

FOUNDATION IN OCCUPATIONAL HEALTH AND SAFETY

**A Postgraduate Course
Course Code: 7439**



**Department of Nutritional Sciences & Environmental Design
Faculty of Sciences
ALLAMA IQBAL OPEN UNIVERSITY**

FOUNDATION IN OCCUPATIONAL HEALTH AND SAFETY

**A Postgraduate Course
Course Code: 7439**



**Department of Nutritional Sciences and Environmental
Design Faculty of Science
ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD**

(All rights are reserved with the publishers)

Year of Printing.....	2025
First Edition	2025
Quantity:	1000
Composed by	Ummad Ahmed shad
Incharge Printing Press	Dr. Sarmad Iqbal
Printer.....	AIOU, Islamabad.
Publisher	AIOU, Islamabad.

COURSE TEAM

Chairman of the Department

Dr. Zaheer Ahmed

COURSE COORDINATOR

Dr. Muhammad Farooq Mustafa
Assistant Professor, Department of
Nutritional Sciences & Environmental
Design, AIOU.

PROGRAM COORDINATOR

Dr. Muhammad Farooq Mustafa
Assistant Professor, Department of
Nutritional Sciences & Environmental
Design, AIOU.

Unit Writer

Dr. Muhammad Farooq Mustafa
Assistant Professor, Department of
Nutritional Sciences & Environmental
Design, AIOU.

REVIEWERS

Mr. Imtiaz Ali Aslam
Director, EDCONS Institute of Business
& Technology

Dr. Rabeea Zafar
Lecturer, Department of Nutritional
Sciences & Environmental Design,
AIOU.

DESIGNER

Ms. Rabia Mukhtar

EDITOR

Mr. Fazal Karim

PRODUCER

Mr. Tayyab Ansari

PREFACE

It is with immense pride that we present study guide for the Postgraduate Diploma in Environment, Health & Safety (EHS) at Allama Iqbal Open University. This program epitomizes our commitment to integrating environmental stewardship with effective and innovative EHS practices in tackling some of the most pressing challenges facing humanity in shaping a sustainable future.

EHS professionals play a crucial role in safeguarding the well-being of employees, public, and the environment. As industries progress and new technologies emerge, EHS professionals face an ever-developing set of challenges. The PGD program is specially designed to provide students with the knowledge, skills, and practical insight needed to lead in such a dynamic field. Our curriculum integrates emerging technologies with sustainable EHS practices, hence responding not only to current needs of the industry but also to prevent and reduce accidents, emergencies, and health issues at workplace, along with any other environmental damage that could result from work practices. This includes the foundation, organizing, planning, monitoring and auditing of EHS management system at workplace. It will train the students as master trainers who will be able to protect the well-being of workforce in their relevant domains of expertise and also ensure the environmental regulations that meet the employees and workplace safety standards, which is necessary in current and future environmental demands.

This study guide serves as an overall map of courses that will make our students competent and forward-looking EHS professionals. It, therefore, outlines the course objectives, structure, and the key components that will leave our students well-prepared for challenges with innovative, realistic, and sustainable solutions.

At Allama Iqbal Open University, we pride ourselves on being a hub of excellence in education and research. The PGD in EHS is proof of our continued quest to further knowledge and practice for the betterment of local and global communities. This course will be your guide on how to engage deeply with the environmental regulations and take up the challenge to a meaningful impact in the EHS management system which in turn would help increase our country's compliance to various EHS regulations.

I wish all the best to all the students in this pursuit. This program may enrich and transform you in being one of the leaders in creating a sustainable and resilient future.

Warm Regards,

Prof. Dr. Nasir Mahmood
Vice Chancellor
Allama Iqbal Open University

MESSAGE FROM DEAN

Dear Students,

I extend a warm welcome to all of you enrolled in the Postgraduate Diploma in Environment, Health and Safety (EHS) program offered by the Department of Nutritional Sciences and Environmental Design (NSED). I hope this message finds you in good health and high spirits.

As we start the study of “EHS”, I wanted to provide you all with a comprehensive guide to clear your understanding and preparation. EHS is crucial because it safeguards human well-being and the planet. Ensures compliance with regulations, preventing accidents, illnesses, and environmental harm. Reduces workplace risks, enhancing employee morale and productivity.

I encourage you to engage actively with the material, ask questions, and participate in discussions to deepen your understanding. Remember, our goal is not just to pass exams but to internalize this knowledge to ensure the safety of ourselves and those around us.

If you have any questions or need further clarification on any topic, feel free to reach out. Let's make safety our top priority as we explore this important subject.

Best Wishes,

**Prof. Dr. Hajra Ahmed
Dean, Faculty of Sciences**

MESSAGE FROM CHAIRMAN

Dear Students,

Welcome to the Department of Nutritional Sciences and Environmental Design's diploma program in EHS. I am pleased to announce the development of a comprehensive study guide focused on "Foundation in Occupational Health & Safety".

This guide aims to equip all students with the necessary knowledge on the importance of EHS in the workplace. Understanding barriers to maintain good EHS standards and consequences of non-compliance with these EHS standards at the workplace.

This initiative aligns with your professional and personal commitment to prioritizing EHS culture. By educating on these critical topics, we not only mitigate EHS risks but also contribute to a safer working environment for everyone.

I encourage all students to actively engage with the study guide and utilize its resources to enhance their understanding of EHS. Together, we can create a workplace where EHS is paramount, and emergencies are managed with confidence and competence.

Thank you for your attention to this important matter. If you have any questions or suggestions, please don't hesitate to reach out to the program coordinator.

Stay Safe, Stay Vigilant!

Best Wishes,

Dr. Zaheer Ahmad
Chairman,
Department of Nutritional Sciences
and Environmental Design (NS&ED)

ACKNOWLEDGMENT

All praises to **Allah**, who gave me the strength to complete this project. The development of this comprehensive study guide on "Foundation in Occupational Health & Safety" has been a collaborative effort, drawing upon the expertise and support of numerous individuals. It gives me pleasure to express my profound gratitude and reverence to the Vice Chancellor of Allama Iqbal Open University, **Prof. Dr. Nasir Mehmood** for guiding, facilitating, and supporting the preparation of the course. We extend our heartfelt gratitude to all those who have contributed to the creation of this resource.

I would like to express my sincere appreciation to **Prof. Dr. Hajra Ahmad**, Dean, Faculty of Sciences, for her support and encouragement. Thanks to **Dr. Zaheer Ahmed**, Chairman, Department of Nutritional Sciences and Environmental Design, for his sustenance and trust. All the faculty members, especially **Mr. Imtiaz Ali Aslam**, Director EDCONS Institute of Business & Technology; **Dr. Rabeea Zafar**, Lecturer, Department of Nutritional Sciences and Environmental Design, **Ar. Nazia Iftikhar**, Lecturer, Department of Nutritional Sciences and Environmental Design, being an expert in EHS, environmental sciences, environmental design, architecture, planning, and sustainable development, provided valuable insights and guidance throughout this study guide's planning and development stages. Your expertise and dedication have been instrumental in ensuring the content's quality and relevance.

I also acknowledge the contributions of the design and editorial team, production, and printing team who worked diligently to ensure the clarity, coherence, and accessibility of the content presented in this study guide. Your dedication and attention to detail have been essential in bringing this resource to fruition.

Lastly, we extend our deepest appreciation to the post-graduate students who will use this study guide as a tool for learning and professional development. It is our sincere hope that it will serve as a valuable resource in your studies.

Thank you to everyone who has contributed to the creation of this study guide. Your collaboration and support have been invaluable in making this project a reality.

Dr. Muhammad Farooq Mustafa
Course Coordinator

INTRODUCTION

Environment, Health and safety go hand in hand and hence their relationship is significant enough to be explored at every level of space planning and devising ideas to improve the safety of the workplace and occupants. This course focuses on the importance of the occupational health and safety (OHS) system identification of barriers (to a good standard of health and safety at the workplace), outlines the reasons for promoting OHS, discusses the standards related to occupational safety and health, consequences of non-compliance of standards and role of stakeholders in devising a safe system of work. In addition, it also helps students (learners) to understand knowledge of risk assessment and hazard identification at the workplace and how they can be improved through preventive and protective measures.

OBJECTIVES

After reading these units, you will be able to:

1. Impart the relationship between Environment, health and safety in the context of workplace and domestic spaces.
2. Inculcate the accepted criteria and standards for the safety of the environment, occupants and employees (Workers).
3. Enhance the student perspective about environment, health and safety in diverse workplace domains focusing on analytical and explorative skills.

UNIT -1

SCOPE AND NATURE OF OCCUPATIONAL HEALTH, SAFETY AND ENVIRONMENT

WRITTEN BY:

Dr. Muhammad Farooq Mustafa

REVIEWED BY:

Mr. Imtiaz Ali Aslam

Dr. Rabeea Zafar

CONTENTS

Unit – 1: Scope and Nature of Occupational Health, Safety and Environment

1.1	Occupational Environment Health and Safety	14
1.2	Importance of Environment, Health and Safety (EHS) at workplace..	14
1.3	Multi-Disciplinary Nature of EHS	14
1.4	EHS Minimum Standards/ Requirements	15
1.5	Barriers to Good Standards of Environment, Health and Safety	16
1.5.1	Complex Workplaces	16
1.5.2	Complex Issues	16
1.5.3	Conflicting Demands	17
1.5.4	Conflict of Standards	17
1.5.5	Budget Issues	17
1.5.6	Behavioral Issues	17
1.5.7	Lack of Management Commitment	17
	Recommended Reading List	18
	Self Assessment Questions	18
	Self Evaluation Questions.....	18

INTRODUCTION

Occupational health, safety and the environment are important aspects of human concern especially in an industrial era. It deals with the adaptation of the working environment to workers for the promotion and maintenance of the physical, mental and social wellbeing of employees/workers in all occupations. A good standard of environment, health and safety is possible only with the cooperation and participation of both employees and employers.

LEARNING OBJECTIVES

After studying this unit the learner shall be able to:

1. Understand the importance of occupational health, safety and environment.
2. Explain barriers to good standards of health, safety and environment in a workplace.

INDICATIVE CONTENTS AND SUMMARY OF THE MAIN TOPICS

1.1 OCCUPATIONAL ENVIRONMENT HEALTH AND SAFETY

Definition

A workplace in which employees and employers collaborate for continuous improvement of health, safety, the well-being of employees and sustainability of the workplace environment.

Occupational Environment, health and safety is identified as the discipline dealing with the prevention of accidents, incidents, work-related injuries, diseases and deaths as well as the protection and promotion of the health of workers. Furthermore, it aims at the improvement of working conditions and environment.

1.2 IMPORTANCE OF ENVIRONMENT, HEALTH AND SAFETY (EHS) AT WORKPLACE

The significance of Environment, Health, and Safety (EHS) in the workplace is of utmost importance. Organizations are becoming more aware of the crucial role that EHS (Environment, Health, and Safety) plays in safeguarding people, guaranteeing adherence to laws, improving efficiency, mitigating risks, maintaining a positive image, cutting expenses, and promoting sustainability.

Work (activities) provide economic benefits but on the other hand unsafe working conditions at work present risks to the health and safety of the workers and may also pose a threat to the environment as well. It brings down the production of the work (organization) and the morale of the worker which simultaneously affects the sustainability of the workplace environment. Continuous improvement of EHS standards at the workplace will reduce the risk or accidents, improve work efficiency, bring (boost) employees morale high, increase business (profit) and a better brand image. In addition, sustainability of the workplace environment also helps in protecting the general public who may be affected by workplace activities.

1.3 MULTI-DISCIPLINARY NATURE OF EHS

The Multi-Disciplinary Nature of EHS practice brings together knowledge from many different disciplines. Some health and safety topics are simple to understand, while others are technical and require specialist knowledge. Sometimes the practical solution to a health and safety problem is straightforward, at other times the solution is complicated and demanding and requires the correct application of

technical knowledge and thinking. In order to fully understand a health and safety issue, there is a need to be familiar with the:

- Technical background to the issue and the relevant knowledge.
- Standards that may apply to the workplace and to the specific health and safety issue under consideration.
- Possible strengths and weaknesses of the various options available to solve the problem.

Workplace environment includes physical, chemical and biological activities, depending on the specific industry. For that reason, EHS relates to all branches of industry, business and commerce including traditional industries, information technology companies, the National Health Services, care homes, schools, universities, leisure facilities and offices.

The roots of a systematic approach to health and safety lie in the development of large scale manufacturing operations. In the past, factory machinery was operated with little or no regard for the safety of workers who suffered from bodily injury due to unguarded machines. Reacting to these effects, the causes were addressed by concerned factory owners and politicians, allied to increasing pressure from workers themselves, by putting in protective measures such as machine guards and developing safe working practices. As scientific knowledge has grown and political and social concern over workplace health and safety has broadened, the effects of work have been studied extensively. The range of issues identified, which started with those clearly identifiable physical injuries such as losing fingers or arms, has widened to include less apparent injuries (such as deteriorating eyesight and bad backs) and illnesses (both physical and psychological), which very often build up over time, rather than being caused by a single incident. The causes of these problems themselves are often not easily identifiable. Occupational health and safety today, then, has moved a long way from its engineering roots and brings together a wide range of subject specialties to investigate what the ill-effects of work are and what causes them. It draws on the study of both the physical world chemistry, physics, biology, etc. and the social world, of how and why people behave as they do. As a health and safety practitioner, you would not expect to be familiar with the detail of all these subjects but should be aware of the range of different disciplines which contribute to knowledge and understanding of health and safety issues.

1.4 EHS MINIMUM STANDARDS/ REQUIREMENTS

The International Labour Organization (ILO) has defined employers' and workers' responsibilities and rights in the Health and Safety Management Convention “C-155” and the recommendation R-164 in 1981; which states that “It is the

responsibility of every employer to provide a safe workplace, safe access and exit, safe work equipment to use, safe system of work, safe work environment, personal protective equipment and welfare facilities that include safe drinking water, clean accommodation and changing facilities, clean places to rest and eating, sanitary conveniences, proper ventilation, lighting, heating and sufficient seating arrangements. In addition, proper training and education must also be provided to ensure the sustainability of the workplace environment. Though all risks may not be eliminated by ensuring a safe system at the workplace employers must protect employees and the environment as much as possible.

EHS standards can only be achieved with effective cooperation and involvement of employers and employees. The most effective way is to involve representatives and stakeholders in the decision making process to avoid any negative culture.

1.5 BARRIERS TO GOOD STANDARDS OF ENVIRONMENT, HEALTH AND SAFETY

It is important to be conscious of the barriers to a good EHS system within the workplace environment. Spotting and resolving barriers at the earliest significantly helps to maintain good standards and establish a positive EHS culture in an organization. Some potential barriers to promoting good standards of EHS due to which an organization might not be able to achieve or maintain goals include complex workplaces, complex issues, conflicting demands, conflict of standards, budget issues, behavioral issues and lack of management commitment etc.

1.5.1 Complex Workplaces

Workplaces are complex in nature that's means several people doing several different activities at the same time and at the same place. In this case, it might be difficult to maintain good standards of health and safety for every person or activity.

1.5.2 Complex Issues

There are times when we encounter complicated or complex health and safety issues or problems. Now finding the solution to that problem might be difficult and require extensive background knowledge and experience. Some solutions are straightforward and for some issues, several courses of action are available with different good and bad outcomes. So lack of competence might become another barrier to promoting good standards of health and safety and the wrong selection of solution might result in an increased number of accidents.

