Facilitator Guidebook

LIFTING & RIGGING SUPERVISOR (SAFETY)

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LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY)

Sector:- Cross Sectoral

Sub-Sector:- Hydrocarbon, Iron & steel, Mining, Power, Automotive, Construction, Infrastructure, Chemicals & Petrochemicals

Occupation:- Lifting & Rigging Engineering & Management.

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Acknowledgments

The Facilitator Guidebook for **Lifting & Rigging Supervisor (Safety)**, **SSD/Q0303**, developed by the **Safety Skill Development Foundation (SSDF),** reflects our commitment to industry requirement for the job role, best practices in the profession, quality training requirement, regulatory compliances, workplace safety, health and sustainable practices. This guide is enriched with insights from **Subject Matter Experts (SMEs), trainers, and industry professionals**, ensuring its relevance to real-world applications.

We extend our special thanks to **CORE-EHS Solutions Pvt Ltd** for their invaluable expertise and support in developing course materials, significantly enhancing the safety and quality aspects of this guide.

Our gratitude also goes to trainers, assessors, industry experts, government bodies, and sector skill councils for their contributions toward advancing occupational safety across industries, including Hydrocarbon, Iron & Steel, Mining, Power, Automotive, Construction, Chemicals & Petrochemicals, and more.

The qualification is aligned with **NSQF** and this guide supports the **Skill India** initiative and is dedicated to trainers committed to excellence in skill development. SSDF welcomes feedback for continuous improvement.

Disclaimer

About this Guide Book

Increasing concerns about safety within heavy industries, particularly in relation to machinery and lifting operations, necessitate the involvement of skilled professionals in safety issues. This is instrumental in ensuring the safe and effective lifting operation process and distinguishing safe practices from inefficiency. When industry firms aim to minimize risk and optimize effectiveness, their needs for well-skilled riggers have never been higher.

Therefore, the comprehensive framework of training would prepare the professionals with all the necessary tools to plan, execute and manage the complex rigging operations in the safest possible ways. That's exactly why Lifting & Rigging Supervisor (Safety) Facilitator Guidebook was intended for training future generations of safety experts as a resource for structured learning by trainers. The book centres on core competencies in rigging and lifting activities , focusing on safe working procedures, risk assessment requirements, regulatory standards, and critical operational practices-all critical to avoiding accidents and high safety standards.

The content of the guidebook will be very helpful in improving instructional methods and developing ideal training programs by trainers for enhancing safety-oriented cultures in industries that use cranes and heavy lifting equipment to reduce risk further and have no accidents.

This facilitator guide, in conformity with the National Skill Qualification Framework (NSQF) and relevant National Occupational Standards (NOS), will equip trainers with adequate knowledge for the delivery of safe rigging practices. The idea is to make workplaces safer and thus contribute to the overall efficiency and safety of lifting operations worldwide.

This Facilitator Guide is designed based on the Qualification Pack (QP) under the National Skill Qualification framework (NSQF) and it comprises of the following National Occupational Standards (NOS)/topics and additional topics.

1.SSD/N0319 v 1.0 – Introduction to Lifting & Rigging Safety Protocols.

2.SSD/N0320 v 1.0 – Safety, Legal and Regulatory Compliance for Lifting & Rigging Operations.

3.SSD/N0321 v 1.0 – Load Planning, Stability Control & Process Requirements.

4.SSD/N0322 v 1.0 – Hazard Identification, Risk Assessment, Safety of Plant & Machinery in Lifting & Rigging Operations.

5.SSD/N0323 v 1.0 – Lifting and Rigging Operations with Safety.

6.SSD/N0324 v 1.0 – Inspection, Maintenance, and Certification of Lifting Equipment's.

7.SSD/N0325 v 1.0 – Plan, Organize, Communication & Emergency Protocols in Lifting & Rigging.

8.SSD/N0326 v 1.0 – Health, Hygiene, Environmental, and Psychological Health Protocols (Lifting & Rigging).

9.DGT/VSQ/N0102 – Employability Skills

This guide focuses on essential competencies for advanced rigging, emphasizing safety procedures, regulatory compliance, risk analysis, and operational protocols in the prevention of accidents. It equips rigging and lifting supervisors with the skills required to promote safe and efficient practices across various industries. To do this, supervisors will learn effective training strategies that foster a safety culture in material handling and heavy lifting sectors. Advanced techniques in the delivery of training allow supervisors to create an environment from which rigging professionals and others can boldly handle complex operations like lifting with minimized risks. The knowledge shared in this guide trains supervisors on the challenges of high-risk lifting, and through it, safer working conditions are achieved, fewer accidents occur, and operations' efficiency improves.

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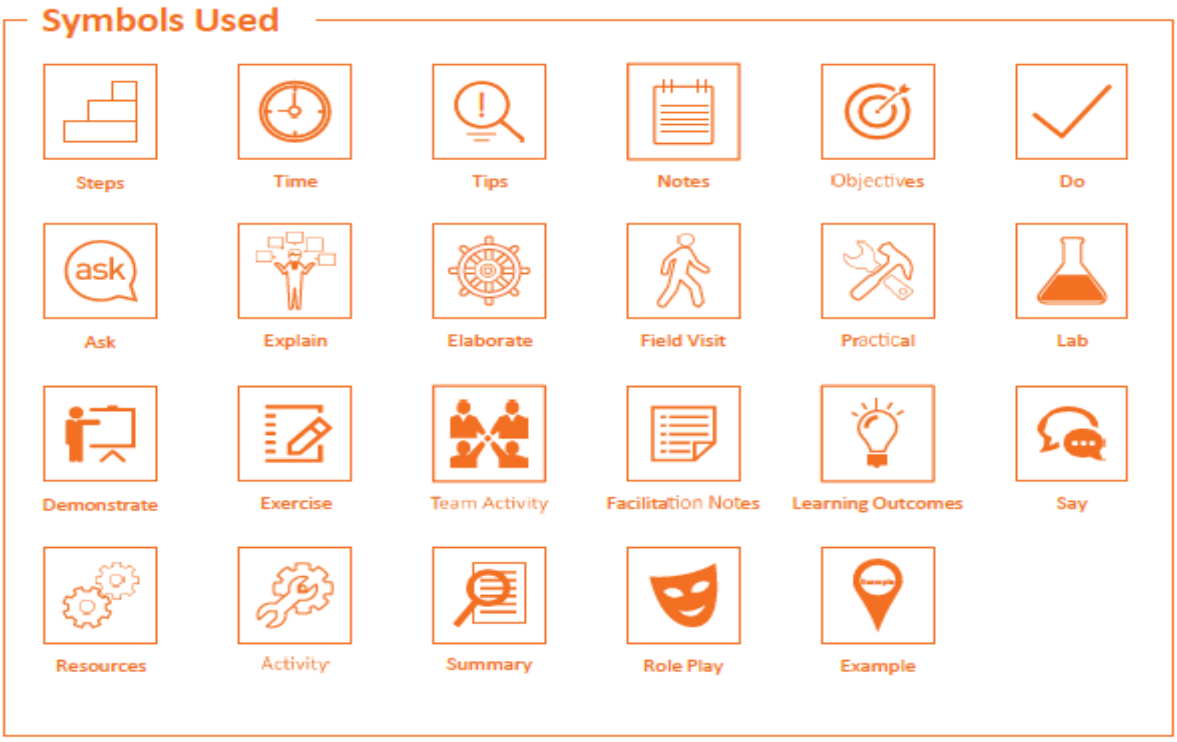
Symbols Used



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Contents

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1. Unit 1 Introduction

1.1. Key Learning Outcomes

At the end of this module, the trainees will be able to:

- Describe Hydrocarbon, Iron & steel, Mining, Power, Automotive, Construction, Chemicals & Petrochemicals
- List the roles and responsibilities of LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY)

1.2. Unit 1.1: Overview of the Industry

1.2.1. Unit Objectives

At the end of this unit, students will be able to:

1. Describe about the Hydrocarbon sector in India
2. Describe about the Iron & Steel sector in India
3. Describe about the Mining sector in India
4. Describe about the Power sector in India
5. Describe about the Automotive sector in India
6. Describe about the Construction sector in India
7. Describe about the Chemicals & Petrochemicals in India
8. Describe how each sub-sector contributes to skill development
9. Compare the job potential of all sub-sectors

1.2.2. Resources to be used

- Available objects such as Projection screen, whiteboard, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Attendance sheet
- Activities (role plays and games)

1.2.3. Ask

- Ask the participants to share their expectations from the program
- Ask them to tell what they know about the Hydrocarbon sector, Iron & Steel sector, Mining sector, Power sector, Automotive sector, Construction sector, Chemicals & Petrochemicals
- What is the 'Make-in-India' initiative?

1.2.4. Do

- Introduce yourself to the participants.
- Give an overview of the program to the participants - duration of the program, objective etc.
- Give an overview of the Hydrocarbon sector, Iron & Steel sector, Mining sector, Power sector, Automotive sector, Construction sector, Chemicals & Petrochemicals sector in India.

1.2.5. Explain

List the major segments in the Hydrocarbon sector, Iron & Steel sector, Mining sector, Power sector, Automotive sector, Construction sector, Chemicals & Petrochemicals sector

1.2.6. Tips

- Go slow with information flow with participants.
- Observe each participant's body language.
- Keep a positive and supportive approach towards the candidates

1.2.7. Activity: Team Spot

- Separate the class in 2 different teams.
- Each team will be assigned with 3 different sector topics
- Ask them to present the given topics team after team, and state examples individually to explain

1.2.8. Notes for Facilitation

- Revise the important points discussed in this unit.

