

Construction Hazards and Risks Control

Lecture Title: Health & Safety in Construction: Risks, Hazards, & Legislation Overview

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**Undergraduate Diploma in
Occupational Health and Safety**



Did you ever do a risk assessment??

What is a Risk Assessment??

A risk assessment is a careful examination of:

- what could cause harm
- whether enough precautions are in place
- what more should be done

Without knowing we carry out risk assessments in our daily lives at all times.



A risk assessment is a dynamic document

- No such thing as a perfect risk assessment - Risk assessments are not infallible and require ongoing improvement.
- Mistakes and errors of judgement will occur,
- If you discover that something isn't right, rectify it.
- Risk assessments are dynamic documents amended to move with progress and change - Regular updates ensure assessments remain relevant to evolving workplace conditions.



Why do we carry out risk assessments?

- Legal Requirement
- Moral & Economic Responsibility



(LN36 of 2003) S.L. 646.11 –

General Provisions for Health and Safety at Workplaces Regulations



Article 4 - General duties of employers

4.(1) It shall be the duty of an employer to ensure the health and safety of workers at all times in every aspect related to the work.

(2) An employer shall make such appropriate arrangements for the effective planning, organisation, control, monitoring and review of the preventive and protective measures, taking into consideration the nature of the activities and the size of the undertaking.

(3) An employer shall take all necessary measures for the safeguard of occupational health and safety, and for this purpose shall prevent occupational risks and provide information and training as required.



Article 5 – Further Duties

Without prejudice to the generality of the provisions of these regulations, an employer shall:

- (a) identify hazards at the place of work and shall avoid risks to occupational health and safety;
- (b) evaluate those risks to the health and safety of workers which cannot be avoided and shall combat them at source;
- (c) adapt the work to the individual, especially with regards to the design of work places, the choice of work equipment and the choice of working and production methods, with a view in particular to alleviate monotonous work and work at predetermined work-rate and to reduce their effect on health.



Article 6 - Evaluation by the employer

(1) An employer shall evaluate risks to occupational health and safety, inter alia in the choice of work equipment, the chemical substances or chemical preparations used, the work practices or activities, and the design and fitting-out of work places, as well as the workers 'capabilities to carry out safely the task or tasks entrusted to them.

(2) Subsequent to the evaluation referred to in the preceding sub regulation, and as necessary, the employer shall take all necessary measures to prevent occupational risks to health and safety, and shall control those factors which are likely to give rise to accidents or which create a risk to occupational health and, or safety including where necessary by changing the working and production methods, so as to assure an improvement in the level of protection afforded to workers with regard to health and safety: Provided that such measures shall be integrated into all the activities and at all hierarchical levels within the undertaking and, or establishment.

Article 6 - Evaluation by the employer

(3) It shall be the duty of an employer to ensure that the planning and introduction of new technologies are the subject of consultation with the workers and, or their representatives, as regards the consequences of the choice of equipment, the working conditions and the working environment for the safety and health of workers.

(4) An employer shall take appropriate steps to ensure that only workers who have received adequate and suitable training may have access to areas where there is serious and specific danger.

Article 10 – Risk Assessments

10.(1) It shall be the duty of every employer and of every self-employed person to carry out, or to ensure that is carried out, suitable, sufficient and systematic assessment of all the occupational health and safety hazards which may be present at the place of work and the resultant risks involved concerning all aspects of the work activity.

(2) Where five or more workers are employed, an employer shall keep in his possession written or retrievable electronic copies of such assessments and shall ensure that they are updated regularly -
Does not apply for construction.



Article 10 – Risk Assessments

(3) An employer and a self-employed person shall decide on the protective measures appropriate to the nature of the work being carried out which are required to be taken following these assessments and, if necessary, the protective equipment to be used.

(4) The assessments referred to in this regulation shall be reviewed whenever there is any major change in working conditions, or whenever the employer or self-employed person have reason to suspect that they are no longer valid.