1.5.3 Conflicting Demands

The employer sometimes places conflicting and competing demands on workers. A common conflict of interest is like ‘demand to increase the supply of a product or service by speeding up the process so as to make a profit’ or ‘to do so safely’ Obviously, this conflict will compromise safety in the real world. So the conflict of demand becomes a barrier to maintaining good standards of health and safety and may cause an increase in accident rates.

1.5.4 Conflict of Standards

Standards conflict may be created when there is a need to comply with different types of standards at the same time and same place like ‘Health and Safety Laws’ as well as ‘Environmental protection Laws’(it is obvious that the theme for both is totally conflicting as health and safety standards demand the prompt removal of hazardous waste material from workplace while environment protection standards refrain from throwing it in the environment) so some standards can be compromised.

1.5.5 Budget Issues

Employers, due to lack of awareness, consider it an extra financial burden to improve health and safety standards in the workplace and some want to improve but due to lack of resources their desires fail to be accomplished. So budget issues become a barrier in promoting good standards of health and safety.

1.5.6 Behavioral Issues

Human behavior is the most challenging barrier in maintaining and promoting health and safety standards. All hardware and procedural improvements go in vain if workers do not behave ideally. Poor morale and low motivation towards safety goals may deteriorate safety culture. Sometimes they make mistakes and sometimes they do violations and similarly, sometimes errors occur. As a result safety culture will deteriorate in an organization resulting in an increasing number of accidents.

1.5.7 Lack of Management Commitment

If management commits to bringing improvement in the health and safety standards at the workplace in policy but doesn’t give it a priority and does not demonstrate its commitment through visible leadership then the safety culture will deteriorate dramatically and the morale of workers decline resulting in increasing number of accidents and become a barrier in maintaining good standards of health and safety

Recommended Reading List

Prescribed Readings

1. Reese, C. D. (2008). Occupational health and safety management: a practical approach. CRC press.
2. Fundamental Principles of Occupational Health and Safety- Benjamin O. Alli (2nd Edition) ILO.

Self Assessment Questions

- Q1 Define Environment, health and safety (EHS) at the workplace. Explain the responsibilities of employer and employee in order to manage good EHS standards.
- Q2 Identify the barriers to achieving good EHS standards at the workplace.

Self Evaluation Questions

1. Employers are responsible for providing a
 - a) Land
 - b) Insurance
 - c) Estimation
 - d) Safe workplace environment
2. Which act establishes responsibilities and rights for employers and employees?
 - a) SARA
 - b) RCRA
 - c) CERCLA
 - d) ILO C-155

UNIT -2

REASONS FOR MAINTAINING AND PROMOTING GOOD STANDARDS OF EHS

WRITTEN BY:

Dr. Muhammad Farooq Mustafa

REVIEWED BY:

Mr. Imtiaz Ali Aslam

Dr. Rabeea Zafar

CONTENTS

Unit – 2: Reasons for maintaining and promoting good standards of EHS	19
2.1 Moral Motivation/Reasons for Maintaining and Promoting Good Standards of EHS.....	22
2.1.1 Benefits of Moral Motivation	23
2.1.2 Challenges in Moral Motivation	23
2.2 Social (Legal) Motivation/Reasons for maintaining and promoting good standards of EHS.....	23
2.2.1 Benefits of Social Motivation	24
2.2.2 Challenges in Social Motivation	24
2.3 Financial Motivation/Reasons for Maintaining and Promoting Good Standards of EHS.....	24
2.3.1 Benefits of Financial Motivation	25
2.3.2 Challenges in Financial Motivation.....	26
2.4 Insured and Uninsured cost.....	26
Self Assessment Questions	29
Self Evaluation Questions.....	30

INTRODUCTION

The moral, legal and financial are three major reasons for promoting and maintaining good EHS standards in the workplace environment. The moral reason includes the moral duty of care which expects that the employer must take care of environmental hazards, his workers and the public to prevent injuries and ill health and deaths). Whereas (as per international, national and local laws) an employer (large or small organization) has a social (legal) responsibility to provide a safe workplace environment, proper training, supervision and competent employees. Furthermore, the financial reason relates to the direct and indirect costs caused due to accidents and incidents, as some of these losses can be insured but most of them are uninsured. It's true that accidents and ill-health cost money. For that reason, EHS management helps organizations in preventing and reducing personal loss, injuries and ill-health caused due to accidents and ill–health at the workplace.

LEARNING OBJECTIVES

After studying this unit learner should be able to:

1. Understand the moral reason; why an employer should manage good EHS standards.
2. Describe social (legal) reasons for promoting and managing good EHS standards in a workplace.
3. Discuss the financial (direct and indirect) losses (costs) that might arise from a workplace accident or incident.

INDICATIVE CONTENTS AND SUMMARY OF THE MAIN TOPICS

Promoting good standards of EHS at the workplace can be motivated by a variety of factors, including moral, social, and financial motivations.

2.1 MORAL MOTIVATION/REASONS FOR MAINTAINING AND PROMOTING GOOD STANDARDS OF EHS

The first and foremost (moral duty) responsibility of an employer is to (take care of his workers and the public, prevent injuries; ill health; deaths, and environmental hazards (and provide the best and safest workplace environment for the employees) results in having a good output of the business. If the workplace environment is safe, employees will love to come to work but also it will increase the productivity of the workers. Accidents occur when EHS standards are not managed properly, which will lead to serious injuries, health illnesses, deaths and terrible diseases, which will collectively impose a negative impact on the surrounding environment, employees but also their, dependents, families, businesses and society.

Moral motivation stems from a sense of responsibility to protect the health and safety of workers and the environment. It is based on the belief that it is the right thing to do and reflects an organization's values and ethics. Organizations that are morally motivated to achieve good standards of EHS are more likely to develop comprehensive EHS policies and procedures that go beyond compliance with regulations.

Examples:

- A company may invest in safety training programs and safety equipment for workers, such as helmets, safety goggles, and gloves, to ensure their safety in hazardous work environments.
- A company may reduce its carbon footprint by adopting eco-friendly practices, such as reducing energy consumption and waste, to minimize its impact on the environment.
- Providing adequate personal protective equipment (PPE) for workers, such as gloves, safety glasses, and respirators, to prevent injury or illness.
- Implementing regular safety audits and inspections to identify and address potential hazards in the workplace.
- Offering employee wellness programs, such as counseling and mental health resources, to support employee health and well-being.
- Establishing a culture of safety that encourages employees to report safety concerns and hazards without fear of retaliation.

- Reducing the use of harmful chemicals and adopting eco-friendly practices to minimize the impact on the environment.
- Encouraging employee involvement in safety initiatives, such as safety committees and hazard identification programs.
- Providing training programs to educate employees on proper safety procedures and protocols.
- Conduct regular environmental assessments to identify potential environmental impacts and implement mitigation strategies.

2.1.1 Benefits of Moral Motivation

By prioritizing moral motivation for EHS standards, companies can build a positive reputation and improve employee morale and job satisfaction. Companies that prioritize moral motivation for EHS standards are more likely to attract socially conscious consumers and investors who value responsible business practices.

2.1.2 Challenges in Moral Motivation

Moral motivation may require significant investments in time and resources, as companies may need to develop comprehensive EHS policies and procedures that exceed regulatory compliance. Companies may face resistance from stakeholders who prioritize short-term financial gains over long-term environmental and social sustainability.

2.2 SOCIAL (LEGAL) MOTIVATION/REASONS FOR MAINTAINING AND PROMOTING GOOD STANDARDS OF EHS

The social reason for managing good EHS standards in the workplace environment deals with the framework of national and international laws governing the conduct of businesses and organizations. Most countries have set legal standards that place a duty on the employer to ensure activities, equipment and substances at the workplace are safe, reasonably practicable and with no risk to the environment and health of the workers and neighborhoods. Failure to achieve these legal standards will lead to enforcement actions by the authorities or prosecution before the courts. Similarly, employees have the responsibility to comply with EHS instructions and cooperate with their employer so they can fulfill their EHS standards. Non-compliance with EHS instructions results in prosecution or punishment of individuals in the form of a fine/ imprisonment.

Examples

- A company may participate in community outreach programs to support local environmental initiatives, such as park, street, and beach cleanups or tree planting.

- A company may develop partnerships with local organizations to promote sustainable business practices and environmental conservation.
- A company may prioritize the use of renewable energy sources, such as solar or wind power, to reduce its environmental impact and align with community expectations.
- A company may adopt eco-friendly packaging and waste reduction initiatives to demonstrate its commitment to environmental sustainability.
- Develop partnerships with local organizations to promote sustainable business practices and environmental conservation.
- Participating in community outreach programs to support local environmental initiatives, such as beach cleanups, recycling drives, or nature conservation programs.
- Implementing green energy initiatives to reduce carbon footprint and minimize the impact on the environment, such as using renewable energy sources or energy-efficient technologies.
- Encouraging employees to volunteer for environmental or social causes, such as participating in community service events or charitable causes.
- Supporting local suppliers and vendors that also prioritize sustainability and social responsibility.
- Creating a culture of social responsibility within the workplace, by communicating the company's values and practices to employees and stakeholders.

2.2.1 Benefits of Social Motivation

By prioritizing social motivation for EHS standards, companies can build a positive reputation and increase their appeal to socially conscious consumers and investors. Companies that prioritize social motivation for EHS standards are more likely to attract and retain top talent who value responsible business practices and social responsibility.

2.2.2 Challenges in Social Motivation

Social motivation may be driven by external pressures and expectations, which can be difficult to manage and may require significant investments in time and resources. Companies may face criticism and backlash if they fail to meet social expectations and may struggle to maintain their reputation and credibility.

2.3 FINANCIAL MOTIVATION/REASONS FOR MAINTAINING AND PROMOTING GOOD STANDARDS OF EHS

Financial motivation stems from the recognition that good EHS standards can lead to cost savings, increased efficiency, and improved business performance.

Organizations that are financially motivated to achieve good standards of EHS are more likely to invest in EHS programs and technologies that reduce costs and improve productivity. For example, they may invest in energy-efficient equipment that reduces energy consumption and saves money on utility bills.

Examples

- A company may invest in energy-efficient technologies to reduce energy consumption and save on utility costs.
- A company may implement waste reduction initiatives to minimize disposal costs and reduce environmental impact.
- A company may prioritize worker safety and health to minimize the risk of workplace injuries and associated costs, such as workers' compensation and medical expenses.
- A company may implement pollution prevention measures to avoid fines and penalties associated with environmental violations.
- A company may adopt sustainable sourcing practices to minimize supply chain disruptions and reduce costs associated with materials and products.
- Develop partnerships with local organizations to promote sustainable business practices and environmental conservation.
- Participating in community outreach programs to support local environmental initiatives, such as beach cleanups, recycling drives, or nature conservation programs.
- Implementing green energy initiatives to reduce carbon footprint and minimize the impact on the environment, such as using renewable energy sources or energy-efficient technologies.
- Encouraging employees to volunteer for environmental or social causes, such as participating in community service events or charitable causes.
- Supporting local suppliers and vendors that also prioritize sustainability and social responsibility.
- Creating a culture of social responsibility within the workplace, by communicating the company's values and practices to employees and stakeholders.

2.3.1 Benefits of Financial motivation

By prioritizing financial motivation for EHS standards, companies can reduce costs and increase profitability, contributing to long-term financial success. Companies that prioritize financial motivation for EHS standards are more likely to attract investors who value efficient and sustainable business practices.

2.3.2 Challenges in Financial Motivation

Financial motivation may be driven by short-term cost savings, which can be counterproductive to long-term environmental and social sustainability. Companies may be reluctant to invest in EHS standards if they perceive them to be too costly or too time-consuming. Companies may face increased scrutiny from regulators, investors, and consumers if they prioritize financial motivation over other motivations for EHS standards.

2.4 INSURED AND UNINSURED COST

The financial reasons relate to the fact that injuries and accidents in the workplace environment will cause direct and indirect costs. Some of the financial losses can be insured but many of them cannot be insured. Indirect costs or hidden costs of an accident could be higher than direct costs. In other words, the direct costs of an accident or disease represent the tip of the iceberg when compared to the overall costs as described in the figure below.

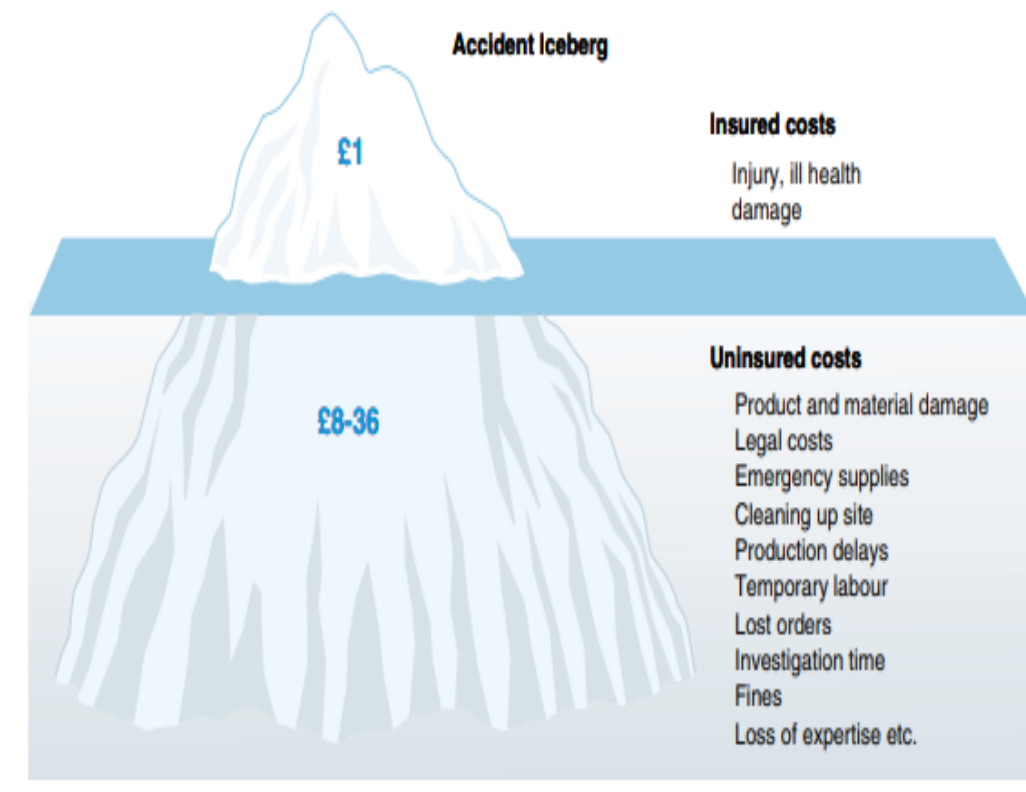


Figure 1: Concept diagram on direct and Indirect costs associated with accidents

Table 1: Direct and Indirect costs that might arise from accidents occur at the workplace.