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- Clear the doubts of the students, if any. Encourage them to ask questions.
- Discuss the question with the class and answer their queries satisfactorily.
- Help participants identify how to apply the skills taught in the course to their work
- Praise participants and the group on improving their performance and developing new skills.
- Encourage participants to move through the initial difficulties of learning new skills, by focusing
- on steps in their progress and the importance of what they are learning to do.

1.2.9. Summary

- **Hydrocarbon:** The hydrocarbon sector involves the extraction, refinement, and distribution of oil and natural gas. This sector plays a crucial role in energy production and the global economy, providing fuel and raw materials for various industries.
- **Iron & Steel:** The iron and steel sector is fundamental to industrial development. It focuses on producing metal alloys used in manufacturing, construction, and infrastructure. This sector is key to building economies and supporting technological advancements.
- **Mining:** The mining industry is concerned with extracting valuable minerals and materials from the earth. It provides essential raw materials for industries like construction, energy production, and manufacturing.
- **Power:** The power sector includes the generation, transmission, and distribution of electricity. This sector is vital to economic development and daily life, powering homes, businesses, and industries through a variety of sources such as coal, natural gas, renewables, and nuclear energy.
- **Automotive:** The automotive sector involves the design, production, and distribution of motor vehicles, including cars, trucks, and motorcycles. It is a significant driver of technological innovation and economic activity globally.
- **Construction**: The construction sector is involved in the building and infrastructure development of residential, commercial, and industrial projects. It supports urbanization and economic development by creating critical infrastructure such as roads, bridges, and buildings.
- **Chemicals & Petrochemicals**: This sector deals with the production of chemicals, fertilizers, and petrochemical products derived from petroleum. It plays a crucial role in manufacturing various goods such as plastics, pharmaceuticals, and industrial chemicals.
- A Safety Auditor assesses workplace safety practices, identifies hazards, ensures compliance with safety regulations, and recommends improvements to prevent accidents and ensure a safe working environment.

1.2.10. Exercise

1. Which of following is the most common cause of accidents in hydrocarbon sector?

A. Equipment Failure
B. Human Error
C. Natural Disasters
D. Fire

2. Routine inspections and maintenance are crucial for preventing accidents in oil and gas pipeline.(T/F)

3. Which of the following is major hazard in steel industry?

A. Noise Pollution
B. High Temperature
C. Exposure to Hazardous Substance
D. All the above

4. Proper PPE is essential for Workers handling molten metal.(T/F)

5. What is most common cause of fatalities in underground mines?

A. Rock Falls
B. Explosion
C. Flooding
D. Electrical Hazards

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1.3. Unit 1.2: Roles and Responsibilities of a LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY)

1.3.1. Unit Objectives

At the end of this unit, students will be able to:

1.Identify roles and responsibilities of LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY)

2.Identify essential skills of LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY)

1.3.2. Resources to be used

- Available objects such as Projection screen, whiteboard, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Attendance sheet
- Activities (role plays and games)

1.3.3. Ask

- Ask the participants to share their expectations from the program

1.3.4. Do

- Give a brief introduction on the job description of LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY) outlining their personal attributes to the participants
- Provide the participants with a List of Roles and Responsibilities of LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY)
- Talk about the skills and knowledge which are essential to become LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY)

1.3.5. Explain

Describe about the roles and responsibility of LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY)

1.3.6. Tips

- Go slow with information flow with participants.
- Observe each participant's body language.
- Keep a positive and supportive approach towards the candidates

1.3.7. Activity: Team Spot

- Separate the class in 2 different teams.
- Each team will be assigned with topics - Roles and responsibilities of LIFTING & RIGGING SUPERVISOR (SAFETY) (SAFETY)
- Ask them to present the given topics team after team, and state examples individually to explain

1.3.8. Notes for Facilitation

- Revise the important points discussed in this unit.
- Clear the doubts of the students, if any. Encourage them to ask questions.
- Discuss the question with the class and answer their queries satisfactorily.
- Help participants identify how to apply the skills taught in the course to their work
- Praise participants and the group on improving their performance and developing new skills.
- Encourage participants to move through the initial difficulties of learning new skills, by focusing on steps in their progress and the importance of what they are learning to do.

1.3.9. Summary

A Lifting & Rigging Supervisor (Safety) (Safety) monitors the lifting and rigging operation in terms of safety and efficiency. Some of their key roles include fulfilling safety standards, risk assessments, and controlling safety measures during the lift duties. They ensure all personnel under a team of rigging are instructed properly on safety measures. In addition, the supervisor is supposed to inspect equipment for defects, prepare safety meetings, and document information regarding lift plans and risk assessments. The supervisor also works with other departments to ensure a seamless operation of all processes,

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minimize hazards, and instil a safety culture. Essentially, they must ensure no accidents occur, lifting is safe, and the organization operates effectively.

1.3.10. Exercise

1.What is the primary responsibility of a Lifting & Rigging Supervisor (Safety) (Safety)?
a) Managing the budget for rigging operations
b) Ensuring safety during lifting and rigging operations
c) Hiring rigging personnel
d) Maintaining equipment logs
2.A Lifting & Rigging Supervisor (Safety) (Safety) is responsible for ensuring all rigging personnel are properly _____.
3.The supervisor is responsible for maintaining _____ related to rigging procedures, equipment checks, and risk assessments
4.Which of the following tasks is a Lifting & Rigging Supervisor (Safety) (Safety) responsible for when it comes to equipment?
a) Purchasing new equipment
b) Inspecting lifting equipment to ensure safety
c) Operating equipment during lifting
d) Setting up equipment for use
5.The supervisor must conduct _____ to evaluate potential risks before any lifting operation begins.

2. Unit 2 NOS 1: SSD/N0309 v 1.0: 1. SSD/N0319 v 1.0 : Introduction to Lifting & Rigging Safety Protocols

2.1. Key Learning Outcomes

At the end of this module, the trainees will be able to:

- Understanding safety principles in lifting and rigging operations
- Understand how to identify hazards and risks at worksites for lifting and rigging operations
- Understanding compliance with national and international safety regulations
- Understand how to use of personal protective equipment (PPE) for lifting and rigging operations
- Understand importance of fostering culture of teamwork and communication in lifting operations

2.2. Unit 2.1: Identify Safety Risks and Hazards

2.2.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to identify and evaluate potential hazards associated with lifting and rigging operations at worksites
- To understand how to develop the ability to recognize hazards related to lifting and rigging tasks, assess their potential risks
- To understand how to effectively report risk to management

2.2.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

2.2.3. Say

- Describe about how to identify and evaluate potential hazards associated with lifting and rigging operations at worksites

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- Describe about how to develop the ability to recognize hazards related to lifting and rigging tasks, assess their potential risks
- Describe about how to effectively report risk to management

2.2.4. Explain

- Describe about how to identify and evaluate potential hazards associated with lifting and rigging operations at worksites
- Describe about how to develop the ability to recognize hazards related to lifting and rigging tasks, assess their potential risks
- Describe about how to effectively report risk to management

2.2.5. Activity

Divide the class into small groups (4-5 people per group).
Provide each group with a handout featuring a detailed lifting and rigging scenario. The scenarios should include a mix of typical worksite conditions (e.g., uneven terrain, high winds, nearby obstacles) and common rigging hazards (e.g., overloading, improper equipment use).
Example Scenario 1: Lifting a heavy steel beam in an area with high winds and uneven ground.
Example Scenario 2: Rigging a load with a damaged sling and unclear signals from the ground crew.
Ask each group to:
Identify potential hazards in the scenario (e.g., equipment failure, environmental conditions, human error).
Assess the safety risks and rank them in terms of severity.
Identify environmental factors (like weather or terrain) that could exacerbate the risks and suggest mitigation strategies.

2.2.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

2.2.7. Summary

The identification of potential risks and hazards ensures proper execution of lifting and rigging operations on worksites. It identifies a hazard: failure, improper rigging techniques, or a human error; if noticed in advance, workers prevent an accident and perform their tasks without any hitch.
It is used to grade the risk of safety due to such hazards. These risks can be graded based on the severity and likelihood, such as load slippage and the injury that occurs to the worker. Reporting the risks to the management will then help in controlling them before becoming serious safety incidents.
Environment can be found for increasing risk: High wind surface unevenness Weather adversities Such climatic and environment conditions can put a threat and affect safety concerns of the entire process. Understanding those elements and measures which can bring change in such hazardous results are taken crucial in preventing potential risks related to lifting operation processes.

2.2.8. Exercise

1.Which of the following is a potential hazard during lifting and rigging operations?
a) Properly calibrated equipment
b) Overloading lifting equipment
c) Clear communication among crew members
d) A well-maintained worksite
2.What is the main purpose of assessing safety risks in lifting and rigging operations?
a) To evaluate the efficiency of the operation
b) To determine the cost of the project
c) To identify hazards and prevent accidents

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d) To manage the workers' performance

3.Which environmental factor may increase the risks during lifting and rigging operations?

a) Clear skies

b) Uneven surfaces

c) Proper lighting

d) Calm weather

4.True or False: Assessing safety risks helps in identifying which hazards could potentially cause the most harm during lifting and rigging operations.

5.True or False: Environmental factors like high winds or uneven surfaces do not significantly affect the safety of lifting and rigging operations.

