas monitoring.
- PPE: Use flame-resistant clothing, gloves, helmet, and respirator.
- PTW Link: Hot Work & Confined Space Permits required before starting.

General Hierarchy of Control

Scenario: Electrical Maintenance

- Task: Electricians need to replace a damaged circuit breaker.
- Hierarchy of Controls Application:
    - Elimination: Isolating the power completely before maintenance.
    - Substitution: Replace with lower-voltage or safer equipment if possi
    - Engineering Controls: Lockout–Tagout (LOTO) devices installed.
    - Administrative Controls:
        - Electrical Work Permit issued.
        - Only competent, authorized personnel allowed.
    - PPE: Use insulated gloves, face shield, and arc-rated clothing.
    - PTW Link: Electrical Work Permit to ensure isolation and authorization.



General Hierarchy of Control

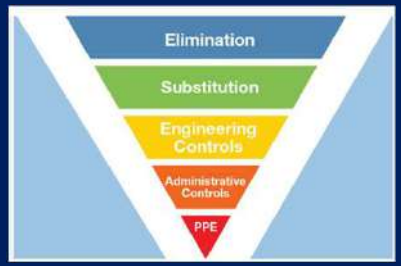
Scenario: Chemical Handling

- Task: Workers transferring corrosive chemicals from a storage tank to a smaller container.
- Hierarchy of Controls Application:
    - Elimination: Use pre-mixed solutions to avoid handling concentrated chemicals.
    - Substitution: Replace with a less hazardous chemical if possible.
    - Engineering Controls: Install automated transfer systems and spill containn
    - Administrative Controls:
        - Training and supervision.
        - Permit to Work for chemical transfer operations.
    - PPE: Chemical-resistant gloves, face shield, and apron.
    - PTW Link: PTW ensures all precautions (ventilation, spill kits, supervision) are in place.

General Hierarchy of Control

Scenario: Working at Height

- Task: Maintenance on lighting fixtures at 8 meters high.
- Hierarchy of Controls Application:
  - Elimination: Can work be done from the ground using extendable tools?
  - Substitution: Use mobile platforms instead of ladders.
  - Engineering Controls: Guardrails, harness anchor points.
  - Administrative Controls:
    - Working at Height Permit issued.
    - Trained personnel only.
  - PPE: Full-body harness, helmet with chin strap.
  - PTW Link: Work at Height Permit ensures risk assessment and fall protection compliance.



21 ACADEMY

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