Direct Cost	Indirect Cost
Damage to buildings, equipment or vehicles	A cumulative business loss
Any attributable production and/or general business loss	Recruitment of replacement staff
Claims on employers and public liability insurance	Product or process liability claims
Fines resulting from prosecution by the enforcement authority	Production delays
Sick Pay; First aid and immediate or emergency treatment cost	Lower employee morale possibly leads to reduced productivity

Workplace accidents are common and can happen to anyone, which means it's vital to have insurance to cover the costs of any injuries or other damages you or your company might face. However, there are costs of workplace accidents that are often not covered by workers' compensation insurance.

- **Loss of Production Time Due To Damaged Equipment**

The first uninsured cost of workplace accidents we will be considering is Loss of Production Time Due To Equipment Damage. If you experience a workplace accident and are unable to work for an extended period of time, then you will not be able to generate an income, which could lead to unpaid bills and other issues. One major uninsured cost is loss of production time due to damaged equipment. Damaged equipment usually results from accidents in manufacturing facilities, construction sites, warehouses, truck yards, offices or any other place where heavy machinery is being used.

- **Lost Productivity**

Another uninsured cost of workplace accidents is productivity loss. This may be due to employee absenteeism and lowered work performance after an accident. Lost productivity comes with greater costs when employees are not able to perform their jobs at the same level they were before they were injured or affected by illness due to injury.

- **Failure To Fill Orders**

Accidents can cause failure to fill orders. The shortage of employees with the skills required for your company's job vacancy or a staff reduction caused by an accident or illness could result in a loss of orders, an increased need for overtime and a decrease in productivity. One way to mitigate these risks is by recruiting qualified candidates ahead of time through pre-screening, skills testing and interviewing methods that are best suited for the position requirements.

The cost of not being able to fill orders is not covered by insurance, hence the organization stands to bear the consequence of not being able to fill its order. This is why organizations should ensure that they prevent workplace accidents as much as possible.

- **Supervision Costs Workers'**

Compensation insurance may not cover all of the expenses incurred due to workplace accidents; an example of such cost is the Supervision cost. The supervision costs refer to the need for additional time, personnel, and equipment needed after an accident. These costs can be significant in cases where employees are injured and unable to work for long periods of time or are even killed on the job. They can range from temporary hiring that requires extra training, security services during hours when someone is unable to work, overtime pay for supervisors and guards or even hiring contractors or other companies to take over some tasks at a higher cost than before.

- **Time Away From Work Due To Injury**

Another uninsured cost of workplace accidents is "Time Away From Work Due To Injury". The cost of a workplace accident goes far beyond what is covered by insurance. Whether it is time away from work due to injury, medical expenses, loss of income or the pain and suffering caused by the accident, many people aren't prepared to deal with the aftermath of a workplace accident. To keep your budget safe in case you are involved in an accident, be sure to check with your employer and state disability agency about when your benefits start.

- **Economic Loss To Injured's Family**

The last uninsured cost of workplace accidents is the "Cost of Economic Loss to the Injured's Family". When one member of the family becomes injured, they are paid 90% of that salary while they are not able to work. If you include other benefits like healthcare and life insurance, that number goes up significantly. Employees with no health coverage have a potential liability risk in the event of injury. Workers compensation insurance is designed to cover these costs for employees who were hurt on the job.

Self Assessment Questions

- Q1 Explain the social responsibilities of employer and employee in order to manage good EHS standards.
- Q2 Describe direct and Indirect costs associated with accidents at the workplace.

Prescribed Reading

1. Reese, C. D. (2008). Occupational health and safety management: a practical approach. CRC Press.

SELF EVALUATION QUESTIONS

- 1.** Health and safety performance within an organization is linked to:
 - a) Organizational performance and culture.
 - b) The skill level of employees.
 - c) Employee attitudes towards supervisors.
 - d) Industry standards and procedures.

- 2.** An approach to OHS that involves the active participation of employers, unions and government is:
 - a) Tripartite.
 - b) Legislative enforcement.
 - c) Self-regulation.
 - d) Individual responsibility.

UNIT -3

**ROLES OF NATIONAL
GOVERNMENT AND
INTERNATIONAL BODIES**

WRITTEN BY:

Dr. Muhammad Farooq Mustafa

REVIEWED BY:

Mr. Imtiaz Ali Aslam

Dr. Rabeea Zafar

CONTENTS

Unit – 3: Roles of National Government and International bodies.....	31
3.1 Role of National Government Bodies.....	34
3.1.1Developing regulations and guidelines	34
3.1.2Conducting Inspections and Monitoring.....	34
3.1.3Authority to Enforcement, Imposing penalties and fines	34
3.1.4Providing education and outreach training	35
3.1.5Collaboration with industry stakeholders	35
3.1.6Investigation and response to complaints	36
3.1.7Technical assistance and support	36
3.2 Role of International Bodies	36
3.3 Employers Responsibility	36
3.3.1Developing Comprehensive EHS Policies and Procedures	36
3.3.2The provision of resources and training.....	37
3.3.3Carrying Out Hazard Assessments	37
3.3.4Measures of Control Should be Implemented	37
3.4 Workers Responsibility	39
3.4.1Compliance with EHS Policies and Procedures	39
3.4.2Using Personal Protective Equipment (PPE) Correctly and Consistently.....	39
3.4.3Participation in Training and Safety Programmes	39
3.4.4Taking Part in Safety Committees and Meetings	40
Self Assessment Questions	42
Self Evaluation Questions.....	42

INTRODUCTION

Most countries have their own laws on EHS laws/policies at the workplace. The formulation of laws, policies, standards, priorities, and strategies regarding EHS is undertaken by national authorities in consultation with stakeholders to develop a safe system of work. A critical role is played by the Government and social partners and professional EHS organizations in ensuring prevention and providing treatment, support and rehabilitation services

LEARNING OBJECTIVES

After studying this unit you should be able to:

1. Understand the role of national and international stakeholders in developing the EHS system.
2. Describe the employer and worker's responsibility in a workplace environment.
3. Explain the role of enforcement authorities in ensuring EHS standards and measures at the workplace.

INDICATIVE CONTENTS AND SUMMARY OF THE MAIN TOPICS

Enforcement and government agencies play a crucial role in ensuring good standards of EHS in the workplace. These agencies are responsible for developing and enforcing regulations and guidelines to promote workplace safety, protect the environment, and safeguard public health. The role of these agencies includes the following:

3.1 ROLE OF NATIONAL GOVERNMENT BODIES

3.1.1 Developing regulations and guidelines

Government agencies such as the Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and National Institute for Occupational Safety and Health (NIOSH) are responsible for developing regulations and guidelines to promote good standards of EHS in the workplace that establish minimum standards for workplace safety and environmental protection. These regulations and guidelines provide a framework for companies to follow and help to ensure that all employers are held to the same standards. These regulations cover a range of issues, including hazard communication, respiratory protection, chemical safety, and waste management. Example: OSHA's Hazard Communication Standard requires employers to provide information to employees about hazardous chemicals in the workplace, including the identity of the chemical, the hazards associated with it, and the measures that employees can take to protect themselves.

3.1.2 Conducting Inspections and Monitoring

Government agencies are also responsible for conducting inspections and monitoring workplaces to ensure that employers are complying with EHS regulations and guidelines. Inspections may be scheduled or unannounced, and they help to identify areas of noncompliance and potential hazards. Inspectors check for violations of safety and environmental standards, and they may also investigate workplace accidents and incidents. Example: OSHA conducts regular inspections of workplaces to ensure compliance with safety regulations. Inspectors may review safety records, interview employees, and observe workplace practices to identify hazards and ensure that corrective action is taken.

3.1.3 Authority to Enforcement, Imposing penalties and fines

Government agencies have the authority to enforce EHS regulations and guidelines through a range of enforcement actions, including fines, penalties, and legal action. Companies that violate EHS regulations can face significant financial and legal

consequences. Non-compliance with EHS regulations and guidelines can result in penalties and fines. Enforcement agencies have the authority to impose fines and penalties on employers who violate regulations and guidelines. These penalties can be significant and can have a significant impact on a company's reputation and financial stability.

Example:

EPA can impose civil or criminal penalties on companies that violate environmental regulations, such as the Clean Air Act or the Clean Water Act. In some cases, companies may also be required to pay for environmental remediation efforts or other cleanup costs.

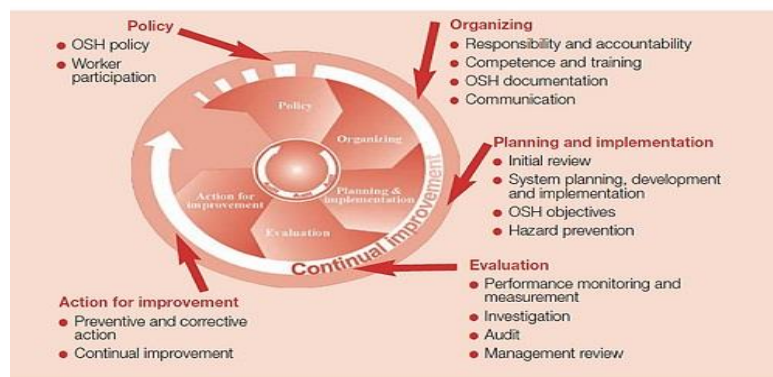


Figure 2: Concept diagram of the role of enforcement agencies in continuous improvement of OHS measures.

3.1.4 Providing education and outreach training

Enforcement and government agencies also provide education and training to employers and employees to help them understand EHS regulations and guidelines. This education and training help to promote the best practices and a culture of safety and environmental responsibility in the workplace. Example: OSHA provides training and education programs for employers and employees on a range of workplace safety issues, including hazard recognition and control, fall protection, and electrical safety. The EPA also offers resources and guidance on environmental compliance and pollution prevention. Here are some additional points on the role of enforcement/ government agencies in ensuring good standards of EHS in a workplace:

3.1.5. Collaboration with industry stakeholders

Government agencies collaborate with industry stakeholders, such as trade associations and labor unions, to develop and implement EHS regulations and

guidelines that are practical and effective. Example: OSHA collaborates with industry stakeholders to develop safety and health standards that reflect current best practices and are feasible for employers to implement.

3.1.6 Investigation and response to complaints

Government agencies investigate complaints and reports of EHS violations in the workplace and take appropriate action to ensure compliance with regulations and guidelines. Example: The EPA responds to complaints from the public about potential environmental violations, such as the illegal dumping of hazardous waste or emissions from industrial facilities.

3.1.7 Technical assistance and support

Government agencies provide technical assistance and support to help companies understand and comply with EHS regulations and guidelines. Example: The National Institute for Occupational Safety and Health (NIOSH) provides technical assistance to help employers and employees identify and control workplace hazards.

3.2 ROLE OF INTERNATIONAL BODIES

The International Labor Organization (ILO) an agency of the United Nations plays a key role in developing international standards on EHS. Most countries are following ILO standards on EHS because they are members of the ILO. This results in the adopting and implementation of basic EHS standards at the workplace. ILO defines that most of the responsibilities lie with the employer to provide and ensure good EHS standards at the workplace. Similarly, the organization also recognizes that individual workers are also responsible for compliance with EHS standards and measures. Under the ILO's Occupational Health and Safety Convention C-155 and recommendation R-164 employers and workers are responsible for environmental hazards, health and safety at the workplace.

3.3 EMPLOYERS RESPONSIBILITY

3.3.1 Developing Comprehensive EHS Policies and Procedures

Employers should build comprehensive EHS policies and procedures that reflect the organization's commitment to ensuring a safe and healthy work environment. These policies and procedures should be established. These policies ought to address a variety of areas, including the identification of hazards, the evaluation of risks, the reporting of incidents, emergency response plans, training programs, and compliance with applicable laws and regulations. The policies must be effectively

conveyed to all employees freely available, and must be evaluated regularly and changed as required.

3.3.2 The provision of resources and training

Employers must offer sufficient resources to support environmental, health, and safety efforts. This includes assigning sufficient cash for training programs, maintenance, and safety equipment so that they can be properly maintained. It is the responsibility of employers to ensure that their employees have access to the apparatus, tools, and machinery, as well as the personal protective equipment (PPE) that is essential for them to execute their jobs safely. In addition, firms should provide staff with thorough EHS training that covers themes such as the identification of hazards, safe work practices, emergency procedures, and the appropriate utilization of personal protective equipment (PPE).

3.3.3 Carrying Out Hazard Assessments

Employers are required to carry out hazard assessments regularly to detect potential risks and hazards that are present in the workplace. To accomplish this, it is necessary to conduct a thorough analysis of the working procedures, apparatus, chemicals, and physical circumstances to identify potential sources of danger. Inspections, job hazard analyses, and risk assessments are all techniques that can be utilized to carry out danger assessments. To mitigate risks and prevent accidents and injuries, the findings from these assessments provide employers with the ability to prioritize and implement relevant control measures accordingly.

3.3.4 Measures of Control Should be Implemented

Employers should take preventative measures to establish control measures based on the findings of hazard assessments. In order to minimize or eliminate the hazards that have been identified, this entails selecting and implementing appropriate engineering controls, administrative controls, and personal protective equipment (PPE). Machine guarding, ventilation systems, and automatic safety features are examples of engineering controls. Administrative controls, on the other hand, may include the implementation of safe work processes, the provision of clear signage, or the establishment of safety protocols. The effectiveness of control methods should be monitored and evaluated on a regular basis by employers, who should also make any necessary adjustments when they become necessary.

Employers play a significant part in the process of establishing a culture of safety inside the organization, including the promotion of a culture of safety. To do this, it is necessary to establish a setting in which safety is given high priority, is highly appreciated, and is incorporated into every facet of the workplace. The importance

of safety should be actively communicated by employers, clear expectations should be established for what constitutes safe behavior, and training and resources should be made available to support a safe working environment. It is also the responsibility of employers to recognize and promote safe behaviors, encourage employee participation and engagement in safety programs, and develop procedures that allow employees to report dangers, incidents, and near misses without fear of punishment.

Employer Non-Compliance Examples:

- **Inadequate Machine Guarding:**

A specific example could involve a manufacturing plant where an employer fails to install proper machine guards on a high-speed conveyor belt. As a result, a worker's loose clothing gets caught in the conveyor belt, leading to a severe entanglement injury. **Lack of Safety Training:**

In a construction company, an employer neglects to provide adequate safety training for workers who are operating heavy machinery. Consequently, a worker who is not properly trained on the equipment's operation accidentally causes a collision with another vehicle on the worksite, resulting in property damage and injuries.

- **Failure to Maintain Safety Equipment:**

An employer in a chemical processing facility fails to regularly inspect and maintain the safety showers and eyewash stations. During an accidental chemical splash, a worker attempts to use an eyewash station that is not functioning correctly, leading to delayed treatment and potentially causing severe eye damage.

- **Ignoring Ergonomic Guidelines:**

In an office setting, an employer fails to address ergonomic concerns and does not provide adjustable chairs or ergonomic keyboard setups for employees. Over time, several workers develop chronic musculoskeletal disorders, such as repetitive strain injuries, due to poor ergonomics.

- **Inadequate Hazard Communication:**

In a laboratory, an employer fails to label hazardous chemicals properly or provide necessary safety information. As a result, a worker mistakenly uses an unlabeled chemical in an experiment, leading to a chemical reaction that causes an explosion and injuries.