2.3. Unit 2.2 Follow Lifting and Rigging Safety Protocols

2.3.1. Unit Objectives

At the end of this unit, students will be able to

- To understand lifting plans and safety procedures for Lifting and Rigging operation.
- To understand how to monitor team adherence to safety regulations throughout the operation to prevent accidents.
- To understand how to communicate lifting plans and safety procedures for lifting and rigging activities

2.3.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

2.3.3. Say

- Describe about lifting plans and safety procedures for Lifting and Rigging operation
- Describe about process how to observe load movements throughout the rigging process
- Describe about how to communicate lifting plans and safety procedures for lifting and rigging activities

2.3.4. Explain

- Describe about lifting plans and safety procedures for Lifting and Rigging operation
- Describe about process how to observe load movements throughout the rigging process
- Describe about how to communicate lifting plans and safety procedures for lifting and rigging activities

2.3.5. Role Play

Roles:

Lifting & Rigging Supervisor (Safety) (Lead role for demonstration)

Rigging Team Member 1 (Worker)

Rigging Team Member 2 (Worker)

Safety Officer (Observer/Coach)

Manager/Operations Lead (Observer)

Lifting & Rigging Supervisor (Safety) (You):

Start by explaining the lifting plan and safety procedures to your team.

Mention specifics like:

The lifting capacity of the crane.

The type of rigging equipment being used (e.g., slings, shackles).

The path of the lift and any potential hazards (e.g., obstacles, overhead power lines).

Emergency protocols and the location of first aid kits and fire extinguishers.

Highlight the importance of equipment checks and the pre-lift inspection.

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Example: "Before we begin, let's review our lifting plan. The crane is rated for 5 tons, so we must ensure the load is properly balanced and that all slings are in good condition. The load will be moved over the northern section of the yard, and we need to be mindful of the wind conditions and potential obstacles in our path. Any questions so far?"

2.3.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

2.3.7. Summary

It focuses on a full understanding of all plans of lifting as well as safe practices. Such involves knowledge about proper equipment, identifying potential hazards, and a work practice aimed at preventing accidents.

It underscores the need for a full safety briefing to be conducted before operation starts. Great care needs to be taken to ensure that all team members know the safety procedures, the operating plan, and their roles in the safe operating environment. This ensures that mistakes are limited, communication is improved, and communication in the operation is enhanced.

It deals with monitoring active compliance by teams to safety regulation during operation. The supervisor must ensure all safety practices in place, like PPE, clear communication, and observing safety procedures in place. This makes it possible to intervene at an early stage to prevent any type of safety violation during the lifting process.

2.3.8. Exercise

1.Which of the following is most important when demonstrating knowledge of lifting plans and safety procedures?

a) Having a basic understanding of the equipment

b) Familiarity with emergency response protocols

c) Knowing the budget for the project

d) Understanding the specific tasks assigned to each worker

2.A safety briefing should be conducted:

a) Only if a hazard is identified

b) At the start of every operation before lifting begins

c) After the operation is complete

d) Once every month

3.Monitoring team compliance with safety regulations throughout the operation ensures that all workers are following proper _____ and prevents accidents.

4.One of the key components of the lifting plan is identifying _____ that may pose risks during the operation, such as weather conditions or uneven ground.

5.True or False: Demonstrating knowledge of lifting plans and safety procedures includes knowing how to handle potential emergencies, such as equipment failure or worker injury.

6.True or False: It is not necessary to monitor team compliance with safety regulations as long as the team has been briefed on the procedures.

2.4. Unit 2.3: Use Personal Protective Equipment (PPE)

2.4.1. Unit Objectives

At the end of this unit, students will be able to:

- Understand to identify and use the appropriate personal protective equipment for a specific lifting operation using safe working practices.
- Understand how to maintain and observe PPE in good operating condition.

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2.4.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

2.4.3. Say

- Describe about process how to identify and use the appropriate personal protective equipment for a specific lifting operation
- Describe about how to maintain and observe PPE in good operating condition

2.4.4. Explain

- Describe about process how to identify and use the appropriate personal protective equipment for a specific lifting operation
- Describe about how to maintain and observe PPE in good operating condition

2.4.5. Activity

- Divide the class into small groups.
- Each group picks a scenario card describing a specific lifting operation (e.g., heavy lifting with a crane, manual lifting of small packages, or working in tight spaces).
- Based on the scenario, groups select the appropriate PPE from the provided items.
- After selecting, each group explains why they chose each piece of PPE based on the risk factors involved in the operation.

2.4.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

2.4.7. Summary

- Proper use of Personal Protective Equipment (PPE) would ensure safety during lifting operations.
- It emphasizes the choice of the correct PPE depending on the task to be accomplished. That is, choosing items, such as helmets, gloves, high-visibility clothing, and shoes, as PPE to safeguard workers from certain hazards in executing lifting tasks.
- Team members are always provided with selected PPE to ensure full availability for performance of all lifting operations. This will help create and maintain the working environment as safe since validation will result in each participant taking precaution in advance against existing hazard during lifting.
- PPE is maintained and looked after. The effectiveness of PC9 depends on the timely routine inspection and replacement of worn or damaged PPE. For instance, monitoring of the state of all equipment to ensure that they maintain all necessary protections throughout.

2.4.8. Exercise

1.Which of the following PPE is most likely required during a manual lifting operation?

a) Safety harness

b) Steel-toed boots

c) Respirator

d) Earplugs

2.Why is it important to check that all team members are wearing PPE correctly before starting a lifting operation?

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a) To save time and begin the operation quickly
b) To ensure each team member is protected from potential hazards
c) To ensure everyone looks uniform
d) To comply with company dress code
3.Why is it important to check that all team members are wearing PPE correctly before starting a lifting operation?
a) To save time and begin the operation quickly
b) To ensure each team member is protected from potential hazards
c) To ensure everyone looks uniform
d) To comply with company dress code
4.The correct selection of PPE is essential to protect workers from hazards associated with _____ lifting operations.
5.Before starting a lifting operation, it is crucial to _____ that all team members are wearing the appropriate PPE.
It is the responsibility of the team leader to verify that all team members are wearing their PPE correctly before the operation begins.
PPE that is damaged or not functioning properly should be repaired, but never replaced, to save costs.

2.5. Unit 2.4: Comply with Regulatory and Organizational Standards

2.5.1. Unit Objectives

At the end of this unit, students will be able to

- To understand the organizational health and safety policies to maintain a safe working environment and prevent potential hazards.
- To understand how to identify and adhere to relevant national and international safety laws
- To understand importance of documentation and report incidents of non-compliance

2.5.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

2.5.3. Say

- Describe about organizational health and safety policies to maintain a safe working environment and prevent potential hazards.
- Describe about how to identify and adhere to relevant national and international safety laws
- Describe about importance of documentation and report incidents of non-compliance

2.5.4. Explain

- Describe about organizational health and safety policies to maintain a safe working environment and prevent potential hazards.
- Describe about how to identify and adhere to relevant national and international safety laws
- Describe about importance of documentation and report incidents of non-compliance

2.5.5. Activity

Divide students into small groups.
Provide each group with different workplace scenarios where non-compliance with safety laws or policies could occur (e.g., improper use of PPE, unsafe working conditions, failure to report hazards).
Ask each group to identify which national/international safety laws or organizational policies apply to their scenario and discuss how they would ensure compliance.
Groups will also discuss how they would document and report the incident to supervisors for corrective action.

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2.5.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

2.5.7. Summary

It argues for the identification of national and international safety laws such as ISO 45001 and OSHA. These laws form the standards for occupational health and safety by outlining the role of employers and employees in the prevention of accidents and protection of workers' welfare.

It also emphasizes adherence to organizational health and safety policies. These organizational health and safety policies may contain various procedures, guidelines, and practices that can help to keep the workplace safe. Complying ensures all employees operate using standardized safety measures, hence preventing risks and hazards.

It emphasizes that workers are liable to record and report any incidence of non-adherence to the safety laws and organizational policies. Reporting in time and in accuracy allows the supervisors to undertake corrective actions on the safety matters and to maintain the safety procedure within the organization.

2.5.8. Exercise

1.Which of the following safety standards focuses specifically on occupational health and safety management systems?

a) ISO 9001

b) ISO 45001

c) OSHA

d) ISO 14001

2.What is the primary purpose of complying with organizational health and safety policies?

a) To follow company rules

b) To ensure a safe working environment and prevent accidents

c) To comply with government regulations

d) To increase company profits

3.Compliance with organizational health and safety policies helps in reducing workplace accidents and creating a safer work environment.(T/F)

4.Non-compliance incidents should be reported immediately to supervisors for corrective actions to be taken.(T/F)

5.Non-compliance incidents must be _____ to supervisors promptly so corrective actions can be taken.

6.Complying with organizational health and safety policies ensures that all safety procedures are _____ in the workplace.

3. Unit 3 NOS 2:SSD/N0320 v 1.0 : Safety, Legal and Regulatory Compliance for Lifting & Rigging Operations

3.1. Key Learning Outcomes

At the end of this module, the trainees will be able to:

- To understand national and international legal frameworks for lifting operations.
- To understand safety regulations (e.g., OSHA, ISO, and LOLER).
- To understand process of monitoring and maintaining operational compliance with organizational policies.
- To understand process of reporting incidents, non-compliance, and corrective actions
- To understand process for preparing and managing regulatory audits and inspections

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3.2. Unit 3.1. Legal Frameworks

3.2.1. Unit Objectives

At the end of this unit, students will be able to:

- To identify and interpret national and international regulations, such as OSHA, LOLER, and ISO 45001, rigging operations.
- To understand how to monitor and assess team compliance with regulatory standards during lifting operations to prevent non-compliance and promote a safe working environment.