What makes a Risk Assessment Suitable, Sufficient and Systematic



Suitable;

- Suitable: A suitable risk assessment is one that is appropriate for the specific hazards and risks present in a particular environment or task.
- It should take into account the unique characteristics of the workplace/ task, the tasks being performed, and the individuals involved.
- This means that the assessment must be tailored to effectively identify and address the risks associated with that context.

Sufficient;

- A sufficient risk assessment is comprehensive enough to cover all relevant hazards and risks.
- It should provide enough detail to ensure that all potential dangers are identified and evaluated.
- This includes considering the likelihood of incidents occurring, the severity of potential outcomes, and the effectiveness of existing control measures.
- A sufficient assessment ensures that all necessary precautions are taken to protect health and safety.



Systematic;

- A sufficient risk assessment is comprehensive enough to cover all relevant hazards and risks.
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Types of Risk Assessments

General Risk Assessments

General risk assessments are broad evaluations designed to identify and mitigate common hazards across similar premises or activities.

Examples:

- A construction general risk assessment might address common hazards like working at height, machinery operation, site traffic management, dust control, noise, vibration, etc .
- A general risk assessment for office work might cover risks like computer-related injuries, fire safety, and ergonomics.



Task Specific Risk Assessments

Focused on specific tasks or activities, this assessment evaluates the risks associated with performing particular jobs. It examines the processes involved and identifies potential hazards linked to those tasks.

Examples:

- Assembly of scaffolds
- Assembly of specific formwork
- Assembly of tower cranes



Specific Risk Assessments

Specific assessments focus on risks associated with a particular person or a specific process.

Examples: Young Persons, Pregnant Workers, Display Screen Equipment Users

Dynamic Risk Assessments

This assessment is conducted in real-time, often in situations where conditions may change rapidly, such as in emergency response or when working in unpredictable environments. It allows for immediate identification and management of emerging risks.

Examples: Emergency repairs in hazardous conditions.



Specialists Risk Assessments

These assessments require expertise and specific equipment to address complex or technical hazards, and includes a degree of monitoring and measurements.

Examples:

- Noise
- Lighting
- Vibration
- Ventilation
- Confined space
- COSHH



Types of hazards and Emerging Risks

- Chemical – e.g. gases, liquids, solids, dusts...
- Physical – e.g. noise, heat, vibration...
- Biological – e.g. bacteria, fungi...
- Mechanical – e.g. electricity, crush, falling objects...
- Ergonomic – e.g. workstation design, worker – comfortability.
- Psychosocial – e.g. occupational stress, employees' capabilities, production quotas, rest periods, harassment / bullying...



Purpose of the Risk Assessment

- Prevention of occupational health & safety risks
- Provides protective measures against emerging risks
- A source of information to workers
- Identifies training needs
- Provides for organisation and resources needs to implement controls
- Legal obligation of employers towards their employees



Purpose of the Risk Assessment

A good source for assisting employers in;

- Identify hazards and evaluate risks
- Select suitable equipment and materials
- Check if existing controls are adequate
- Prioritise further action
- Demonstrate compliance to authorities and workers
- Improve overall levels of protection



Reviewing Risk Assessments

Risk assessments must be reviewed when:

- New processes are introduced
- New equipment or materials are introduced
- Work organisation changes
- New technological advances
- New sites or work areas are used
- After accidents or near misses
- Periodically, depending on risk level



Risk Assessment Process

1. Establish programme
2. Structure the assessment
3. Collect information
4. Identify hazards
5. Identify who is at risk
6. Identify exposure patterns
7. Evaluate risks
8. Identify control options
9. Prioritise actions
10. Implement controls
11. Record assessment
12. Measure effectiveness
13. Review
14. Monitor programme



Risk Assessment - Preparation

Decide approach:

- Site-based
- Task-based
- Process-based
- Existing scenario or proposed scenario?