3.4 WORKERS RESPONSIBILITY

3.4.1 Compliance with EHS Policies and Procedures

It is the responsibility of workers to ensure that they comply with the EHS policies and procedures of the organization. Among these are the observance of all safety rules and guidelines, the adherence to safe work procedures, and the utilization of equipment and machinery by prescribed instructions. Employees need to get familiar with the EHS policies, processes, and safety manuals of the organization, and they should actively seek clarification whenever such clarification is required. Workers make a contribution to the maintenance of a safe working environment for themselves and their coworkers by adhering to employees' health and safety policies. Workers are obligated to promptly report any hazards, hazardous situations, incidents, or near misses to their supervisors or the designated EHS staff. This responsibility extends to the reporting of incidents and hazards. The identification and reporting of possible risks, such as damaged equipment, malfunctioning machinery, or unsafe work environments, is included in this.

Additionally, it is the responsibility of workers to report any events or injuries that they both experience or observe. Employers are able to take the appropriate actions to address dangers, investigate accidents, and implement measures to prevent such occurrences in the future when they receive timely reports within a reasonable time frame.

3.4.2 Using Personal Protective Equipment (PPE) Correctly and Consistently

Workers are expected to utilize personal protective equipment (PPE) in a right and consistent manner. This includes the use of personal protective equipment (PPE) and its maintenance, which may include safety goggles, gloves, hard helmets, respiratory protection, and any other necessary protective tools. The workers should be aware of the functions of each form of personal protective equipment (PPE), know when and how to use it, and make sure it fits them correctly. They should also report any problems or shortcomings with their protective equipment (PPE) to their superiors or the EHS department.

3.4.3 Participation in Training and Safety Programmes

Employees are expected to take an active role in the environmental, health, and safety training programs that are provided by their company. Participating in safety orientations, hazard-specific training sessions, emergency response drills, and other training activities that are pertinent to the circumstances are included in this. When workers participate actively in training, they receive awareness of the hazards that are present in the workplace, as well as safety protocols and best practices. Through

the application of this knowledge, they are able to recognise and manage possible hazards, successfully respond to emergencies, and contribute to the maintenance of a safe working environment and environment.

3.4.4 Taking Part in Safety Committees and Meetings

If the organization has safety committees or meetings, employees should take part in these forums and actively participate in them. Workers are allowed to engage with management and other employees through the existence of safety committees. This allows for the discussion of safety concerns, the sharing of best practices, and the identification of prospective improvements. During safety meetings, employees have the opportunity to share their perspectives, observations, and suggestions to assist in the identification of hazards, the development of preventative measures, and the improvement of workplace safety.

It is possible for employers and employees to work together to develop a collaborative strategy for ensuring that environmental, health, and safety measures are effectively implemented and maintained in the workplace if they fulfil their respective tasks. By fostering a more secure working environment, lowering the likelihood of accidents and injuries, and safeguarding the health and well-being of all employees, this cooperation contributes to increased safety.

Worker Non-Compliance Examples:

- **Failure to Use PPE:**

A construction worker, despite being provided with the necessary personal protective equipment (PPE), chooses not to wear a hard hat while working in an area with a risk of falling objects. Consequently, the worker sustains a severe head injury when an object falls and strikes their head.

- **Improper Lifting Techniques:**

In a warehouse, a worker disregards proper lifting techniques and attempts to lift a heavy box using their back instead of their legs. This improper lifting technique leads to a strained back and debilitating back pain. Ignoring Lockout/Tagout Procedures: A maintenance worker in a factory fails to follow lockout/tagout procedures while repairing a malfunctioning machine. As a result, the machine unexpectedly starts up, causing the worker to suffer a severe hand injury.

- **Disregarding Safety Procedures:**

An employee in a restaurant kitchen bypasses safety procedures by reaching into a running meat slicer to remove a stuck piece of food. This action leads to a severe laceration and potential amputation of their finger.

Prescribed Readings

1. Benjamin, O. Alli. (2008). Fundamental Principals of Occupational health and safety.
2. Phil Hughes and Ed Ferrett. (2011). Introduction to Health and Safety at Work.

Self Assessment Questions

- Q1 What does ILO consider to be the key element of the EHS system?
- Q2 Discuss in detail the role of enforcement agencies in the EHS management system at the workplace.

Self Evaluation Questions

1. What can the government's Health and Safety Inspection Service do when they see an offense?
 - a) Impose a requirement and/or make a report of the offense.
 - b) Give the management a reprimand, suspend the work and withdraw the VCA (SCC) certificate.
 - c) Appoint an official to coordinate the work, give a warning and impose a requirement.

2. Which factor has a direct impact on the risks associated with work?
 - a) The supervision exercised by the client.
 - b) The Health and Safety Plan (H&S Plan).
 - c) The workplace.

UNIT -4

CONSEQUENCES OF NON-COMPLIANCE

WRITTEN BY:

Dr. Muhammad Farooq Mustafa

REVIEWED BY:

Mr. Imtiaz Ali Aslam

Dr. Rabeea Zafar

CONTENTS

Unit – 4 :	Consequences of NonCompliance	43
4.1	The Value of Investing in Compliance	46
4.2	Financial Losses.....	46
4.3	Damaged Reputation.....	47
4.4	Loss of employee’s confidence (Trust).....	47
4.5	Loss of Productivity	47
4.6	Enforcement Actions	47
4.7	Prosecution of the Organization	47
4.8	Prosecution of the Individual	48
4.9	Business disruption	48
4.10	Environmental and health impacts	48
4.11	Increased insurance costs	48
4.12	Regulatory scrutiny	48
4.13	Negative media coverage	48
4.14	Product recalls and liability	49
4.15	Human Cost	49
Self Assessment Questions		50
Self Evaluation Questions.....		50

INTRODUCTION

EHS Compliance is an essential regulatory requirement for an industry that refers to the act of parliament, regulations, approved code of practice, policies, programs, and protocols surrounding workplaces and aims to ensure that all company activities must not endanger the health and safety of any worker, member public, or do not cause any excessive environmental damage. Legal compliance (fulfilling all the mandatory legal requirements failure leads to a punishable offense) is also the combination of all actions, activities, prohibitions and directives created to prevent workplace injuries or illnesses, contamination in the facility and pollution in the environment.

EHS compliance is not the sole concern of most businesses, it's just one part of running a healthy and productive company. But compliance is still an absolute must in order to run a safe and effective business, and EHS managers are faced with the daunting task of managing regulatory compliance across multiple facilities and functions, often without a lot of resources and now likely virtual in some capacity. As we look at COVID-19, it's a great time to refocus and revisit "pre-COVID" initiatives and goals.

LEARNING OBJECTIVES

After studying this unit students shall be able to:

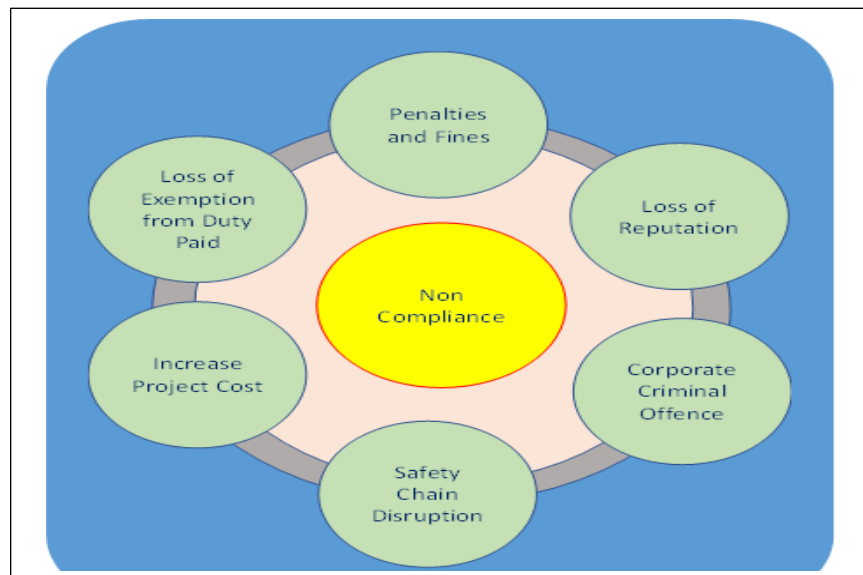
1. Understand the importance of compliance with EHS standards
2. Describe the issues related to non-compliance with EHS standards

INDICATIVE CONTENTS AND SUMMARY OF THE MAIN TOPICS

4.1 THE VALUE OF INVESTING IN COMPLIANCE

Compliance is abiding by the regulatory or non-regulatory requirements. The first step toward achieving compliance is knowing exactly what rules apply to a given business depending on its size, industry, property location and jurisdiction. Employers should view compliance as a necessity just like their products, buildings or equipment. Adapting the workplace and operational procedures to meet EHS requirements can come with an initial cost, but it doesn't have to be a financial black hole.

Non-compliance leaves employers and employees at risk for a huge financial loss, license revocations, business disruptions, erosion of trust, and a damaged reputation as described in the figure below:



4.2 FINANCIAL LOSSES

Breaching health and safety regulations is a criminal offense. It is the duty of the employer to ensure the working environment is safe for employees. By not doing so, an employer can face consequences, including fines. Financial penalties for regulatory non-compliance come in multiple forms: financial fines, limitations on activities, additional barriers to approvals and permits, and imprisonment of duty holders. Even if an organization is not given an actual penalty, an investigation by

a government body (an enforcement agency) will cost many hours of additional work and potential legal and contractor fees.

4.3 DAMAGED REPUTATION

Non-compliance with EHS regulations can also hurt a business's reputation. Disqualification (Cancellation of business license can be likely outcome of legal noncompliance) from the industry is a likely consequence, often leaving companies' reputations in ruin. It's the employer's legal responsibility to protect their employees. Businesses with a history of EHS compliance violations often suffer the effects of negative press coverage, which works against all of their public outreach and brand messages. This information may deter customers on principle or at least damage the company's professional reputation.

4.4 LOSS OF EMPLOYEE'S CONFIDENCE (TRUST)

The main purpose of EHS regulations is to preserve the environment as well as the health and safety of its employees. Companies that violate these regulations often expose their own workers to unnecessary risks, which has profound consequences throughout the organization. On top of the financial expenses of insurance claims, this type of leadership (work environment) creates a toxic workplace culture that drains morale and cuts retention rates. Valuable employees are likely to seek alternative employment where they aren't exposed to serious EHS risks.

4.5 LOSS OF PRODUCTIVITY

Breaches of EHS laws/standards often result in an organization having to cease production until the errors have been rectified. This loss of production will inevitably result in a loss of income (huge financial losses) which, in a worst-case scenario could result in the company going out of business.

4.6 ENFORCEMENT ACTIONS

Serious or repeat EHS violations can prompt state or federal enforcement agencies to issue closure on commercial properties. This effectively suspends all business operations on-site until further notice, which can have devastating consequences on profitability and investor relations. Closures typically last until the company addresses its environmental violations and related legal or financial obligations.

4.7 PROSECUTION OF THE ORGANIZATION

Organizations can be found guilty of criminal acts, much like individual people. This primarily has financial implications, because it gives enforcement officials the legal latitude to levy the company's assets and other resources. This means the

punitive and legal costs of a criminal charge can be exponentially higher than a civil fine. In some cases, employees or leaders of a business can also be charged with criminal behavior depending on the nature and consequences of the noncompliance concern.

4.8 PROSECUTION OF THE INDIVIDUAL

The most obvious consequence is the possibility of the individual being fined for non-compliance. For individuals with the need to pay not only their own legal costs but also those of the prosecution, non-compliance with legislation is a costly exercise. Individuals can also be imprisoned for breaches of EHS law, with sentences of up to a few months. Therefore it is also the legal responsibility of individuals to comply with EHS standards.

4.9 BUSINESS DISRUPTION

Non-compliance with EHS regulations can result in business disruption, including stop-work orders, plant closures, and other measures that can impact a company's operations and profitability.

4.10 ENVIRONMENTAL AND HEALTH IMPACTS

Non-compliance with EHS regulations can result in environmental damage and negative health impacts for individuals and communities. This can include air and water pollution, exposure to hazardous chemicals and materials, and other risks that can harm the environment and public health

4.11 INCREASED INSURANCE COSTS

Companies that violate EHS regulations may find that their insurance premiums increase, as insurers view non-compliance as a higher risk for accidents and incidents.

4.12 REGULATORY SCRUTINY

Companies that violate EHS regulations may find themselves subject to increased regulatory scrutiny, including increased inspections, audits, and other oversight by government agencies.

4.13 NEGATIVE MEDIA COVERAGE

Non-compliance with EHS regulations can also result in negative media coverage, which can further damage a company's reputation and erode public trust.

4.14 PRODUCT RECALLS AND LIABILITY

Non-compliance with EHS regulations can also result in product recalls and liability, particularly for companies in the consumer goods or manufacturing industries. This can result in significant costs for the company, including product replacement, legal fees, and reputational damage.

4.15 HUMAN COST

Non-compliance can lead to injury, illness, and even death in some cases, putting the safety and well-being of employees and the public at risk.

Enforcement and government agencies play a crucial role in ensuring good standards of EHS at the workplace. Their efforts help to promote a culture of safety and environmental responsibility, and their enforcement actions help to ensure that all employers are held to the same high standards. The consequences of non-compliance can be severe and can have a lasting impact on a company's reputation, financial stability, and most importantly, the safety and wellbeing of employees and the public.

Recommended Reading List

1. Benjamin, O. Alli. (2008). Fundamental Principals of Occupational health and safety.
2. Phil Hughes and Ed Ferrett. (2011). Introduction to Health and Safety at Work.

Self Assessment Questions

- Q1 Describe three legal responsibilities that an employer has to comply with at the workplace.
- Q2 What are the consequences for an employer of non-compliance with EHS responsibilities at the workplace?

Self Evaluation Questions

1. Under the OHS ACT, employers are responsible for providing a _____
 - a) Land
 - b) Insurance
 - c) Safe workplace
2. What are the two types of notice that health and safety inspectors can issue when they are unhappy with what they find at an employer's premises?
 - a) Prohibition notices and violation notices.
 - b) Prohibition notices and improvement notices.
 - c) Improvement notices and investigation notices.

UNIT -5

CLAIMS FOR COMPENSATION

WRITTEN BY:

Dr. Muhammad Farooq Mustafa

REVIEWED BY:

Mr. Imtiaz Ali Aslam

Dr. Rabeea Zafar

CONTENTS

Unit – 5: CLAIMS FOR COMPENSATION	51
5.1 Workers Compensation Claim.....	54
5.1.1Personal Injuries Compensation	54
5.1.2Medical-Only Claim	55
5.1.3Lost Time Claim	55
5.1.4Temporary Total Disability Claim.....	55
5.1.5Permanent Partial Disability Claim	55
5.1.6Permanent Total Disability Claim	56
5.1.7Vocational Rehabilitation	56
5.2 Worker’s Compensation Law	57
5.3 Alternatives for Satisfying Workers' Compensation	57
5.4 Who pays workers’ compensation insurance premiums?	57
5.5 Issues that are not covered by workers' compensation	58
5.5.1Self-Inflicted Injuries	58
5.5.2Violations of Company Policy Injuries	58
5.5.3Injuries Outside Work Scope	58
5.5.4Mental Health Conditions	59
5.5.5Pre-existing Conditions	59
5.5.6Independent Contractors	59
5.5.7Causation Disputes.....	59
Self Assessment Questions	60
Self Evaluation Questions.....	60

INTRODUCTION

Compensation claim (related to injury and illness at the workplace) is the prerogative demanded by an employee who gets injured, disabled or suffering from illness in connection with work. Payment of such claims are required and regulated by local laws. Employees are entitled to make such compensation claims for the pain and suffering he or she has endured as a result. In most of the cases, the compensations are cash benefits and/or medical care.