3.2.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

3.2.3. Ask

- Describe about national and international regulations, such as OSHA, LOLER, and ISO 45001, rigging operations.
- Describe about process of inspections of rigging equipment

3.2.4. Explain

- Describe about national and international regulations, such as OSHA, LOLER, and ISO 45001, rigging operations.
- Describe about process of inspections of rigging equipment

3.2.5. Activity

Divide the class into small groups and give each group a scenario card detailing a lifting operation (e.g., lifting heavy materials with a crane, using a hoist for machinery, or manual lifting in a construction setting).

Ask each group to identify which specific national and international regulations (OSHA, LOLER, ISO 45001) apply to their given scenario.

Groups will also need to identify specific legal standards that should be followed for the safe execution of the operation, such as inspection of lifting equipment, weight limits, or operator certifications.

3.2.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

3.2.7. Summary

Identify National and International Statutory Regulations which are relevant including OSHA LOLER ISO 45001 The appropriate safety standards which govern the usage of equipment, procedures and personnel for an accident-free risk-free environment while conducting lifting tasks are as mentioned:.

It will ensure that all lifting operations conform to this legal standard. This means planning and executing the task of lifting using explicit detailed guidelines provided in the relevant regulations to ensure that all safety measures are in place.

It deals with monitoring how the team observes these statutory requirements during the process. It is critical to monitor work continuously to ascertain whether there is an ongoing compliance and to identify the issues of non-compliance and corrective actions to take before potential hazards or legal violations occur.

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3.2.8. Exercise

1.Which of the following regulations is specifically related to lifting operations and equipment safety?
a) ISO 9001
b) LOLER (Lifting Operations and Lifting Equipment Regulations)
c) ISO 14001
d) OHSAS 18001
2.Which of the following is the key responsibility of a supervisor during lifting operations?
a) To operate the lifting equipment
b) To monitor the team's compliance with statutory safety requirements
c) To perform maintenance on the lifting equipment
d) To provide first aid during accidents
3.Lifting operations can proceed without monitoring compliance if all safety equipment appears to be in working order.(T/F)
4.ISO 45001 provides guidelines for creating and maintaining effective occupational health and safety management systems in lifting operations.(T/F)
5.ISO 45001 is primarily concerned with which aspect of workplace safety?
a) Quality management systems
b) Environmental management
c) Occupational health and safety management systems
d) Fire safety management

3.3. Unit 3.2. Compliance with Organizational Safety Policies

3.3.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to ensure operational procedures align with company safety policies, maintaining compliance with internal safety standards.
- To understand process of conducting regular audits to identify and address non-compliance issues

3.3.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

3.3.3. Say

- Describe about process how to ensure operational procedures align with company safety policies, maintaining compliance with internal safety standards.
- Describe about process of conducting regular audits to identify and address non-compliance issues

3.3.4. Explain

- Describe about process how to ensure operational procedures align with company safety policies, maintaining compliance with internal safety standards.
- Describe about process of conducting regular audits to identify and address non-compliance issues

3.3.5. Activity

Divide the class into small groups.
Give each group a scenario card that describes an operational situation (e.g., lifting operation, equipment use, or emergency procedures). Some scenarios should include instances of non-compliance (e.g., failure to wear PPE, incorrect equipment use, untrained personnel performing tasks).
Groups will read the scenario and identify the compliance issues related to company safety policies. They will then discuss corrective actions that should be taken to ensure compliance.

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3.3.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

3.3.7. Summary

It states that operating procedures should always be consistent with the company safety policies. That means incorporating safety requirements into the activities of daily work and ensuring that all operations strictly adhere to these protocols for safe working.

It suggests audit needs to be conducted frequently to identify issues of non-compliance. These audits highlight the areas where the safety policies are not followed and, therefore an opportunity is created to take corrective actions for such deficiency to continue with safety and risk management.

It pertains to the need to revise policies and procedures from time to time due to changing safety regulations and standards. Changing regulations require an organization to review and update its safety policies to be within the set regulations and reach the highest levels of workplace safety.

3.3.8. Exercise

1. Which of the following is a key step in ensuring operational procedures comply with company safety policies?

a) Ignoring minor safety violations

b) Regularly reviewing and updating the safety procedures

c) Allowing employees to create their own safety policies

d) Reducing safety training

2. What is the main purpose of conducting regular audits in a workplace?

a) To increase employee work hours

b) To identify and correct non-compliance with safety standards

c) To assess employee performance

d) To reduce the number of policies

3.Audits are conducted to _____ non-compliance issues and ensure corrective actions are taken to improve safety.

4.It is essential to update policies and procedures regularly to ensure they remain in _____ with changes in safety regulations.

5.Regular audits help identify areas where safety policies are not being followed, and corrective actions can be taken.(T/F)

6.Safety policies and procedures should remain unchanged, even if regulatory standards change.(T/F)

3.4. Unit 3.3. Incidents and Non-Compliance

3.4.1. Unit Objectives

At the end of this unit, students will be able to:

- Understand how to document incidents or violations of legal standards
- Understand importance of report non-compliance issues to the relevant authorities and management
- Understand corrective actions and preventive measures.

3.4.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

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3.4.3. Say

- Describe about how to document incidents or violations of legal standards
- Describe about importance of report non-compliance issues to the relevant authorities and management
- Describe about corrective actions and preventive measures.

3.4.4. Explain

- Describe about how to document incidents or violations of legal standards
- Describe about importance of report non-compliance issues to the relevant authorities and management
- Describe about corrective actions and preventive measures.

3.4.5. Activity

Divide the class into small groups and give each group a scenario card that outlines a specific non-compliance incident (e.g., worker without proper PPE, unsafe equipment usage, or failure to follow safety protocols).

Ask each group to complete an incident report based on the scenario, using a provided template. The report should include key details such as the date, location, description of the incident, individuals involved, and any immediate actions taken.

After completing the report, each group will briefly present the incident to the class, explaining their documentation process and why each detail is important.

3.4.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

3.4.7. Summary

As a precautionary measure at the incident and violations of legal standards, PC7 states that any such should be documented properly. The reason that violations are documented is to ensure that all the violations are recorded appropriately with proper details of violations which can be used in analysis, reporting, and taking corrective action for the mistakes. This ensures accountability and a clean record in case of safety or legal breach.

It emphasizes the responsibility of reporting cases of noncompliance to authorities and management. It provides ample opportunity to take effective measures for rectifying a violation before its severity increases; otherwise, corrective measures cannot be taken promptly.

Preventive action would be taken to stop further violations from happening. After a violation has been identified and reported, corrective action would be taken to correct the situation so that a similar violation does not happen again. This may involve a change in procedure, training, or updates of some equipment in place.

3.4.8. Exercise

1. Which of the following is a key aspect of documenting an incident or violation of legal standards?

a) Recording the incident's location and involved individuals

b) Ignoring minor infractions

c) Reporting the incident after a long delay

d) Making assumptions about the causes of the violation

2.What is the primary purpose of implementing corrective actions after a violation or non-compliance incident?

a) To punish the individuals involved

b) To prevent future violations and improve safety procedures

c) To ignore the incident and focus on future tasks

d) To cover up the mistake and move on

3.It is not necessary to report minor violations of legal standards to management or authorities. (T/F)

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4.Corrective actions are only necessary if a non-compliance issue results in an accident.(T/F)
5.Non-compliance incidents should be _____ to the relevant authorities and management to ensure corrective action is taken.
6.The goal of implementing corrective actions is to _____ future violations and enhance overall workplace safety.

3.5. Regulatory Audits and Inspections

3.5.1. Unit Objectives

At the end of this unit, students will be able to:

- Understand how to keep proper records of the inspection, certification, and incident reports to be compliant in case of any audits.
- Understand importance of coordinate with auditors and inspectors so that regulatory audit processes are done without a hitch, and all audit findings are promptly addressed.
- Understand how to implement corrective actions from audit findings to achieve continuous improvement in compliance standards.

3.5.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

3.5.3. Say

- Describe about how to keep proper records of the inspection, certification, and incident reports to be compliant in case of any audits.
- Describe about importance of coordinate with auditors and inspectors so that regulatory audit processes are done without a hitch, and all audit findings are promptly addressed.
- Describe about process about implement corrective actions from audit findings to achieve continuous improvement in compliance standards.

3.5.4. Explain

- Describe about how to keep proper records of the inspection, certification, and incident reports to be compliant in case of any audits.
- Describe about importance of coordinate with auditors and inspectors so that regulatory audit processes are done without a hitch, and all audit findings are promptly addressed.
- Describe about process about implement corrective actions from audit findings to achieve continuous improvement in compliance standards.

3.5.5. Activity

Divide the class into small groups (3-4 students per group).
Each group will represent a company preparing for a regulatory audit. Provide them with a sample set of documents that could be part of inspections, certifications, and incident reports (e.g., inspection logs, safety certifications, maintenance records).
Assign each group a role (e.g., compliance officer, inspector, auditor) to ensure they experience different perspectives during the audit.

3.5.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

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3.5.7. Summary

Maintain records One of the core activities is preparing for audits. All relevant records are maintained with inspection reports, certifications, and incident reports forming the base for assessments of audits. Documentation ensures compliance and the auditors have all the information needed to assess the safety standards and operational practices.