Collect information

- Visit the workplace
- Observe work activities
- Method statements
- SDS
- Drawings
- Site layout
- Past accidents and near misses
- Workforce required (including contractors)
- Competence or specialisation required



Risk Assessment – Hazard identification

- Consulting workers and supervisors
- Observing work activities
- Consult drawings, design, methodologies, SDS, etc

Consider:

- o normal work
- o maintenance works
- o cleaning works
- o emergency works



Risk Assessment – Who can be affected?

To consider:

- Directly exposed workers
- Other workers nearby
- Third party workers
- Other contractors and subcontractors
- Site Visitors
- Members of the public



Risk Assessment – How to evaluate the risk?

Likelihood Vs Severity

To consider:

- Frequency of exposure
- Duration of exposure
- Number of people exposed

			Severity				
		Description	Very low	Low	Medium	High	Very High
Description		Rating	1	2	3	4	5
Probability	Very likely	5	5	10	15	20	25
	Likely	4	4	8	12	16	20
	Possible	3	3	6	9	12	15
	Unlikely	2	2	4	6	8	10
	Very unlikely	1	1	2	3	4	5

Probability	
Very Likely	is expected to occur in most circumstances
Likely	Will probably occur
Possible	Might occur at some time in the future
Unlikely	Could occur but doubtful
Very/ Unlikely	This may occur in exceptional circumstances

Severity	
Very High	Fatality, permanent disability and multiple life-threatening injuries
High	Life-threatening injury or multiple serious injuries
Medium	Serious injury requires hospitalization of multiple medical treatment cases
Low	Minor injury requiring First Aid treatment
Very Low	Injury not requiring medical treatment

Risk Code	
	Unacceptable - requires an immediate action plan, task analysis or additional control measures
	Requires control of risk (ALARP)
	Acceptable - requires periodic monitoring

Risk Assessment Matrix

		Severity of the potential injury/damage				
		Insignificant damage to Property, Equipment or Minor Injury	Non-Reportable Injury, minor loss of Process or slight damage to Property	Reportable Injury moderate loss of Process or limited damage to Property	Major Injury, Single Fatality critical loss of Process/damage to Property	Multiple Fatalities Catastrophic Loss of Business
0 – 5 = Low Risk		1	2	3	4	5
6 – 10 = Moderate Risk						
11 – 15 = High Risk						
16 – 25 = extremely high unacceptable risk						
Likelihood of the hazard happening	Almost Certain 5	5	10	15	20	25
	Will probably occur 4	4	8	12	16	20
	Possible occur 3	3	6	9	12	15
	Remote possibility 2	2	4	6	8	10
	Extremely Unlikely 1	1	2	3	4	5

Risk Assessment Matrix

Table 2: Example of a qualitative risk matrix

	Low Severity	Medium Severity	High Severity
Low Probability	Very Low Risk	Low Risk	Medium Risk
Medium Probability	Low Risk	High Risk	High Risk
High Probability	Medium Risk	High Risk	Immediately Dangerous

Table 3: Example of a semi-quantitative risk matrix

	Negligible Severity (1)	Minor Severity (2)	Moderate Severity (3)	Major Severity (4)	Catastrophic Severity (5)
Rare Probability (1)	Low (1)	Low (2)	Low (3)	Moderate (4)	Moderate (5)
Unlikely Probability (2)	Low (2)	Moderate (4)	Moderate (6)	High (8)	High (10)
Possible Probability (3)	Low (3)	Moderate (6)	High (9)	High (12)	Extreme (15)
Likely Probability (4)	Moderate (4)	High (8)	High (12)	Extreme (16)	Extreme (20)
Almost Certain Probability (5)	Moderate (5)	High (10)	Extreme (15)	Extreme (20)	Extreme (25)

Risk Assessment – Controls required

To consider:

- If any existing measures are already in place
- If the hazards can be eliminated
- If not, how the risks can be reduced
- If the law is clear, or further research is required (eg, industry standards, guidelines, etc)

The priority for controls should consider;

- Severity
- Likelihood
- Number of people affected
- Time required to implement the controls



	Small Construction Project - Example		Date of Assessment:		DD/MM/YY				
Completed by:	Name of Assessor		Supporting Information:		Health and Safety at Work Act (1974)				
Work activity being assessed:	Insert Description of the Main processes of the project								
Persons at Risk:	Site Operatives, Visitors, General Public								
Significant Hazards	Key Task(s) & Potential Risks	Uncontrolled Risk Rating (L x S = R)			Risk Control Measures	Risk Rating with Controls (L x S = R)			Continuous Improvement Actions
		L	S	R		L	S	R	
Slips & Trips	Risk of slips and trips from untidy work areas and poorly maintained surfaces	3	2	6	<ul style="list-style-type: none"> - Housekeeping is to be maintained at a high standard throughout the site at all times. - Waste materials should be disposed of efficiently - Suitable safety boots with non-slip soles to be worn at all times - Additionally lighting to be provided where necessary to ensure good visibility 	1	2	2	
Work at Height - Scaffolding	Risk of falls from height, resulting in serious injury/fatality Scaffolding to be erected for access to door systems on internal side of Structure – risk of falls from significant height	3	3	9	<ul style="list-style-type: none"> - Scaffolding must be installed and inspected by a competent contractor - Scaffold inspection to occur every 7 days to ensure structural integrity - Scaffold structure must not be manipulated or changed without a specific risk assessment/re-design - Any abnormalities/changes to scaffold to be reported immediately to site supervisor. 	1	3	3	
Use of Mobile Elevated Working	MEWP to be used to access high-level infrastructure where scaffold is inappropriate	3	3	9	<ul style="list-style-type: none"> - Only trained & competent operator (IPAF) to use MEWP - Banksman must assist operator at all times 	1	3	3	



Health and Safety
Executive

Risk assessment template

Company name:

Assessment carried out by:

Date of next review:

Date assessment was carried out:

What are the hazards?	Who might be harmed and how?	What are you already doing to control the risks?	What further action do you need to take to control the risks?	Who needs to carry out the action?	When is the action needed by?	Done
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<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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More information on managing risk: www.hse.gov.uk/simple-health-safety/risk/