Learning Objectives

After studying this unit students shall be able to:

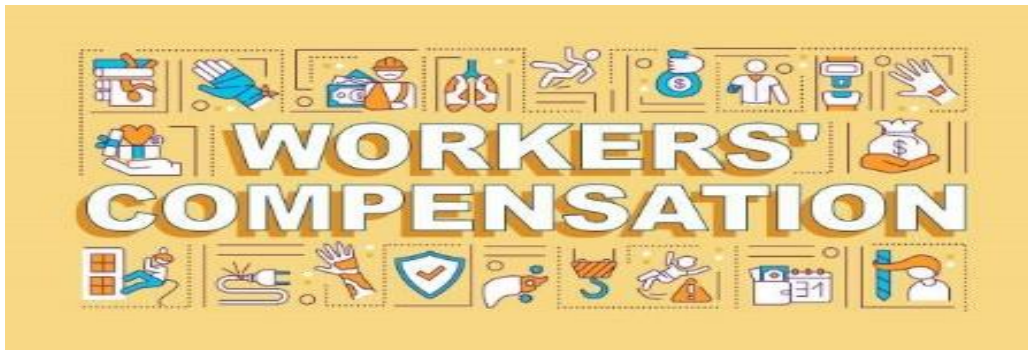
1. Understand the knowledge regarding workers' compensation in case of personal injury at the workplace.
2. Describe the worker's compensation laws at the national and international levels.
3. Explain the alternatives for satisfying worker's compensation in case of personal injury.

INDICATIVE CONTENTS AND SUMMARY OF THE MAIN TOPICS

The lack of federal standards for workers' compensation has resulted in extremely varied policies for the same kinds of injuries from state to state. 3 Aamir Mubasher PGD Health Safety Programe Identical injuries can receive radically different kinds of compensation depending on where a worker resides. A paper by the Occupational Safety and Health Administration (OSHA) flatly calls workers' compensation a "broken system," and estimates that 50% of the costs of workplace injury and illness are borne by the individuals who suffer them. Low-wage and immigrant workers often don't even apply for benefits.

5.1 WORKERS COMPENSATION CLAIM

A compensation claim is a legal process through which an employee seeks compensation or benefits from their employer for injuries or illnesses sustained while on the job. In general, workers' compensation claims are designed to provide employees with financial assistance for medical expenses, lost wages, and other related costs that may arise as a result of a workplace injury or illness. Workers' compensation, commonly referred to as "workers' comp," is a government-mandated program that provides benefits to workers who become injured or ill on the job or as a result of the job. It is effectively a disability insurance program for workers, providing cash benefits, healthcare benefits, or both to workers who suffer injury or illness as a direct result of their jobs. There are different types of workers' compensation claims, including:



5.1.1 Personal Injuries Compensation

No matter what precautions are put in place, accidents at work can and do happen under varying circumstances. Injuries caused by these work accidents can range in severity from minor scratches and injuries to broken bones, amputations, severe burns and sometimes sadly, even fatalities. Personal injury compensation aims to help employees recover compensatory damages.

An employee may have a valid basis for a work accident claim if injured at work for any of the below-mentioned reasons and has suffered a personal injury:

- Slip, trip, or fall.
- Dangerous practices and procedures in the workplace.
- Defective or poorly maintained equipment.
- Dangerous machinery at work.
- Falls from height.
- Noxious environment or toxic substances.
- Falling objects. Non-adherence to Health & Safety regulations.
- Negligence of co-workers.
- Insufficient or improper training.
- Assault at work.
- Accident while operating a forklift.
- Faulty lifting and manual handling practices brought on by lack of training.

Personal injury compensation includes quantifiable, out-of-pocket expenses. A few examples of Personal injury compensation include:

- Medical Expenses
- Loss of wages/ earning capacity
- Loss of irreplaceable items
- Long-term physical pain & suffering resulting from the injury

5.1.2 Medical-Only Claim

This type of claim involves an employee who has suffered an injury or illness at work that requires medical treatment but does not result in lost time from work. Medical-only claims typically cover the cost of medical treatment, such as doctor visits, medication, and rehabilitation.

5.1.3 Lost Time Claim

This type of claim involves an employee who has suffered an injury or illness at work that results in lost time from work. Lost time claims typically provide benefits to cover a portion of an employee's lost wages and medical expenses.

5.1.4 Temporary Total Disability Claim

This type of claim involves an employee who is unable to work due to a work-related injury or illness, but is expected to recover and return to work at a later date.

Temporary total disability claims typically provide benefits to cover a portion of an employee's lost wages and medical expenses during the period of disability.

5.1.5 Permanent Partial Disability Claim

This type of claim involves an employee who has suffered a permanent injury or impairment as a result of a work-related injury or illness, but is still able to work in some capacity. Permanent partial disability claims typically provide benefits to compensate for the permanent loss of physical function or earning capacity.

5.1.6 Permanent Total Disability Claim

This type of claim involves an employee who has suffered a permanent injury or illness that has left them permanently unable to work. Permanent total disability claims typically provide benefits to compensate for the employee's lost earning capacity for the remainder of their life.

5.1.7 Vocational Rehabilitation

Vocational rehabilitation is designed to help people who have been injured or disabled return to work. According to the National Rehabilitation Information Center (NARIC), vocational rehabilitation may include job training, career counseling, and assistance in finding new employment. If you cannot return to your previous employment because of your injuries, you can include vocational rehabilitation benefits in your workers' compensation claim.

Workers' compensation claims can be complex and may involve legal and medical expertise. It is important for employers and employees to understand their rights and responsibilities in the workers' compensation process and to work together to ensure a safe and healthy workplace. Employers can take steps to reduce the risk of workplace injuries and illnesses, such as providing proper training and equipment, implementing safety protocols, and addressing workplace hazards. Employees can also take steps to protect themselves by following proper safety procedures and reporting any unsafe conditions or practices.



5.2 WORKER’S COMPENSATION LAW

Worker compensation insurance, often called "workers compensation," is a state-mandated program consisting of payments required by law to be made to an employee who is injured or disabled in connection with work. In addition, it is a system of compensation that allows employees who are injured at work to obtain payment for lost wages, medical costs, and occupational rehabilitation expenses without regard to their personal negligence or fault. In exchange for this no-fault system, which means it doesn't account for an employee's personal negligence or fault, employees give up their right to sue their employers directly for negligence or other damages.

Workers compensation laws in Pakistan:

- The Workmen’s Compensation Act, 1923.
- Punjab Workers’ Compensation (Amendment) ACT, 2013.
- The Khyber Pakhtunkhwa Workers’ Compensation ACT, 2013.
- Sindh Workers Compensation Act, 2016 (Act No. VII of 2016).

5.3 ALTERNATIVES FOR SATISFYING WORKERS' COMPENSATION

Employers want to hire the most qualified employees and keep those employees loyal and productive. To attract and keep their employees, employers provide a “package” that includes compensation (money), incentives (special perks or rewards for good work) and benefits (valuable options such as health insurance and paid vacation).

5.4 WHO PAYS WORKERS’ COMPENSATION INSURANCE PREMIUMS?

The employer pays workers’ compensation insurance premiums. There is no payroll deduction, as for Social Security benefits. The employer is required by law to pay workers’ compensation benefits as established by individual state laws.

In summary, workers' compensation claims can arise from a variety of injuries and illnesses that occur in the workplace. Understanding the different types of claims and how they are evaluated can help employers and employees navigate the workers' compensation process and ensure that injured workers receive the benefits they are entitled to.

5.5 ISSUES THAT ARE NOT COVERED BY WORKERS' COMPENSATION

Workers' compensation typically offers coverage for a wide range of work-related injuries and illnesses, there are specific issues that may not fall under its provisions. These exclusions can vary depending on local regulations and insurance policies, but some common examples include:

5.5.1 Self-Inflicted Injuries

Injuries intentionally caused by the employees to themselves are generally not covered. This provision aims to prevent individuals from harming themselves to claim benefits.

5.5.2 Violations of Company Policy Injuries

Occurring while an employee is breaching company rules or engaging in illegal activities may disqualify them from receiving workers' compensation benefits. For instance, injuries sustained under the influence of substances may not be covered.



5.5.3 Injuries Outside Work Scope

Workers' compensation typically applies only to injuries sustained during work-related tasks. Injuries during breaks, recreational activities, or commuting may not be covered unless specific circumstances warrant otherwise.

5.5.4 Mental Health Conditions

While some jurisdictions include coverage for work-related mental health conditions, eligibility criteria can be stringent. Proving a direct link between the workplace and mental health issues can be challenging.

5.5.5 Pre-existing Conditions

Workers' compensation may not cover conditions existing before employment unless work exacerbates them significantly. Assessing the degree of aggravation due to work-related factors can be complex.

5.5.6 Independent Contractors

Typically, workers' compensation benefits do not extend to independent contractors, as they are not considered employees. Disputes may arise over misclassification, affecting eligibility.

5.5.7 Causation Disputes

If there's uncertainty regarding whether an injury or illness stems from work activities, the claim might face denial or contention. Establishing a clear causal connection between the workplace and the condition is crucial for successful claims.

Understanding these exclusions and seeking guidance from legal experts or workers' compensation representatives can help individuals navigate complexities and ensure their rights are protected under applicable laws and policies.

Recommended Reading List

1. Benjamin, O. Alli. (2008). Fundamental Principals of Occupational health and safety.
2. Phil Hughes and Ed Ferrett. (2011). Introduction to Health and Safety at Work.

Self Assessment Questions

- Q1 Discuss in detail the types of personal injury claims that are most common in Pakistan.
- Q2 Identify the possible cost to an employer following an accident in the workplace.

Self Evaluation Questions

1. What term is used to describe the doctrine where an employer is held legally responsible for injuries sustained at work even if wholly blameless?
 - a) Reasonable foreseeability
 - b) Voluntary assumption of risk
 - c) Vicarious liability
2. Under which type of claim is it necessary to show that an employee has suffered 'oppressive and unacceptable' treatment 'of an order which would sustain criminal liability'?
 - a) Protection from Harassment Act
 - b) Negligence leading to stress
 - c) Constructive dismissal

UNIT -6

INTERNATIONAL STANDARDS

WRITTEN BY:

Dr. Muhammad Farooq Mustafa

REVIEWED BY:

Mr. Imtiaz Ali Aslam

Dr. Rabeea Zafar

CONTENTS

Unit – 6: INTERNATIONAL STANDARDS	61
6.1 PDCA Cycle.....	64
6.2 ISO 9001	65
6.3 ISO 14001	65
6.4 ISO 12100	66
6.5 ISO 45001	66
6.6 OHSAS 18001	67
6.7 OSHA.....	67
6.8 HSEUK	68
6.9 CCOHS	68
6.10 NFPA STANDARDS	68
Self Assessment Questions	70
Self Evaluation Questions.....	70

INTRODUCTION

Standards are the distilled wisdom of people with expertise in their subject matter and who know the needs of the organizations they represent, people such as manufacturers, sellers, buyers, customers, trade associations, users and regulators. For instance, Quality management standards to help work more efficiently and reduce product failures. Environmental management standards help reduce environmental impacts, reduce waste and be more sustainable. Health and safety standards to help reduce accidents in the workplace.

EHS standards play a key role in the overall standards environment, providing a backbone for industry-specific standardization efforts. ISO standards as a formula (management system) describe the best way of doing something.

LEARNING OBJECTIVES

After studying this unit, students shall be you should be able to:

1. Understand national and international standards (ISO 9001, 140001, 12100 & 45001) on the EHS system.

INDICATIVE CONTENTS AND SUMMARY OF THE MAIN TOPICS

6.1 PDCA CYCLE

The PDCA cycle is a method for making changes to work processes and improving standards. PDCA stands for Plan, Do, Check, and Act. The PDCA approach achieves a balance between the systems and behavioral aspects of management. It also treats EHS management as an integral part of good management generally, rather than as a stand-alone system.



Plan: A plan is about setting up the organizational expectations; objectives, goals, responsibilities and targets. In addition, it provides the basis for better performance and base-line for performance measurement.

Do: It is about putting the plan into practice to achieve the set objectives and goals. Try out the plans, making sure everyone involved understands the changes. This implementation phase is key to getting accurate results. Assess the risks, identify what could cause harm in the workplace, who it could harm and how and what to do to manage the risk. Decide what the priorities are and identify the biggest risks. Involve workers and communicate, so that everyone is clear on what is needed and can discuss issues, and develop positive attitudes and behaviors. Provide adequate resources, including competent advice where needed. Decide on the preventive and protective measures needed and put them in place. Provide the right tools and equipment to do the job and keep them maintained. Train and instruct, to ensure everyone is competent to carry out their work. Supervise to make sure that arrangements are followed.

Check: It is a performance measurement to evaluate the EHS performance of the organization in accordance with the set standard. Performance check requires follow-up to see how effective the changes are. Make sure that plans have been implemented. Assess how well the risks are being controlled. In some circumstances, formal audits may be useful. Investigate the causes of accidents, incidents or near misses.

Act: It is about setting up new objectives and targets and developing a strategy to make improvements in future plans and arrangements. This is done by Learning from accidents and incidents, ill-health data, errors and relevant experience, including from other organizations. Revisit plans, policy documents and risk assessments to see if they need updating. Take action on lessons learned, including from audit and inspection reports. If the changes work, continue using them and make them the new standard.

6.2 ISO 9001

ISO 9001 is the internationally recognized standard for Quality Management Systems (QMS). It is the most widely used QMS standard in the world. It provides a framework and set of principles that ensure a common-sense approach to the management of the organization to consistently satisfy customers and other stakeholders. In simple terms, ISO 9001 certification provides the basis for effective processes and effective people to deliver an effective product or service time after time.

The key to any successful business is strong quality control. ISO 9001 is a quick and easy way for potential consumers to see a company has put the time and effort into making sure that its product or service is the best it can possibly be.

6.3 ISO 14001

ISO 14001 specifies the requirements for an environmental management system (EMS) that an organization can use to enhance its environmental performance. It is intended for use by an organization seeking to manage its environmental responsibilities in a systematic manner that contributes to the environmental pillar of sustainability. It also helps an organization achieve the intended outcomes of its environmental management system, which provides value for the environment, the organization itself and interested parties. Consistent with the organization's environmental policy, the intended outcomes of an environmental management system include:

- Enhancement of environmental performance
- Fulfillment of compliance obligations

- Achievement of environmental objectives

ISO 14001 is applicable to any organization, regardless of size, type and nature, and applies to the environmental aspects of its activities, products and services that the organization determines it can either control or influence considering a life cycle perspective. It does not state specific environmental performance criteria. It can be used in whole or in part to systematically improve environmental management. Claims of conformity to ISO 14001:2015, however, are not acceptable unless all its requirements are incorporated into an organization's environmental management system and fulfilled without exclusion.