Coordination with Auditors and Inspectors Coordinating these steps in the process ensures a smooth flow of the audit process. This can be achieved by providing them with all the requested documents, answering questions to the best of one's knowledge, and allowing them to observe operations as required. Clear communication and timely response to their inquiries may help facilitate an efficient audit process while limiting possible disruptions in operations.

Implement Corrective Action in Respect of Audit Findings: Corrective action in respect of the audit findings requires immediate action, or the non-compliances found need to be addressed. This would be through reviewing the audit results, formulating corrective actions, and implementing solutions to the deficiencies found. Quick correction of audit findings would prevent organizations from failing to comply with the law, hence avoiding future issues and making steps toward continuous operations improvement and safety practices.

3.5.8. Exercise

1.Which of the following is a key responsibility when preparing for a regulatory audit?
A) Ignoring audit findings
B) Maintaining accurate records of inspections, certifications, and incident reports
C) Delaying corrective actions after an audit
D) Focusing only on incident reports
2.Which of the following actions should be taken after an audit identifies non-compliance?
A) Delay corrective measures
B) Implement corrective measures promptly
C) Ignore the findings and continue operations
D) Only address audit findings if they are serious
3.Coordinating with auditors and inspectors only during the audit itself is enough to ensure smooth operations.(T/F)
4.Addressing audit findings promptly helps prevent recurring issues and ensures compliance.(T/F)
5.To ensure smooth regulatory audits, it is essential to _____ with auditors and inspectors, providing the necessary documents and clarifications.
6.To pass a regulatory audit, organizations must _____ records of inspections, certifications, and incident reports.

4. Unit 4 NOS 3: SSD/N0321 v 1.0 : Load Planning, Stability Control & Process requirements.

4.1. Key Learning Outcomes

At the end of this module, the trainees will be able to;

- To understand how to plan and balance loads for lifting operations by accurately calculating load weights, sling angles, and ensuring load stability.
- To understand how to identify and manage overload and operational risks by selecting appropriate lifting and rigging equipment based on load characteristics and site conditions.
- Understanding load management techniques, calculating load capacities, and applying these skills to optimize lifting operations.
- Understand the importance of environmental and site-specific factors, ensuring that these are considered when planning and executing lifting tasks.

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- To understand regulatory requirements and safety protocols for lifting operations.

4.2. Unit 4.1: Plan Loads for Lifting Operations

4.2.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to assess the weight, size, shape, and centre of gravity of the load
- To understand how to select and utilize the appropriate lifting equipment (e.g., slings, cranes, hooks) based on the specific characteristics of the load

4.2.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

4.2.3. Say

- Describe about process to assess the weight, size, shape, and centre of gravity of the load
- Describe about how to select and utilize the appropriate lifting equipment (e.g., slings, cranes, hooks) based on the specific characteristics of the load

4.2.4. Explain

- Describe about process to assess the weight, size, shape, and centre of gravity of the load
- Describe about how to select and utilize the appropriate lifting equipment (e.g., slings, cranes, hooks) based on the specific characteristics of the load

4.2.5. Activity

- Divide the class into small groups (3-4 students per group).
- Assign each group a different load (e.g., a large box, a cylindrical object, a piece of machinery) with corresponding data sheets containing the weight, size, and shape details.
- Assess Load Characteristics & Calculate (20 minutes):
- Each group will:
- Assess the weight, size, and shape of the load based on the provided data.
- Calculate the centre of gravity for their assigned load. (Optional: Provide a simplified method or formula for calculation if needed.)
- Discuss the challenges posed by the load's shape and how it might affect lifting.

4.2.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

4.2.7. Summary

Planning loads for lifting operations is a critical process that ensures safety, efficiency, and accuracy in handling heavy or bulky items. The process involves assessing several key factors related to the load and selecting the right equipment to handle it effectively.

Assessing Load Characteristics : Before lifting any load, it is essential to evaluate the weight, size, and shape of the object. This assessment helps determine the level of difficulty in lifting and identifies any special considerations, such as the need for additional support or handling precautions. Properly understanding these characteristics ensures the operation is planned accurately and can be executed without issues.

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Centre of gravity: The centre of gravity that is the load's weight's evenly distributed points. This requires to be discovered so that load tipping or movement during lifting isn't possible while reducing the workers and equipment possibility of getting damaged.
Selecting Appropriate Equipment : Based on the load's characteristics, the appropriate lifting equipment must be chosen. This includes selecting tools like cranes, slings, hooks, and hoists that are capable of safely handling the weight and shape of the load. Proper equipment selection minimizes risks and optimizes the lifting process.

4.2.8. Exercise

1.What is the first step in planning a lifting operation?
A) Select the lifting equipment
B) Assess the weight, size, and shape of the load
C) Determine the centre of gravity
D) Ensure the safety protocols are in place
2.Why is it important to determine the centre of gravity of a load during a lifting operation?
A) To calculate the weight of the load
B) To ensure the load remains balanced and stable during lifting
C) To estimate the lifting time
D) To select the size of the crane
3.The centre of gravity helps determine the correct positioning of the load during a lift to prevent tipping.(T/F)
4. Selecting appropriate lifting equipment is based solely on the weight of the load.(T/F)
5.To ensure the load remains balanced during lifting, it is essential to determine the _____ of the load.
6.Selecting the appropriate _____ is crucial for safely lifting a load based on its characteristics, such as weight, shape, and size.

4.3. Unit 4.2: Weight and Sling Angles

4.3.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to calculate the weight of the load and determine the correct sling angles to ensure the load is within equipment capacity and lifted safely
- To understand use load charts and formulas to perform accurate calculations
- To understand about sling angles and load weights to select appropriate lifting equipment and execute safe, efficient lifting operations.

4.3.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

4.3.3. Say

- Describe about how to calculate the weight of the load and determine the correct sling angles to ensure the load is within equipment capacity and lifted safely
- Describe about use load charts and formulas to perform accurate calculations
- Describe about sling angles and load weights to select appropriate lifting equipment

4.3.4. Explain

- Describe about how to calculate the weight of the load and determine the correct sling angles to ensure the load is within equipment capacity and lifted safely
- Describe about use load charts and formulas to perform accurate calculations
- Describe about sling angles and load weights to select appropriate lifting equipment

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4.3.5. Activity

Divide the class into small groups (3-4 students per group).
Provide each group with a sample load (e.g., a crate, a beam, or machinery), including its weight and dimensions.
Also provide the groups with the necessary load charts, formulas, and guidelines for sling angle calculations.
Calculate Load Weight & Determine Sling Angles (20 minutes):
Each group will:
Calculate the weight of the load (if not already provided) using the given data.
Determine the sling angles needed for safe lifting based on the load's characteristics and ensure the angles are within safe limits.
Use load charts to verify that the lifting equipment can safely handle the load at the chosen sling angles.
Discuss the impact of different angles on the overall lifting operation and equipment capacity.

4.3.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

4.3.7. Summary

Calculate Load Weight. The first step in a lifting operation is to determine the exact weight of the load. This ensures that the lifting equipment used can handle the load safely and within its rated capacity. Overloading equipment can lead to accidents, so accurate weight calculation is crucial for a safe operation.

Sling angles are critical in determining the load distribution during a lift. The angle at which the sling is attached to the load affects the forces exerted on both the load and the lifting equipment. Incorrect sling angles can lead to instability, shifting of the load, or even failure of the lifting equipment. Therefore, calculating and setting the correct sling angles is essential for a safe lift.
Load charts and formulas provide the necessary data to confirm that lifting equipment can safely handle the load at the chosen sling angles. By using these tools, operators can verify that their equipment's lifting capacity aligns with the load's weight and the selected angles. This ensures that the lifting operation is both safe and efficient.

4.3.8. Exercise

1.Why is it important to calculate the weight of the load in lifting operations?
A) To determine how long the lift will take
B) To ensure the load is within the equipment's lifting capacity
C) To decide the size of the load
D) To check the load's appearance
2.What is the purpose of using load charts and formulas in lifting operations?
A) To decorate the equipment
B) To verify that lifting equipment can safely handle the load at the chosen sling angles
C) To calculate the cost of the operation
D) To measure the height of the load
3.The sling angle has no impact on the safety of the lifting operation.(T/F)
4.Using load charts and formulas ensures that lifting operations stay within the capacity of the equipment and helps prevent accidents.(T/F)
5.It is important to calculate the _____ of the load to ensure it is within the lifting equipment's capacity.
6.The _____ at which the sling is attached to the load impacts the load distribution and overall safety of the lift.

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4.4. Unit 4.3 Load and Equipment Stability

4.4.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to monitor the stability of the load and vary the setup of the equipment
- To understand use load charts and formulas to perform accurate calculations
- To understand about sling angles and load weights to select appropriate lifting equipment and execute safe, efficient lifting operations.

4.4.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

4.4.3. Say

- Describe about how to monitor the stability of the load and vary the setup of the equipment
- Describe about use load charts and formulas to perform accurate calculate
- Describe about sling angles and load weights to select appropriate lifting equipment

4.4.4. Explain

- Describe about how to monitor the stability of the load and vary the setup of the equipment
- Describe about use load charts and formulas to perform accurate calculate
- Describe about sling angles and load weights to select appropriate lifting equipment

4.4.5. Activity

- Divide the class into small groups (3-4 students per group).
- Provide each group with a sample load (e.g., a crate, a beam, or machinery), including its weight and dimensions.
- Also provide the groups with the necessary load charts, formulas, and guidelines for sling angle calculations.
- Calculate Load Weight & Determine Sling Angles
- Each group will:
- Calculate the weight of the load (if not already provided) using the given data.
- Determine the sling angles needed for safe lifting based on the load's characteristics and ensure the angles are within safe limits.
- Use load charts to verify that the lifting equipment can safely handle the load at the chosen sling angles.
- Discuss the impact of different angles on the overall lifting operation and equipment capacity.