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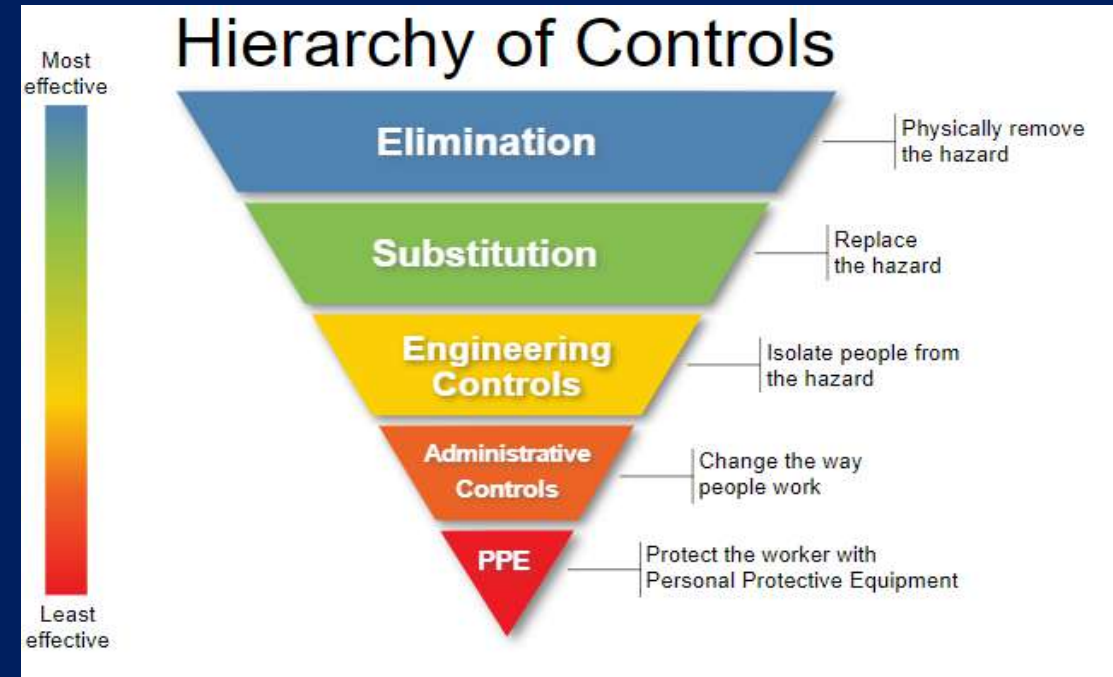
What are the hazards?	Who might be harmed and how?	What are you already doing to control the risks?	What further action do you need to take to control the risks?	Who needs to carry out the action?	When is the action needed by?	Done
Stress	All staff could be affected by factors such as lack of job control, bullying, not knowing their role etc.	<ul style="list-style-type: none"> Staff understand what their duties and responsibilities are. Staff can talk to supervisors or manager if they are feeling unwell or at ease about things at work. 'No bullying' policy. 	Remind staff they can speak confidentially to their manager or supervisors if they are feeling unwell or or ill at ease because of work.	Manager	4/10/19	3/10/19
Electrical	Staff could get electrical shocks or burns from using faulty electrical equipment. Electrical faults can also lead to fires.	<ul style="list-style-type: none"> Staff trained to spot and report (to office administrator) any defective plugs, discoloured sockets or damaged cable/equipment. Defective equipment taken out of use safely and promptly replaced. Staff told not to bring in their own appliances, toasters, fans etc. 	<ul style="list-style-type: none"> Ask landlord when the next electrical installation safety check is due. Confirm the system with landlord for making safe any damage to building installation electrics, eg broken light switches or sockets. 	Office administrator	4/10/19	4/10/19
Asbestos Asbestos-containing materials (ACMs) are present in some partition walls	Staff carrying out normal activities at very low risk. Asbestos only a risk if fibres are released into air and inhaled. Maintenance workers most at risk.	<ul style="list-style-type: none"> Systems in place to inform contractors and others who might disturb the asbestos, where it is and to ensure safe working. Partition walls in good condition and asbestos unlikely to be disturbed during normal activities. 'Danger, asbestos, do not disturb' signs posted at partition walls. Staff told to report any accidental damage immediately. Condition of partition walls checked periodically. 	At next staff meeting, remind staff that the asbestos must not be disturbed and to report any accidental damage to the partition walls immediately.	Manager	4/10/19	4/10/19

Hierarchy of Controls

Employers must reduce risk to As Low As Reasonably Practicable (ALARP)

Hierarchy:

1. Eliminate the hazard
2. Substitute with less dangerous option
3. Control at source
4. Collective protection
5. Personal Protective Equipment



ALARP

- Legislation requires employers to reduce risks to a level that is as low as is reasonably practicable (sometimes abbreviated as ALARP).
- To carry out a duty *so far as is reasonably practicable* means that the degree of risk in a particular activity or environment can be balanced against the time, trouble, cost and physical difficulty of taking measures to avoid the risk.

Examples of Control Measures

Eliminate:	Prefabrication at ground level
Substitute:	Low-silica materials, less harmful chemicals
Engineering controls:	Edge protection, guards, barriers, ventilation etc.
Administrative controls;	Job rotation, policies, rules, SOPs, workplace adjustments
PPE:	Helmets, safety harnesses, respirators, hearing protection

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Any Questions?



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