6.4 ISO 12100

ISO 12100 specifies basic terminology, principles and a methodology for achieving safety in the design of machinery. It specifies principles of risk assessment and risk reduction to help designers in achieving this objective. These principles are based on knowledge and experience of the design, use, incidents, accidents and risks associated with machinery. Risk assessment follows a series of logical steps to identify and examine any potential hazards associated with machinery which include:

- Machinery Limits identification
- Hazard identification
- Risk Estimation
- Risk Evaluation

6.5 ISO 45001

ISO 45001 is an international standard for health and safety at work developed by the International Organization for Standardization (ISO), involving national and international standards committees of experts. The goal of ISO 45001 is the reduction of occupational injuries and diseases, including promoting and protecting physical and mental health.

Its standards are the result of great effort by a committee of health and safety management experts who looked closely at a number of other approaches to system management including ISO 9001 and ISO 14001. In addition, ISO 45001 was designed to take other existing occupational health and safety standards, such as OHSAS 18001, into account as well as the ILO's labor standards, conventions and safety guidelines. Especially geared toward senior management, ISO 45001 has the ultimate goal of helping businesses provide a healthy and safe working environment for their employees and everyone else who visits the workplace. This goal can be achieved by controlling factors that could potentially lead to injury, illness and in extreme situations even death. As a result, ISO 45001 is concerned with mitigating

any factors that are harmful or that pose a danger to workers' physical and/or mental well-being.

6.6 OHSAS 18001

OHSAS 18001, Occupational Health and Safety Assessment Series, was an international standard for occupational health and safety management systems that was subsequently adopted as a British Standard. Compliance with it enabled organizations to demonstrate that they had a system in place for occupational health and safety.

Organizations that are certified to OHSAS 18001 were able to migrate to ISO 45001 by March 2021 to retain a recognized certification. Organizations worldwide recognize the need to control and improve health and safety performance and do so with occupational health and safety management systems (OHSMS). However, before 1999 there was an increase of national standards and proprietary certification schemes to choose from. This caused confusion and fragmentation in the market and undermined the credibility of individual schemes.

Difference with ISO 45001: The new ISO 45001 standard encompasses two types of changes from the OHSAS 18001 standard. The first change involves a significant overhaul of the clauses to follow a new organizational structure that is being implemented for all ISO management system standards. ISO developed Annex SL - a framework for a generic management system and the blueprint for all new and revised management system standards. The revised versions of the ISO 14001 and ISO 9001 standards and the new ISO 45001 standard are organized in accordance with this new structure. A Plan-Do-Check-Act model is retained in the new structure for all management system standards, with the clauses organized to facilitate the implementation of an integrated management system.

6.7 OSHA

The Occupational Safety and Health Administration (OSHA) is a large regulatory agency of the United States Department of Labor that originally had federal visitorial powers to inspect and examine workplaces. Congress established the agency under the Occupational Safety and Health Act (OSH Act), which President Richard M. Nixon signed into law on December 29, 1970. OSHA's mission is to "assure safe and healthy working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance". The agency is also charged with enforcing a variety of whistleblower statutes and regulations. OSHA's workplace safety inspections have been shown to reduce injury rates and injury costs without adverse effects on employment, sales, credit ratings or firm survival.

6.8 HSEUK

The Health and Safety Executive (HSE) is a UK government agency responsible for the encouragement, regulation and enforcement of workplace health, safety and welfare, and for research into occupational risks in Great Britain. It is a non-departmental public body of the United Kingdom with its headquarters in Bootle, England. In Northern Ireland, these duties lie with the Health and Safety Executive for Northern Ireland. The HSE was created by the Health and Safety at Work etc. Act 1974, and has since absorbed earlier regulatory bodies such as the Factory Inspectorate and the Railway Inspectorate though the Railway Inspectorate was transferred to the Office of Rail and Road in April 2006. The HSE is sponsored by the Department for Work and Pensions. As part of its work, HSE investigates industrial accidents, small and large, including major incidents such as the explosion and fire at Buncefield in 2005. Though it formerly reported to the Health and Safety Commission, on 1 April 2008, the two bodies merged.

6.9 CCOHS

The Canadian Centre for Occupational Health and Safety (CCOHS) is an independent departmental corporation under Schedule II of the Financial Administration Act and is accountable to Parliament through the Minister of Labour. CCOHS functions as the primary national agency in Canada for the advancement of safe and healthy workplaces and preventing work-related injuries, illnesses and deaths. Additional work in this area is carried out by provincial and territorial labour departments and workers' compensation CCOHS was created in 1978 by an Act of Parliament - Canadian Centre for Occupational Health and Safety Act S.C., 1977-78, c. 29.

The act was based on the belief that all Canadians had a “fundamental right to a healthy and safe working environment”. The centre, located in Hamilton, Ontario, is governed by a tripartite Council of Governors representing government (federal, provincial and territorial), employers, and workers. CCOHS promotes the total well-being of physical, psychosocial and mental health of working Canadians by providing information, training, education, management systems and solutions. It makes credible information about workplace hazards and conditions easily and widely accessible to all Canadians - promoting safe and healthy workplaces.

6.10 NFPA STANDARDS

National Fire Protection Association (NFPA) standards mostly deal with fire prevention in workplaces. NFPA is a standards writing organization, founded in 1896 and dedicated to the concept of voluntary consensus standards writing. While it is not an enforcing agency, NFPA enjoys a unique reputation; and its standards

have been adopted by all levels of government, in many cases giving the standards the force of law.

Companies in all types of situations should at least be aware of the most common codes so that they can be followed. Examples of these would include:

- NFPA 10 – The Standard for Portable Fire Extinguishers
- NFPA 13 – Standards for the Installation of Sprinkler Systems
- NFPA 70 – The National Electrical Code
- NFPA 70E – The Standard for Electrical Safety in the Workplace
- NFPA 921 – A Guide for Fire and Explosion Investigations

Recommended Reading List

1. UNIDO & ISO. ISO 45001:2018. Occupational Health and Safety Management Systems.
2. Phil Hughes and Ed Ferrett. (2011). Introduction to Health and Safety at Work.

Self Assessment Questions

- Q1 What are the benefits of ISO certification? Discuss in Detail.
- Q2 What are the examples of evidence that demonstrate that an organization is managing its EHS legal responsibilities in conformance with ISO standards?

Self Evaluation Questions

1. According to ISO, the quality system is the organizational structure, responsibilities, procedures, processes, and resources for implementing quality management.
 - a) True
 - b) False
2. ISO 14000 standards are for the _____
 - a) Quality Management System
 - b) Environmental Management System
 - c) Administration

UNIT -7

HAZARD IDENTIFICATION & RISK ASSESSMENT (HIRA)

WRITTEN BY:

Dr. Muhammad Farooq Mustafa

REVIEWED BY:

Mr. Imtiaz Ali Aslam

Dr. Rabeea Zafar

CONTENTS

Unit – 7: HAZARD IDENTIFICATION & RISK ASSESSMENT (HIRA) ..	71
7.1 HIRA & Job Safety Analysis (JSA)	73
7.2 Risk Assessment	73
7.2.1 Risk Assessment Steps.....	75
7.3 Hazard & Risk.....	76
7.3.1 Safety Hazards	76
7.3.2 Biological Hazards.....	77
7.3.3 Physical Hazards.....	77
7.3.4 Ergonomic hazards.....	78
7.3.5 Chemical Hazards	78
7.3.6 Work organization hazards	78
7.3.7 Environmental hazards.....	79
7.4 Risk Control Hierarchy	80
7.5 Reasonably Practicable Control.....	81
Self Assessment Questions	82
Self Evaluation Questions.....	82

INTRODUCTION

Hazard identification and risk assessment (HIRA) are two processes necessary for maintaining a high level of safety and efficiency in the workplace. These processes aim to identify potential risks and hazards, assess their severity, and put management teams in a better position to put controls and preventive and corrective actions.

During hazard identification, teams inspect workspace and processes with the goal of identifying potential risks to the environment, human health and safety. The types of hazards teams may identify vary from organization to organization, but it's crucial to ensure that the team detects any and all potential threats. Risk assessment is the next step after hazard identification. This is the process of assessing the risks and hazards found during the identification process and determining their severity, likelihood, and other factors. That way, the team can create a comprehensive and effective plan to protect workers and create a better work environment.

LEARNING OUTCOMES

After studying this unit, students shall be able to:

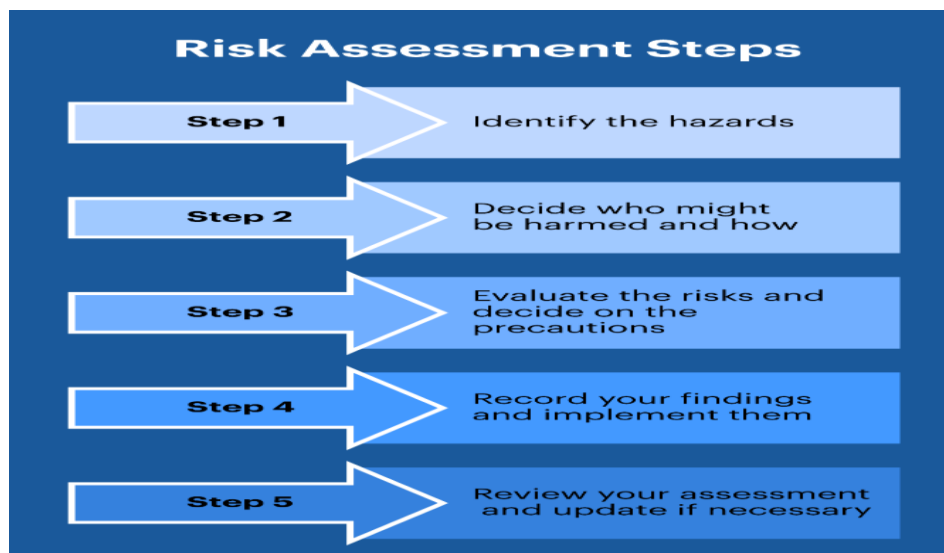
1. Understand the concept and steps involved in Hazard identification and Risk assessment.
2. Describe the types of hazards involved, symptoms, sources and control measures in a workplace environment.
3. Explain the risk control hierarchy to ensure a safe working environment.

INDICATIVE CONTENTS AND SUMMARY OF THE MAIN TOPICS

7.1 HIRA & JOB SAFETY ANALYSIS (JSA)

HIRA: HIRA is to identify and evaluate the hazards, risks and put control measures for the safe execution of activities at the workplace.

Job Safety Analysis: Job safety analysis (JSA) is a procedure that helps to integrate EHS principles and practices into a particular task or job. In a JSA, each basic step of the job, is to identify potential hazards and to recommend the safest way to do the job.



The most important difference is that a job safety analysis looks at job-specific risks while the HIRA looks at the bigger picture. The HIRA will identify risks throughout the facility, and not just those that may directly impact an employee. For example, HIRA looks to identify environmental hazards and put processes in place to mitigate that risk, while a job safety analysis would not. The job safety analysis looks at individual tasks, which often allows the safety professional to look much deeper into the potential hazards.

7.2 RISK ASSESSMENT

Risk assessment is a primary management tool/ technique in ensuring the EHS standards at the workplace. Companies use a Risk Assessment Framework (RAF) to prioritize and share the details of the assessment. It also helps an organization to identify potential hazards and any business assets put at risk by these hazards.

7.2.1 Risk Assessment Steps

Step 1: Identify the hazards. The first step in a risk assessment is to identify any potential hazards that, if they were to occur, would negatively influence the organization's ability to conduct business. Potential hazards that could be considered or identified during risk assessment include natural disasters, utility outages, cyber-attacks and power failure.

Step 2: Determine/Decide what, or who could be harmed. After the hazards are identified, the next step is to determine which business assets would be negatively influenced. Business assets deemed at risk of these hazards can include critical infrastructure, environment pollution, IT systems, business operations, company reputation and even employee safety.

Step 3: Evaluate the risks and develop control measures. A risk analysis can help identify how hazards will impact business assets and the measures that can be put into place to minimize or eliminate the effect of these hazards on business assets. Potential hazards include property damage, business interruption, financial loss and legal penalties.

Step 4: Record the findings. The risk assessment findings should be recorded by the company and filed as easily accessible, official documents. The records should include details on potential hazards, their associated risks and plans to prevent the hazards.

Step 5: Review and update the risk assessment regularly. Potential hazards, risks and their resulting controls can change rapidly in a modern business environment. It is important for companies to update their risk assessments regularly to adapt to these changes.

Some common types of risk assessments include:

Fire risk assessments: Fire safety management procedures are required to be established in all workplaces including a suitable and sufficient fire risk assessment.

Manual handling risk assessments should be conducted in any workplace where an employee may be at risk from injury and/or ill-health through the need to lift, carry, and move loads.

Display screen equipment (DSE) risk assessments are required to be completed in workplaces where employees (and others) are using computers, laptops, etc.

COSHH risk assessments are required within workplaces where hazardous substances are stored, used or manufactured.

7.3 HAZARD & RISK

A hazard is any source of potential damage, harm, or adverse health effects on something or someone whereas “Risk” is the chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard”.

The common workplace hazards are:

- Safety hazards
- Biological hazards
- Physical hazards
- Ergonomic hazards
- Chemical hazards
- Respiratory Hazards
- Electrical wiring
- Confined spaces (Work organization hazards)
- Environmental hazards



7.3.1 Safety Hazards:

(are those which can cause injury or loss). Effect on employees who work directly with machinery or on construction sites. Safety hazards are unsafe working conditions and practices that can cause injury, illness, and death.

These include:



- Anything that can cause slips or trips such as cords running across the floor or ice.

- Anything that can cause falls such as working from heights, including ladders, scaffolds, roofs, or any elevated work area.
- Unguarded and moving machinery parts that a worker can accidentally touch.
- Electrical hazards like frayed cords, missing ground pins, and improper wiring.

7.3.2 Biological Hazards:

Biological hazards exposure to harm or disease from working with animals, people, or infectious plant materials. Workplaces with these kinds of safety hazards include but are not limited to, work in schools, daycare facilities, colleges and universities, hospitals, laboratories, emergency services, nursing homes, or various outdoor occupations.

Types of things you may be exposed to for biological hazards:

- Blood and other body fluids
- Fungi/mold
- Bacteria and viruses
- Plants
- Insect bites



7.3.3 Physical Hazards:

Physical hazards affect workers in extreme weather conditions or harmful working environments. Workers who are exposed outside to the sun for a prolonged period of time can suffer physical hazards which can cause long-term effects on their health. Physical hazards can be any factors within the environment that can harm the body without necessarily touching it. Physical hazards include:

- Radiation: including ionizing and non-ionizing (EMFs, microwaves, radio waves, etc.) materials
- High exposure to sunlight/ultraviolet rays
- Gases under pressure
- Temperature extremes – hot and cold
- Constant loud noise

7.3.4 Ergonomic hazards:

Ergonomic safety hazards occur when the type of work, body positions, and working conditions put a strain on your body. They are the hardest to spot since you don't always immediately notice the strain on your body or the harm that these hazards pose. Short-term exposure may result in "sore muscles" the next day or in the days following the strain, but extended exposure can result in serious long-term issues. Ergonomic Hazards include:

- Improperly adjusted workstations and chairs
- Frequent lifting
- Poor posture
- Awkward movements, especially if they are repetitive
- Having to use too much force, especially if you have to do it frequently
- Excessive vibration



7.3.5 Chemical Hazards:

Chemical hazards are present when a worker is exposed to any chemical agent in the workplace in any form (solid, liquid or gas). Some are more hazardous than others, but to some workers who are more sensitive to chemicals, even common solutions can cause illness, skin irritation, or breathing problems.