4.4.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

4.4.7. Summary

The critical actions pay importance to safe lifting and effective implementation of the tasks. Monitoring during the lifting will prevent accidents with regards to loads, and a re-adjustment should be conducted to the setup in case it's unstable to prevent accidents and injury. On the other hand, the loads must not reach or exceed equipment ratings for there to be no strain or breakdown. This will give safety to the

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equipment by avoiding overload condition, hence operates at safe limits; failure or accidents are minimized. In total, these practices contribute to the overall safety and efficiency of lifting operations.

4.4.8. Exercise

1.What is the primary purpose of monitoring the stability of the load during lifting?
a) To speed up the lifting process
b) To avoid accidents
c) To reduce equipment maintenance
d) To improve load capacity
2.What should you do if instability is observed during lifting operations?
a) Ignore it and continue lifting
b) Adjust the equipment setup
c) Increase the load capacity
d) Raise the load higher
3.Monitoring the stability of the load is important to prevent accidents during lifting operations.(T/F)
4.If instability is detected during lifting, the equipment setup should remain unchanged.(T/F)
5.To avoid accidents, it is crucial to _____ the stability of the load during lifting.
6. If instability is observed during operations, you should _____ the equipment setup.

4.5. Unit 4.4. Select Equipment for Lifting & Rigging Operations

4.5.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to select appropriate lifting tools and equipment based on load type and weight.
- To understand operational standards and safety standard for cranes, slings, ropes, and pulleys
- To understand how to verify that all equipment is certified, maintained, and ready for use

4.5.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

4.5.3. Say

- Describe about how to select appropriate lifting tools and equipment based on load type and weight
- Describe about operational standards and safety standard for cranes, slings, ropes, and pulleys
- Describe about how to verify that all equipment is certified, maintained, and ready for use

4.5.4. Explain

- Describe about how to select appropriate lifting tools and equipment based on load type and weight
- Describe about operational standards and safety standard for cranes, slings, ropes, and pulleys
- Describe about how to verify that all equipment is certified, maintained, and ready for use

4.5.5. Activity

Divide the class into small groups (3-4 participants per group).
Each group will be given a specific load scenario (e.g., lifting a heavy metal beam, a large wooden crate, a fragile glass object, etc.) with details on the load type, weight, and dimensions.
Task 1: Equipment Selection (15 minutes):
Each group must:
Analyse their load scenario.
Discuss and decide on the appropriate lifting tools and equipment based on the load type and weight.
Select the lifting equipment from the available mock-ups or images (e.g., crane, slings, ropes, pulleys).
Justify their selection by explaining why each piece of equipment is suitable for the load.

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4.5.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

4.5.7. Summary

It observes that lifting tools and equipment must be selected based on the type and weight of the load. It would mean that one knows the specific characteristics of the load in terms of weight, size, and stability, and then matched it with the right lifting tools, which include cranes, slings, ropes, and pulleys.

It emphasizes that all equipment used should be checked against very high safety and operational standards. Among these guidelines include the fact that lifting tools and machinery should be made and rated right for the load intended and should be safe to use according to industry safety regulations. Checks, therefore, need to be conducted regularly to ensure cranes, slings, ropes, pulleys, and all other equipment are fit to serve.

It states that all the lifting equipment applied in use must be certified and in good condition. In other words, all equipment should be current with a full complement of certifications, should have been inspected as necessary, and be maintained properly. It should be the only equipment to be used and qualified.

4.5.8. Exercise

1.What is the primary factor to consider when selecting lifting tools and equipment?

a) Equipment brand

b) Load type and weight

c) Colour of the equipment

d) Cost of the equipment

2.Why is it important to verify that lifting equipment is certified, maintained, and ready for use?

a) To ensure equipment looks new

b) To reduce the risk of equipment failure and accidents

c) To increase the speed of operations

d) To meet company policy

3.Cranes, slings, ropes, and pulleys must meet safety and operational standards before being used in lifting operations.

4.It is acceptable to use lifting equipment that has not been certified if it looks in good condition.

5.The first step in selecting appropriate lifting tools and equipment is to consider the _____ and _____ of the load.

6.Before using equipment such as cranes, slings, ropes, and pulleys, it is essential to ensure they meet _____ and _____ standards.

4.6. Unit 4.5. Plan Operations According to Load Requirements

4.6.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to assess load characteristics including weight, size, and centre of gravity to decide on the requirements for lifting.
- To understand how to calculate equipment load limits and capacities
- To understand operational requirements, timelines, and environmental factors of lifting operation
- To understand how to identify and manage site-specific hazards such as live lines, poor ground, or adverse weather, ensuring a lift operation is not only safe but also efficient.

4.6.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc

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- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

4.6.3. Say

- Describe about how to assess load characteristics including weight, size, and centre of gravity to decide on the requirements for lifting
- Describe about how to calculate equipment load limits and capacities
- Describe about operational requirements, timelines, and environmental factors of lifting operation
- Describe about how to identify and manage site-specific hazards

4.6.4. Explain

- Describe about how to assess load characteristics including weight, size, and centre of gravity to decide on the requirements for lifting
- Describe about how to calculate equipment load limits and capacities
- Describe about operational requirements, timelines, and environmental factors of lifting operation
- Describe about how to identify and manage site-specific hazards

4.6.5. Activity

Divide the class into small groups (3-4 participants per group).
Provide each group with a load scenario card, an equipment capacity chart, a site layout diagram, and an environmental factors checklist.
Each group will:
Review their load scenario card, which includes details like the weight, size, and centre of gravity of the load.
Assess the characteristics of the load to determine lifting requirements. This includes deciding on the lifting equipment based on load weight, size, and stability.
Record their assessment of the load and explain the lifting requirements based on the load characteristics.

4.6.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

4.6.7. Summary

It involves several steps aimed at checking the load characteristics, determining the equipment capacity, and developing a sophisticated lifting plan. PC14 highlights the assessment of key load characteristics such as weight, size, and centre of gravity as aspects that ensure the accurate establishment of the necessary lifting requirement. This step further helps to select the right kind of lifting equipment for the load.
It aims at calculating the load limits and lift equipment capacity so that equipment is used with safety. Understanding the rated capacity of the equipment and means of ensuring correct alignment with the specifications of loads ensures that equipment overload does not happen, thus potentially causing a breakdown or an accident of the equipment.
Formulation of a comprehensive lifting plan that would consider the operational requirements and timelines of the task. This will include definition of the sequence of operations, safety measures, and equipment for easy implementation of the lifting operation.
Environmental factors and site-specific hazards include wind speed, surface conditions, site layout, etc. A lifting plan must take into consideration risks or hazards found on-site, such as power lines or uneven ground. The lifting plan must accommodate such environmental changes to ensure a hazard-free lift.

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4.6.8. Exercise

1.What is the primary consideration when assessing load characteristics?
a) Load colour
b) Load weight, size, and centre of gravity
c) Load material
d) Load transportation method
2.Why is it important to calculate the load limits and capacity of lifting equipment? a) To speed up the lifting process
b) To ensure that equipment is not overloaded and operates safely
c) To increase equipment lifespan
d) To reduce equipment costs
3.Assessing load characteristics, such as weight and centre of gravity, is unnecessary if the load appears to be small.(T/F)
4.It is essential to calculate the load limits and capacity of equipment to prevent overloading and ensure safe lifting operations.(T/F)
5.The first step in determining lifting requirements is to assess the load's _____ , _____ , and _____ .
6.To ensure safe lifting operations, you must calculate the _____ limits and capacity of the equipment.

4.7. Unit 4.6. Implement Regulatory and Organizational Standards

4.7.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand national and international standards, such as LOLER, OSHA, and ISO 45001 for lifting operations
- To understand how to develop and document lifting plans in accordance with safety regulations and organizational protocols.
- To understand how to report any deviations from standards to supervisors for corrective active
- To understand with legal requirements, internal policies, and best practices, while documenting and reporting

4.7.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

4.7.3. Say

- Describe about national and international standards, such as LOLER, OSHA, and ISO 45001 for lifting operations
- Describe about how to develop and document lifting plans in accordance with safety regulations and organizational protocols
- Describe about how to report any deviations from standards to supervisors for corrective active
- Describe about legal requirements, internal policies, and best practices, while documenting and reporting

4.7.4. Explain

- Describe about national and international standards, such as LOLER, OSHA, and ISO 45001 for lifting operations
- Describe about how to develop and document lifting plans in accordance with safety regulations and organizational protocols
- Describe about how to report any deviations from standards to supervisors for corrective active

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- Describe about legal requirements, internal policies, and best practices, while documenting and reporting

4.7.5. Activity

Divide the class into small groups (3-4 participants per group).
Provide each group with copies of national and international standards (LOLER, OSHA, ISO 45001), organizational lifting guidelines, and lifting plan templates.
Each group will be given a lifting scenario card, which includes details like load specifications, equipment used, and potential hazards.
Identify the relevant standards (LOLER, OSHA, ISO 45001) that apply to the situation.
Ensure that the lifting operation follows the standards and organizational guidelines.
Identify any deviations from the standards or guidelines (e.g., improper equipment selection, inadequate safety measures).
Discuss the potential risks involved and recommend corrective actions.

4.7.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

4.7.7. Summary

Compliance to the national and international standards, among them LOLER, OSHA, and ISO 45001, is hence very important.
It shall be very particular about these needs so that to avoid accidents on site and, in turn, ensure that all lifting activities undertaken are within legal and safe stipulations. The best frameworks about keeping equipment up-to-date for operational procedures to ensure that all workers are managed safely during lifting tasks.
It emphasizes the need to comply with organizational policies and guidelines to ensure safe lifting operations. Most organizations have certain procedures that suit their operations but are in accordance with general safety standards. Internal policies ensure the consistent and safe performance of lifting operations, thereby giving clear guidelines to workers to be followed.
It provides for the lifting plan to be recorded and report any deviation of the established standard to the supervisor. Proper documentation will ensure all lifting operations are planned, monitored, and regulated. Any deviation identified from the safety standards or organizational guidelines must be reported to ensure corrective action is taken right away, thereby ensuring that the operation is safe and compliant throughout.

4.7.8. Exercise

1.Which of the following is a key standard to ensure safety in lifting operations?
a) ISO 9001
b) OSHA
c) ISO 14001
d) ISO 45001
2.Why is it important to follow organizational policies and guidelines for lifting operations?
a) To reduce costs
b) To ensure compliance with legal and safety standards
c) To increase the speed of lifting tasks
d) To make lifting operations more complex
3.It is not necessary to follow national and international standards like LOLER and OSHA if the lifting operation is simple.(T/F)
4.Organizational policies and guidelines are essential to ensure that lifting operations are conducted safely and in compliance with legal requirements.(T/F)

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5.Following _____ policies and guidelines ensures that lifting operations are carried out safely and in compliance with regulatory requirements.
6.Lifting plans should be _____ to ensure compliance with national and international standards, and all safety measures should be clearly documented.

5. Unit 5 NOS 4 SSD/N0322 v 1.0 : Hazard Identification, Risk Assessment, Safety of Plant & Machinery in Lifting & Rigging Operations

5.1. Key Learning Outcomes

At the end of this module, the trainees will be able to;

- Identify hazards related to crane and lifting operations.
- Conduct risk assessments to evaluate and prioritize risks.
- Implement preventive and corrective actions to reduce risks.
- Report incidents, near-misses, and safety violations effectively.
- Conduct root-cause analysis to determine the underlying reasons for incidents
- Maintain incident records and ensuring corrective actions are documented.
- Ensure safe operation of machinery, plant, and vehicles at work sites.
- Conduct inspections and maintenance to detect faults and malfunctions.
- Implement and monitor safety protocols to prevent accidents.
- Coordinate with operators, supervisors, and safety teams to ensure compliance.
- Manage vehicles, personnel, and equipment in dynamic environments.

5.2. Unit 5.1 Hazard Identification, Risk assessment & Mitigation During Operations

5.2.1. Unit Objectives

At the end of this unit, students will be able to:

- To identify, assess, and understand the possible risks associated with equipment and site-related factors in the case of crane operations
- To do effective risk assessments in identifying hazards in the workplace
- To assess the probability and probable impact of identified hazards in ranking risks
- To develop protective measures in control of identified risks for safety provision
- To communicate identified risks and their corresponding control measures to team members
- To assess environmental factors, such as heavy winds or a lack of planed surfaces, on what would impact the lifts

5.2.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.

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- Activities (role plays)

5.2.3. Ask

- Describe about process how to identify, assess, and understand the possible risks associated with equipment
- Describe about risk assessments process
- Describe about how to develop protective measures in control of identified risks
- Describe about how to communicate identified risks and their corresponding control measures to team members

5.2.4. Explain

- Describe about process how to identify, assess, and understand the possible risks associated with equipment
- Describe about risk assessments process
- Describe about how to develop protective measures in control of identified risks
- Describe about how to communicate identified risks and their corresponding control measures to team members

5.2.5. Activity

Divide the class into small groups and give each group a scenario card detailing specific lifting operations. Examples of scenarios could include:

Operating a crane in high wind conditions.

Using lifting equipment with known wear on critical parts.

Lifting a load over uneven surfaces.

Each group will:

Identify the hazards present in the scenario.

Perform a risk assessment by evaluating the likelihood of each identified hazard and its potential impact.

Use the provided risk assessment templates for this.

Groups will fill out the assessment, rating the hazards based on likelihood (e.g., low, medium, high) and impact (e.g., minor, moderate, severe).

5.2.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

5.2.7. Summary

Hazard identification will include identifying risks that are likely to be posed by the crane, equipment, and worksite. Mechanical hazards in cranes and equipment may result from failures in component parts, incorrect setup, and wear and tear. Site conditions such as uneven ground or obstacles create hazardous lifting environments. A good site assessment and crane inspection should highlight the potential risks.

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Assess the risks with respect to the potential and consequences of known hazards

The first step in risk management is identifying hazards in the workplace, whether it is a failure of equipment, environmental, or human. Once these hazards are identified, a risk assessment is performed, which evaluates the likelihood of the hazard occurring and the potential impact it could have on safety and operations. It allows for prioritizing hazards and focusing resources on addressing those that pose the greatest risk.

Implement and establish preventive measures against risk.

Following the identification and evaluation of risks, preventive measures to control the risks should be designed and implemented. These may include changes in work procedures, the use of safety equipment, regular maintenance, or training. The aim is to minimize the chances of hazards happening and their effects on workers, equipment, and operations. Preventive measures could be short-term or long-term; however, they should be realistic, feasible, and relevant to the identified risks.

Discuss Identified Risks and Controls with Team Members.

Effective communication of identified risks and control measures ensures that all members of the team are aware of potential hazards and know how to address them. It is of utmost importance that the results of risk assessments should be communicated so that preventive measures are outlined for everyone involved. This may be in the form of safety briefings, written instructions, signage, and many reminders so that the team is following safety protocols and ready to handle anything that comes up.

5.2.8. Exercise

1.Which of the following is a potential hazard when using cranes in a construction site?

a) Uneven surfaces

b) Low temperatures

c) Properly maintained equipment

d) Clear weather conditions

2.Cranes should be operated on uneven surfaces only if the crane is equipped with outriggers. (T/F)

3.What is the primary purpose of performing a risk assessment?

a) To eliminate all hazards from the workplace

b) To determine the likelihood and impact of identified hazards

c) To assign blame for accidents

d) To evaluate employee performance

4.Performing a risk assessment involves evaluating only the likelihood of a hazard, not its impact.(T/F)

5.Preventive measures should aim to eliminate hazards whenever possible, or at least reduce their potential impact.(T/F)

6.A risk assessment helps determine the _____ and _____ of potential hazards in the workplace.

5.3. Unit 5.2 Report Incidents, Conduct Root-Cause Analysis & Records

5.3.1. Unit Objectives

At the end of this unit, students will be able to:

- To document and report incidents, near-misses, and safety violations effectively in line with organizational procedures and standards.

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- To conduct thorough root-cause analyses that identify underlying factors contributing to incidents.

5.3.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

5.3.3. Ask

- Describe about process of document and report incidents, near-misses, and safety violations
- Describe about root-cause analyses

5.3.4. Explain

- Describe about process of document and report incidents, near-misses, and safety violations
- Describe about root-cause analyses

5.3.5. Activity

Divide the class into small groups (3-4 people per group).

Provide each group with a case study scenario involving an incident, near-miss, or safety violation.

Have each group complete an incident report using the provided templates, ensuring that all sections are filled out in accordance with organizational procedures.

Sections may include: Incident description, date/time, persons involved, immediate actions taken, severity, and corrective actions proposed.

Encourage the groups to consider:

Timeliness of the report.

Consistency with organizational standards.

Clarity and accuracy of the information.

5.3.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

5.3.7. Summary

Reporting and documentation of incident occurrences, near misses, and safety violations are part of maintaining a safe workplace. It highlights the importance of prompt reporting to act quickly over such occurrences. On-time documentation traces safety trends and mitigates future risks; therefore, this practice improves workplace safety altogether.

It requires that the need to report incidents is within organizational procedures and standards. Standard reporting will therefore provide consistency, clarity, and legal and organizational compliance, hence an easier means of dealing with the issue and resolution.

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It aims at carrying out root cause analysis in determining the causes of incidents. Organisations can correct similar incidents by finding and correcting the root causes. This then creates a culture of continuous improvement in safety.

5.3.8. Exercise

1.Why is it important to report incidents and near-misses promptly?

a) To ensure compliance with organizational standards

b) To prevent further risks and enable corrective actions

c) To avoid legal consequences

d) All of the above

2.What is the purpose of conducting a root-cause analysis after an incident?

a) To assign blame to individuals

b) To identify underlying factors that led to the incident

c) To punish employees involved

d) To determine the cost of the incident

3.Incident reports must be _____ to ensure that they are documented in a timely and consistent manner according to organizational standards.

4.The process of identifying the underlying factors contributing to an incident is called _____.

5.In an incident report, it is important to document the _____ of the incident, such as date, time, and location, to ensure accuracy.

5.4. Unit 5.3 Conduct Pre-Operation Inspections

5.4.1. Unit Objectives

At the end of this unit, students will be able to:

- Carry out pre-operational checks on machinery, plant, and road vehicles to discover possible faults before equipment is used.
- Identify signs of wear, damage, or malfunctions during inspections and effectively report them to the maintenance team for corrective action.
- Accurately record the findings from inspections and any faults reported to have the worksite fully operational while ensuring safety.