Chemical hazards can be present in the following forms:

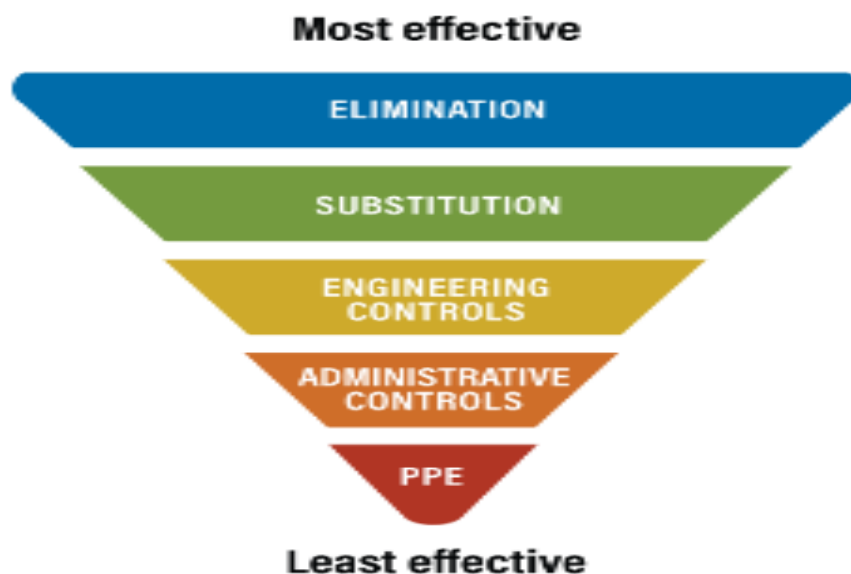
- Liquids like cleaning products, paints, acids, and solvents particularly if hazardous products are in an unlabeled container.
- Vapors and fumes that come from metals or exposure to solvents.
- Gases like acetylene, propane, carbon monoxide, helium, and Hydrogen Sulfide (H₂S) gas.
- Hazardous products and flammable materials like gasoline, solvents, and explosive chemicals
- Pesticides.

7.3.6 Work organization hazards:

Safety hazards or stressors that cause stress (short-term effects) and strain (long-term effects). These are hazards associated with workplace issues such as workload, lack of control and/or respect, etc. Examples include:

- Workload demands
- Workplace violence
- High intensity and/or pace
- Respect (or lack thereof)
- Flexibility
- Control or say about things
- Social support or relations
- Sexual harassment

Hierarchy of Controls



7.3.7 Environmental hazards:

Environmental hazards are constantly changing with increasingly unpredictable and extreme weather and climate. The bad news is that they are mostly out of our control, but the good news is weather challenges and hazards are somewhat predictable with the change in seasons and advances in meteorology. Examples include:

- Extreme temperatures (dangerous heat and cold)
- Extreme precipitation (rain and snow)
- Dangerous levels of noise
- Dangerous levels of radiation
- Pollution (air, water, soil and solid waste)
- Unstable infrastructure

- Biological hazards
- Violent members of the public

7.4 RISK CONTROL HIERARCHY

Risks should be reduced to the lowest reasonably practicable level by taking preventative measures, in order of priority.

The table below sets out an ideal order to follow when planning to reduce risk:

Elimination	Redesign the job or substitute a substance so that the hazard is removed or eliminated
Substitution	Replace the material or process with a less hazardous one. Care should be taken to ensure the alternative is safer than the original.
Engineering controls	Use work equipment or other measures to prevent falls where you cannot avoid working at height. Install or use additional machinery such as local exhaust ventilation to control risks from dust or fumes. Separate the hazard from operators by methods such as enclosing or guarding dangerous items of machinery/equipment. Give priority to measures that protect collectively over individual measures.
Administrative controls	These are all about identifying and implementing the procedures you need to work safely. For example: reducing the time workers are exposed to hazards (eg by job rotation); prohibiting the use of mobile phones in hazardous areas; increasing safety signage, and performing risk assessments.
Personal protective clothes and equipment	Only after all the previous measures have been tried and found ineffective in controlling risks to a reasonably practicable level, must personal protective equipment (PPE) be used. For example, where you cannot eliminate the risk of a fall, use work equipment or other measures to minimize the distance and consequences of a fall (should one occur). If chosen, PPE should be selected and fitted by the person who uses it. Workers must be trained in the function and limitations of each item of PPE.



7.5 REASONABLY PRACTICABLE CONTROL

'Reasonably practicable' is a legal requirement. It means doing what are reasonably able to do to ensure the health and safety of workers and others like volunteers and visitors.

Basically, employers always need to try to eliminate, so far as is reasonably and practicable, any EHS risks in the workplace.

If a risk cannot be removed, an employer must minimize it by doing one or more of these things:

- Substituting (wholly or partly) the hazard with something with a lesser risk
- Isolating the hazard from any person exposed to it
- Implementing engineering controls (if the risk remains, employer must implement administrative controls)
- Use personal protective equipment.

When determining what is reasonably practicable, an employer should take into account:

- The likelihood of the hazard or risk occurring
- The degree of harm from the hazard or risk
- Knowledge about ways of eliminating or minimizing the hazard or risk
- The availability and suitability of ways to eliminate or minimize the risk
- Cost of eliminating or minimizing the risk

Recommended Reading List

1. James T. Tweedy. (2010). Introduction to Hazard Control Management.
2. Phil Hughes and Ed Ferrett. (2011). Introduction to Health and Safety at Work.

Self Assessment Questions

- Q1 Describe the purpose of Hazard identification and risk assessment at the workplace.
- Q2 Discuss in detail the steps involved in Risk assessment.

Self Evaluation Questions

1. The _____ process determines whether exposure to a chemical can increase the incidence of adverse health effects.
 - a) Hazard identification
 - b) Exposure assessment
 - c) Toxicity assessment
2. Which of the following data is not required for hazard identification?
 - a) Land use
 - b) Contaminant levels
 - c) Affected population

UNIT -8

SAFE SYSTEM OF WORK

WRITTEN BY:

Dr. Muhammad Farooq Mustafa

REVIEWED BY:

Mr. Imtiaz Ali Aslam

Dr. Rabeea Zafar

CONTENTS

Unit – 8: SAFE SYSTEM OF WORK	83
8.1 Responsibility of the Employer	87
8.2 Role of the Competent Authority.....	88
8.3 Responsibility of the Employees	88
8.4 Technical Control in the Development of a Safe System of Work	88
8.4.1Engineering Controls	89
8.4.2Isolation and Segregation.....	89
8.4.3Substitution of Hazardous Substances	89
8.5 Procedural Control in the Development of a Safe System of Work	89
8.5.1Standard Operating Procedures (SOPs).....	89
8.5.2Training and Education.....	90
8.5.3Permit-to-Work Systems.....	90
8.5.4Emergency Response Plans	90
8.5.5Incident Reporting and Investigation.....	90
8.5.6RiskAssessments.....	91
8.5.7Supervision and Monitoring	91
8.5.8Continuous Improvement	91
Self Assessment Questions	92
Self Evaluation Questions.....	92

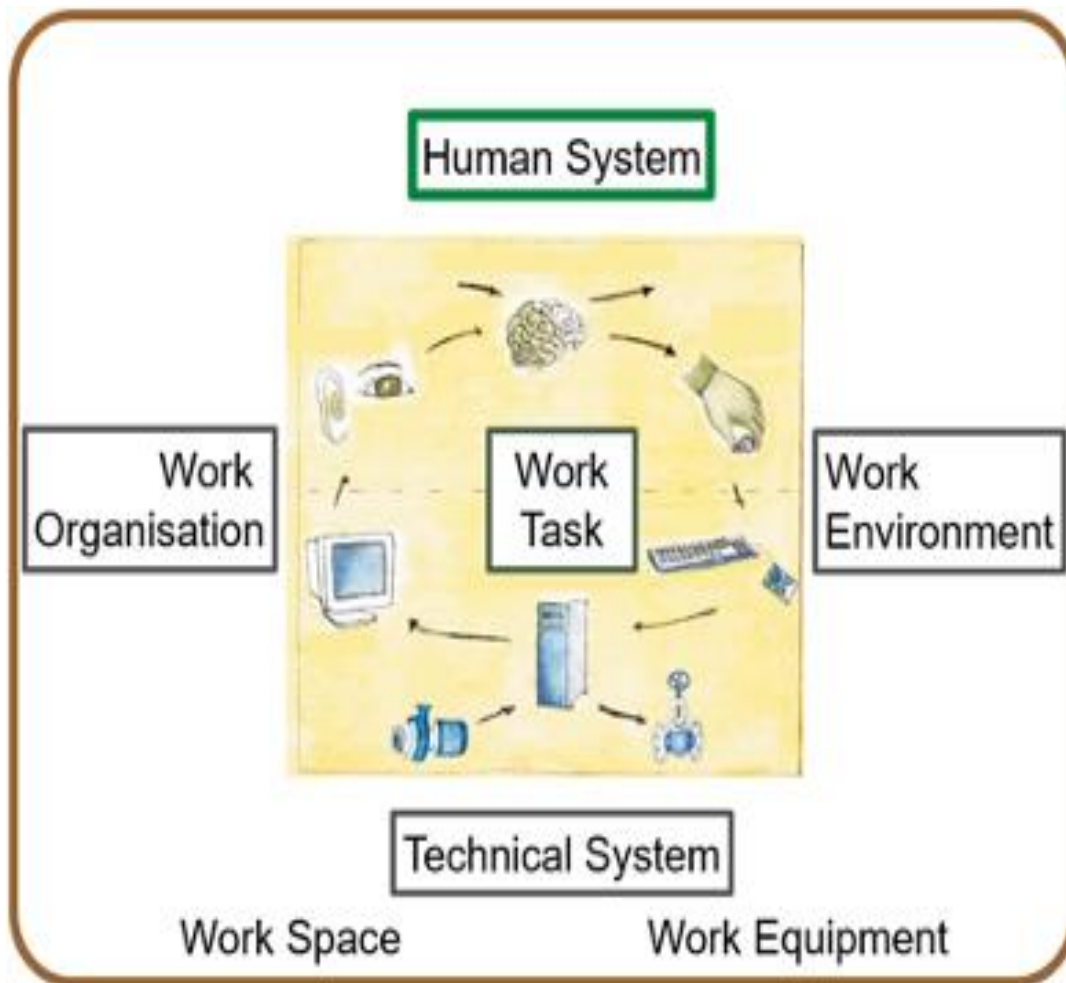
INTRODUCTION

A safe system of work is a formal recorded procedure to eliminate the risks that are involved in a specific operation. The 1st priority is to eliminate the risks. If that cannot be achieved, then priority falls to lowering the risks involved in the process to acceptable levels. A safe system of work is a part of risk assessment. Once underlying hazards are identified, then different measures can be taken to eliminate risks. This can be achieved by different procedures like introducing engineering controls, administrative controls, etc. For example, introducing a local exhaust ventilation system or guarding the moving parts of the machinery, etc.

LEARNING OBJECTIVES

After studying this unit, the student shall be able to:

1. Understand the responsibilities of employer and worker in developing a safe system of work.
2. Describe the role of the competent person, and technical & procedural control in the development of a safe system of work.



INDICATIVE CONTENTS AND SUMMARY OF THE MAIN TOPICS

Safe systems of work ensure that all the steps necessary for safe working have been anticipated and implemented and are designed to reduce human error. They prevent situations where workers attempt to cut corners, rush through a task or take unnecessary risks, reducing the likelihood of accidents occurring.

There are five basic steps to developing safe systems of work that include:

- Assess the risk
- Identify the hazards
- Define safe methods
- Implement the system
- Monitor the system

8.1 RESPONSIBILITY OF THE EMPLOYER

A large percentage of accidents occur due to lack of or failure in systems of work. The law requires employers to provide systems of work that are planned, organized, performed, maintained and revised as appropriate so as to be, so far as is reasonably practicable, safe and without risk to health. Systems of work must be communicated and understood by the relevant employees. The detail of the system of work, for example, whether it is oral or written will depend on the level of risk and the complexity of the work involved. For example, high-risk activities where there is a risk of serious injury or death, will need to have documented systems of work that are strictly supervised and enforced.

All employers, whatever the size of the business, must:

- Make the workplace safe
- Prevent risks to the environment and health
- Make sure that machinery is safe to use
- Make sure safe working practices are set up and followed
- Make sure that all materials are safely handled, stored and used
- Provide adequate first-aid facilities
- Tell about any potential hazards from the work, chemicals and other substances used by the firm, and give information, instructions, training and supervision as needed
- Set up emergency plans
- Make sure that ventilation, temperature, lighting, toilet, washing and rest facilities all meet EHS requirements
- Check that the right work equipment is provided and is properly used and regularly maintained
- Prevent or control exposure to substances that may damage health
- Take precautions against the risks caused by flammable or explosive hazards, electrical equipment, noise and radiation
- Avoid potentially dangerous work involving manual handling (and if it can't be avoided, take precautions to reduce the risk of injury)
- Provide health supervision as needed
- Provide protective clothing or equipment free of charge (if risks can't be removed or adequately controlled by any other means)

- Make sure that the right warning signs are provided and looked after
- Report certain accidents, injuries, diseases and dangerous occurrences

8.2 ROLE OF THE COMPETENT AUTHORITY

Safe systems of work should be developed by a competent person, i.e. a person with sufficient training, experience knowledge and other qualities to assist with key aspects of safety management and compliance. When developing a safe system of work, a competent person should follow the steps includes:

- Conduct a risk assessment
- Carry out research and consult employees on the best way to do the work
- Document the safe system of work
- Communicate the safe system of work to employees
- Review and monitor the effectiveness of the safe system of work
- Environment Friendly

8.3 RESPONSIBILITY OF THE EMPLOYEES

A safe and healthy workplace not only protects workers from injury and illness, it can also lower injury/illness costs, reduce turnover, increase productivity and quality, and raise employee morale. Therefore it is important to involve employees who carry out the work or with detailed knowledge of the activity, so that the system of work produced is effective and practical as well as safe. Involving employees in the process helps them to understand why this level of control has to be established and maintained. Employees are responsible for:

- Taking reasonable care of their own health and safety
- Co-operating with their employer and following instructions
- Not putting others in danger
- Environment friendly
- Report any hazards illnesses or injuries

8.4 TECHNICAL CONTROL IN THE DEVELOPMENT OF A SAFE SYSTEM OF WORK

Ensuring the health and safety of workers in the manufacturing sector necessitates the implementation of both procedural and technical controls when developing a safe system of work. While procedural controls concentrate on creating safe work practices, policies, and procedures to help people do their activities safely, technical controls use engineering techniques and physical protections to remove or minimize dangers. The following is a thorough explanation of the role that technical controls play in creating a safe work environment:

8.4.1 Engineering Controls

These involve modifying machinery, equipment, or the work environment to mitigate hazards.

Examples include:

- Installing physical barriers and safety devices to prevent access to moving machinery parts.
- Setting up ventilation systems to remove airborne contaminants.
- Using soundproofing materials to reduce noise levels.
- Employing automation to minimize direct worker exposure to hazards.

8.4.2 Isolation and Segregation

This entails physically separating workers from hazards. Examples include:

- Enclosing hazardous processes within designated areas.
- Implementing barriers to limit access to hazardous zones.
- Establishing clear traffic routes to separate pedestrians and vehicles.
-

8.4.3 Substitution of Hazardous Substances

This involves replacing hazardous materials or processes with safer alternatives.

Examples include:

- Switching to less toxic chemicals.
- Adopting solvent-free cleaning agents.
- Using non-reactive materials to reduce fire risks.

8.5 PROCEDURAL CONTROL IN THE DEVELOPMENT OF A SAFE SYSTEM OF WORK

Procedural controls involve establishing and implementing policies, procedures, and safe work practices to guide employees in performing tasks safely. These controls include:

8.5.1 Standard Operating Procedures (SOPs)

Developing comprehensive SOPs that outline step-by-step instructions, safety precautions, and best practices for performing specific tasks or operating equipment safely.

Examples include:

- Standard operating procedures (SOPs) detailing task steps.
- Lockout/tagout (LOTO) procedures for energy isolation during maintenance.
- Confined space entry protocols.

8.5.2. Training and Education

Providing regular training programs to ensure workers are knowledgeable about potential hazards, understand safety protocols, and are competent in performing their tasks safely.

Examples include:

- Initial and ongoing training on job-specific hazards.
- Regular safety meetings or toolbox talks

8.5.3 Permit-to-Work Systems

Implementing permit-to-work systems for high-risk activities, such as working at heights, confined space entry, or hot work. These systems require specific authorization, risk assessments, and controls before commencing work.

Examples:

- Issuing permits for tasks like hot work or confined space entry.
- Establishing procedures for obtaining and canceling permits.

8.5.4 Emergency Response Plans

Developing and communicating emergency response plans to address potential incidents or accidents, including evacuation procedures, first aid protocols, and contact information for emergency services.

Examples

- Emergency response plans outlining roles and procedures.
- Regular emergency drills to test response effectiveness.

8.5.5 Incident Reporting and Investigation

Establishing a system for reporting and investigating incidents, near misses, and hazards. This enables organizations to identify root causes, implement corrective actions, and prevent similar incidents in the future.

8.5.6 Risk Assessments

Conduct regular risk assessments to identify hazards, assess risks, and implement control measures. This helps prioritize safety improvements and ensures ongoing monitoring of hazards and risks in the workplace.

8.5.7 Supervision and Monitoring

Providing adequate supervision and monitoring of work activities to ensure compliance with safety procedures, identify unsafe behaviors, and provide timely feedback and corrective actions.

8.5.8. Continuous Improvement:

Encouraging a culture of continuous improvement in safety by soliciting feedback from workers, conducting safety audits, analyzing data, and implementing measures to enhance safety performance.

Recommended Reading List

1. Jeremy Stranks. (2010). Health and Safety at Work: An Essential Guide for Managers
2. John Channing. (2014). Safety at Work.

Self Assessment Questions

- Q1 What technical & procedural controls are required in developing a safe system of work?
- Q2 Discuss in detail the responsibilities of an employer and employees in developing a safe system of work.

Self Evaluation Questions

1. The accident book is a legal document that describes_____
 - a. How businesses should deal with an accident.
 - b. Details risk assessments and safety rules.
 - c. Details of an accident in the workplace.

2. The legal responsibilities of an employer with regard to health and safety include _____
 - a. Charging employees for replacing damaged or lost PPE
 - b. Providing safe systems of work for all employees
 - c. Taking out additional insurance for dangerous work

UNIT -9

INTRODUCTION TO PERSONAL PROTECTIVE EQUIPMENT

WRITTEN BY:

Dr. Muhammad Farooq Mustafa

REVIEWED BY:

Mr. Imtiaz Ali Aslam

Dr. Rabeea Zafar

CONTENTS

Unit 9:INTRODUCTION TO PERSONAL PROTECTIVE EQUIPMENT .93

9.1	Importance of PPEs.....	96
9.2	PPEs & Coronavirus	97
9.3	Duties – Employers	97
9.4	Duties – Employees	98
9.5	Assessing suitable PPE.....	98
9.6	Types of PPEs.....	99
9.7	Behavioral Issues in adopting PPEs at the workplace	99
9.8	What can be done to ensure proper use of personal protective equipment?	101
Self Assessment Questions		103
Self Evaluation Questions.....		103

INTRODUCTION

Hazards exist in every workplace in many different forms: sharp edges, falling objects, flying sparks, chemicals, noise and a myriad of other potentially dangerous situations. The Occupational Safety and Health Administration (OSHA) requires that employers protect their employees from workplace hazards that can cause injury.

Personal protective equipment, commonly referred to as "PPE", is equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Personal protective equipment may include items such as gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, or coveralls, vests and full body suits.

LEARNING OUTCOMES

After studying this unit, students shall be able to:

1. Understand the importance of PPEs in the workplace.
2. Describe the role of the duties of employer and employees in providing, using and assessing suitable PPEs in the workplace.

INDICATIVE CONTENTS AND SUMMARY OF THE MAIN TOPICS

PPE can include items such as safety helmets, gloves, eye protection, hazmat suits, high-visibility clothing, safety footwear, safety harnesses, ear plugs, ear defenders and respiratory protective equipment (RPE). In appropriate situations disposable PPE may be provided; e.g. single-use coveralls. Employers have duties concerning the provision and use of personal protective equipment at work.

PPE does not include:

- Ordinary working clothes or uniforms are not designed to provide for the health or safety of workers.
- Clothing is provided for food hygiene purposes.
- Equipment used for protection while travelling on a public road (ie motorcycle or bicycle helmets).
- Equipment used during competitive sports competitions (but other protective equipment used by sports instructors would be included e.g a life jacket worn by a canoe instructor).
- An offensive weapon is used as self-defense or as deterrent equipment. For example, truncheons or CS gas canisters as used by the police or military (but helmets, body armor and other PPE used to protect staff from physical violence, is included).
- Portable devices for detecting and signaling risks and nuisances, such as badges for detecting radiation, or personal gas detectors.

9.1 IMPORTANCE OF PPES

In the hierarchy of risk control, PPE is considered to rank lowest and represent the option of last resort. It is only appropriate where the hazard in question cannot be totally removed or controlled in such a way that harm is unlikely (for example by isolating the hazard or reducing the risk at source to an acceptable level).

There are a number of reasons for this approach:

- PPE protects only the person using it, whereas measures controlling the risk at source can protect everyone at the workplace;
- Theoretical maximum levels of protection are seldom achieved using PPE, and the real level of protection is difficult to assess (due to factors such as poor fit, or failure to wear it when required). Effective protection can only be achieved by equipment that is correctly fitted, maintained and properly used at all times;
- PPE may restrict the wearer by limiting mobility, and visibility or by requiring additional weight to be carried.

- The use of PPE may alter employees' perception of the hazards they are dealing with.

In this context of a last resort control measure, PPE is critically important as it is generally only used where other measures are insufficient and as such it plays a crucial role in preventing and reducing many occupational fatalities, injuries and diseases.

9.2 PPES & CORONAVIRUS

WHO provides interim guidance on the quality, performance characteristics and related standards of personal protective equipment to be used in the context of COVID-19. This includes WHO Priority Medical Devices, specifically: surgical masks, non-surgical masks, gloves, goggles, face shields, gowns and N95 masks. It is intended for procurement agencies, occupational health departments, infection prevention and control departments or focal points, health facility administrators, biomedical and materials engineering, PPE manufacturers and public health authorities at both national and facility levels. The four COVID-19 guidelines analysed were:

- Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortage;
- Advice on the use of masks in the context of COVID-19 – in the community, during home care, and in health care settings;
- COVID-19 advice for the public: when and how to use masks;
- Analysis of the PPE required to perform the clinical management of COVID-19 patients (5), and the Disease commodity package for novel coronavirus.

9.3 DUTIES – EMPLOYERS

Employers should provide PPE to their employees only where there is a health and safety risk that cannot be adequately controlled by other means. Where risks cannot be controlled by other means then PPE must be provided. It must:

- Be appropriate for the risks and for the Working Environment;
- Take account of the user's health, ergonomics, and fit factors and be compatible with other items of PPE required to be worn;
- Adequately control the risk presented by the hazard without increasing the overall risk experienced by the worker. For example, goggles that are to be used in a hot environment and therefore steam up making it difficult to see;

- Be supplied free of charge if supplied for work-related health-and-safety reasons;
- Be properly maintained and suitably stored (in practice, for mobile workers, it may be necessary to supply a hold-all or other container to prevent damage to PPE in transit);
- Comply with relevant legislation implementing the European Directives concerning the design and manufacture.

There are also considerable differences in the physical dimensions of different workers, depending on their gender, ethnicity, and lifestyle, therefore, different sizes and contours should be available to fit wearers. PPE should also be adjustable and where problems occur, advice should be sought to take account of any medical conditions. In the case of close fitting respiratory protection specific employee fit testing is required. Training, instruction and information will also need to be provided to wearers of PPE. In providing this the following details should be included:

- The risks the PPE will avoid or limit;
- The purpose and manner in which the PPE is to be used;
- Action to be taken by the employee to ensure good working order, as well as hygienic condition

9.4 DUTIES – EMPLOYEES

With regard to PPE, employees are required to correctly use any such items provided as directed and in accordance with any training, instructions or information they have received. Aside from proper use, employees are also required to return PPE to its storage place after use. Employees must take care of PPE and report defects or loss of equipment as soon as they become aware of them.

9.5 ASSESSING SUITABLE PPE

The type and nature of the hazards in the workplace will be a primary indicator of the right type of PPE. The following questions should be considered when assessing whether PPE is suitable or not:

- Is it appropriate for the risks involved and the conditions at the place where exposure to the risk may occur? For example, eye protection designed to provide protection against agricultural pesticides will not offer adequate face protection for someone using an angle grinder to cut steel or stone;
- Does it prevent or adequately control the risks involved without

- increasing the overall level of risk?
- Can it be adjusted to fit the wearer correctly? (In the case of close-fitting respiratory protective equipment specialist fit testing is required);
- Has the state of health or needs of those who will be wearing it been taken into account?
- What are the needs of the job and the demands it places on the wearer? For example, the length of time the PPE needs to be worn, the physical effort required to do the job and the requirements for visibility and communication;
- If more than one item of PPE is being worn, are they compatible? For example, does a particular type of respirator make it difficult to get eye protection to fit properly?

9.6 TYPES OF PPES

Various types of PPE are available for use in the workplace.
The different types of PPE include:

- Head and scalp protection;
- Respiratory protection;
- Eye protection;
- Hearing protection;
- Hand and arm protection;
- Foot and leg protection;
- Body protection;
- Height and access protection.

9.7 BEHAVIORAL ISSUES IN ADOPTING PPES AT THE WORKPLACE

Most workers are illiterate and do not know what protective measures should be adopted for their jobs. As well as education, behavioural safety relies on observation from everyone involved. Management needs to emphasise that the model will only work if all workers are observing behaviours in the workplace and identifying any that are deemed unsafe. It's crucial that management nurtures a culture of reporting that workers feel comfortable utilising without fear of retribution.

Construction-site management should promote the benefits of reporting and positive outcomes for workers following behavioural-safety guidance. In doing

this, workers will feel empowered to take control and contribute in this way. This kind of safety model is built around education and re-education. Complacency from workers is a huge risk to industries like construction, so it's imperative that management nips bad habits in the bud and continues to emphasise the importance of health and safety on-site.

Managers should also proactively educate workers on the hazards associated with all tasks, even jobs that are considered low-risk and the importance of maintaining high safety standards on construction sites. This helps workers to identify hazards by having a true understanding of what is meant by risk. Workers in their right mind would gladly wear Personal Protective Equipment (PPE) when performing dangerous tasks, however, plenty of workers don't.

Workers sometimes refuse to wear PPE on religious or health grounds, most refusals are due to poor management, communication and training. If workers do not understand why PPE is needed or have no say in choosing it, they are more likely to not use it. Some workers have allergies to certain fabrics or have a skin condition that makes some materials irritating to wear. Dermatitis, eczema, and psoriasis are just a few examples.

Behaviour changes don't always happen overnight, so construction companies implementing behavioural safety should be prepared for the time and effort it takes to make positive changes. Any new health and safety measures will take a while to implement, and behavioural safety is no different. Setting achievable goals for when behavioural safety is implemented will help management see how the process is working and give insights into what to expect after a longer period.

Reliable reporting can also be a challenge with behavioural safety in construction, as workers will often underestimate the risks associated with some behaviours. The HSE study, Reducing Risk and Influencing Behaviour, notes that people within the same workplace, but with different roles, judge risks differently. It uses the example of construction workers who were asked to estimate the risk of falls for different tradesmen. Each of these groups made consistent judgements but overestimated the

risks in trades other than their own by about 10%. In general, people tend to make a lowerrisk estimation in their jobs than in other jobs



As modification in behaviour can be difficult to quantify, behavioural safety can prove a challenge to enforce. It's important for management to identify which areas need improving and what they expect from workers to achieve higher safety standards. Implementing behavioural safety can also help improve site-wide communication. As there will be more shared ownership of safety measures, workers must know how to report unsafe behaviour. This relationship between management and workers will create open communication and increased correspondence. This can help make management feel more visible and accessible to workers, especially on construction projects with huge numbers of people on-site.

9.8 WHAT CAN BE DONE TO ENSURE PROPER USE OF PERSONAL PROTECTIVE EQUIPMENT?

All personal protective equipment should be safely designed and constructed and should be maintained in a clean and reliable fashion. It should fit comfortably, encouraging worker use. If the personal protective equipment does not fit properly, it can make the difference between being safely covered or dangerously exposed. When engineering, work practice, and administrative controls are not feasible or do not provide sufficient protection, employers must provide personal protective

equipment to their workers and ensure its proper use. Employers are also required to train each worker to use personal protective equipment to know:

- When it is necessary
- What kind is necessary
- How to properly put it on, adjust, wear and take it off
- The limitations of the equipment
- Proper care, maintenance, useful life, and disposal of the equipment

If PPE is to be used, a PPE program should be implemented. This program should address the hazards present; the selection, maintenance, and use of PPE; the training of employees; and monitoring of the program to ensure its ongoing effectiveness.

Recommended Reading List

1. Eva F. Gudgin Dickson (2012). Personal Protective Equipment for Chemical, Biological, and Radiological Hazards: Design, Evaluation, and Selection.
2. Katarzyna Majchrzycka. (2014). Head, Eye, and Face Personal Protective Equipment: New Trends, Practice and Applications.

Self Assessment Questions

- Q1 Do employers have to provide training on PPEs? Comment in detail.
- Q2 Describe the importance of PPEs in the construction industry with appropriate examples.

Self Evaluation Questions

1. What does PPE stand for?
 - a. Protective Preventative Equipment
 - b. Personal Protective Equipment
 - c. Personal Preventative Equipment
2. Why is it important to wear PPE?
 - a. Because it looks right
 - b. Because it protects the tools
 - c. Because it protects you.

REFERENCES:

- 1- <https://libguides.ilo.org/occupational-safety-and-health-en/home>
- 2- (https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_093550.pdf)
- 3- <https://www.cipe.org/wp-content/uploads/2022/03/Fundamentals-of-occupational-Safe>