5.4.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

5.4.3. Ask

- Describe about pre-operational checks on machinery, plant, and road vehicles.
- Describe about process how to identify signs of wear, damage, or malfunctions during inspections
- Describe about recording process of findings

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5.4.4. Explain

- Describe about pre-operational checks on machinery, plant, and road vehicles.
- Describe about process how to identify signs of wear, damage, or malfunctions during inspections
- Describe about recording process of findings

5.4.5. Activity

Divide the class into small groups (3-4 students per group).
Inspect a crane
Each group will:
Use the inspection checklist to go through the required inspection steps.
Identify faults, wear, or malfunctions on crane. They may find problems such as low fuel, worn-out tires, or malfunctioning lights.
Report any faults to the "maintenance team" (the instructor or designated students). Discuss what actions should be taken to resolve these issues.
Document the inspection results on a pre-designed inspection form, noting any identified issues and the proposed solutions.

5.4.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

5.4.7. Summary

Pre-use inspection is the most vital procedure ensuring that equipment and vehicle safety and efficiency are guaranteed. It introduces checking in general equipment condition to check whether the condition satisfies basic safety requirements. This gives an understanding of which points may fail in operation and can lead to accidents.
It ensures that all the essential operational parts of the machine or vehicle, including brakes, steering, and safety devices, are working correctly. All these parts must be in good working condition to ensure safe machinery and vehicle use and minimize the risk of failure while in operation.
It puts emphasis on recording any form of servicing or any need for repair and reporting such need to the appropriate party. This way, the need is addressed as soon as possible not to delay or compromise safety while operating.
These points ensure proper equipment maintenance and safety as the equipment and vehicles are properly prepared before use.

5.4.8. Exercise

1.**What is the primary goal of performing a pre-operation inspection on machinery, plant, and vehicles?**

a) To ensure the equipment is running at maximum efficiency

b) To identify faults, wear, or damage before operation

c) To clean the equipment

d) To measure the operator's performance

2.What should be done if damage or a malfunction is identified during the inspection?

a) Continue operating the equipment as usual

b) Report the issue to the maintenance team for immediate attention

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c) Ignore it until the next inspection

d) Use the equipment for non-critical tasks

3.A pre-operation inspection helps to identify _____ before machinery, plant, or vehicles are used in the work environment.

4.When faults or malfunctions are detected during an inspection, they should be _____ to the maintenance team immediately for repairs.

5.True or False: Pre-operation inspections should only focus on the exterior appearance of machinery and vehicles.

6.True or False: Documenting the inspection results is not necessary if the faults are reported to the maintenance team verbally.

5.5. Unit 5.4 Operate Plant, Machinery, and Vehicles Safely

5.5.1. Unit Objectives

At the end of this unit, students will be able to:

- To ensure the safe operation of plant, machinery, and vehicles at work sites.
- To monitor and assess the safe handling and operation of these equipment types by checking whether the operators are following the manufacturer's instructions for use together with established safety guidance.
- To ensure that all personnel are using the right PPE, thereby creating a culture of safety and compliance at the workplace

5.5.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

5.5.3. Ask

- Describe about process of safe operation of plant, machinery, and vehicles at work sites.
- Describe about process how to monitor and assess the safe handling and operation
- Describe about process to ensure that all personnel are using the right PPE

5.5.4. Explain

- Describe about process of safe operation of plant, machinery, and vehicles at work sites.
- Describe about process how to monitor and assess the safe handling and operation
- Describe about process to ensure that all personnel are using the right PPE

5.5.5. Activity

Divide the class into small groups (3-4 people per group).

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Provide each group with a scenario card that describes a specific plant, machinery, or vehicle used on a worksite (e.g., operating a forklift in a warehouse, using a bulldozer on a construction site, or driving a delivery truck).

The group's task is to:

Review and identify the manufacturer's instructions and safety guidelines that must be followed for safe operation.

Check the PPE requirements for operators of that specific equipment, ensuring that appropriate gear (e.g., helmets, gloves, eye protection, etc.) is listed.

List the common hazards associated with operating that equipment and identify preventive measures.

5.5.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

5.5.7. Summary

Safe operation of the plant, machinery, and vehicles is crucial in preventing accidents and ensuring efficient operations. It requires that the use of machinery and vehicles must be performed following standard operating procedures. The SOPs ensure that operations are performed consistently and safely, thus reducing the chances of errors or accidents.

Equipment must operate at the set limit. Avoid loading and push it beyond capacity. This can help in averting malfunctioning, increase life of the equipment, and assure safety to operators and the surrounding environment.

It emphasizes keeping a check on the site condition and adjusting activities in such a manner that would allow both the aspects of safety and efficiency simultaneously. The fluctuation in climate, geography, or other parameters might require different uses of plant and machinery that ensure maximum levels of safety with efficiency.

These activities ensure a safe and efficient workplace by taking proper care while handling plant, machinery, and vehicles in operations in accordance with defined safety rules and regulations.

5.5.8. Exercise

1.What is the primary responsibility when monitoring the safe handling and operation of plant, machinery, and vehicles at work sites?

a) To ensure that the equipment is clean and operational

b) To ensure operators follow safety guidelines and use appropriate PPE

c) To schedule regular maintenance of equipment

d) To ensure machines are only operated during specific hours

2.Which of the following is essential for ensuring safe operations of plant, machinery, and vehicles at a work site?

a) Only ensure the machinery is regularly serviced

b) Verify that operators are properly trained and follow manufacturer's instructions

c) Ignore the use of personal protective equipment (PPE)

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d) Ensure the worksite is only safe during working hours

3.True or False: It is only necessary to monitor the safe operation of plant, machinery, and vehicles at work sites when there is a scheduled inspection.

4.True or False: All operators must be trained to follow the manufacturer's instructions and safety guidelines to prevent accidents and injuries.

5.To ensure the safe operation of plant, machinery, and vehicles at a work site, operators must always follow _____ instructions and safety guidelines.

6.Before allowing personnel to operate machinery or vehicles, it is important to verify that they are wearing the appropriate _____ (PPE).

5.6. Unit 5.5 Identify and Manage Hazards

5.6.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to identify potential hazards related to machinery and vehicle operations
- To understand how to implement immediate corrective actions to mitigate identified hazards and ensure the safety of personnel and equipment during operations.
- To understand how to report hazards or near-miss incidents to supervisors promptly, ensuring that further actions are taken to prevent recurrence and enhance overall safety protocols.

5.6.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

5.6.3. Ask

- Describe about how to identify potential hazards related to machinery and vehicle operations
- Describe about how to implement immediate corrective actions to mitigate identified hazards
- Describe about how to report hazards or near-miss incidents to supervisors

5.6.4. Explain

- Describe about how to identify potential hazards related to machinery and vehicle operations
- Describe about how to implement immediate corrective actions to mitigate identified hazards
- Describe about how to report hazards or near-miss incidents to supervisors

5.6.5. Activity

Divide the class into small groups (3-4 participants per group).
Provide each group with a set of hazard scenario cards, each describing a potential hazard related to machinery and vehicle operations (e.g., a vehicle's blind spot in a warehouse, a heavy load with improper securing, etc.).
Instruct each group to review the scenario cards and identify the hazards present in each scenario. For What are the potential risks (e.g., blind spots, unstable loads)?

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How can these hazards lead to accidents or safety violations?
Groups should write down their observations on the whiteboard or flip chart for class discussion.

5.6.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

5.6.7. Summary

Machinery and vehicle operation hazards should be recognized and acted upon to achieve a safe work environment. It recognizes that some areas, like blind spots or unstable loads, may become risky for the accidents or injuries in operation. Hazards may be identified at an early stage before incidents.

It emphasizes the immediate corrective actions that should be undertaken to overcome the identified hazards. To eliminate accidents and ensure that operations are carried on without delays, swift resolution of unstable loads or machine malfunctions will be achieved by operating personnel.

It helps in reporting hazards or near-miss incidents to supervisors, where additional steps can be taken to rectify the situations. If reported in a timely manner, it aids the supervisors in judging the situation and taking further additional safety measures while continually improving workplace safety measures.

These factors together create an overall approach toward the management of hazards through identification and immediate adoption of corrective measures for reporting in a working environment.

5.6.8. Exercise

1.Which of the following is a potential hazard when operating machinery and vehicles?
a) Clear visibility
b) Blind spots
c) Stable loads
d) Proper maintenance
2.What is the first step to take when identifying a hazard in machinery or vehicle operations?
a) Wait for a supervisor to notice it
b) Ignore it if it seems minor
c) Implement immediate corrective actions
d) Identify and assess the hazard immediately
3.If a near-miss incident occurs, it is crucial to _____ to supervisors to ensure corrective measures are taken.
4.Hazards related to machinery and vehicle operations should be identified and mitigated to prevent _____ and injuries.
5.Blind spots and unstable loads are examples of potential hazards during machinery and vehicle operations.(T/F)
6. Immediate corrective actions should be taken only after an accident occurs.(T/F)

5.7. Unit 5.6 Ensure Compliance with Safety and Traffic Management Protocols

5.7.1. Unit Objectives

At the end of this unit, students will be able to:

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- To understand national and international safety standards (such as OSHA and ISO) to maintain a high level of safety and compliance with legal requirements.
- To understand how to follow traffic management protocols and safety signage on-site to manage the flow of machinery and personnel effectively.
- To understand how to collaborate with site personnel to identify potential hazards
- To understand importance of effective communication and teamwork in fostering safety culture

5.7.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

5.7.3. Ask

- Describe about national and international safety standards (such as OSHA and ISO)
- Describe about how to follow traffic management protocols and safety signage on-site to manage the flow of machinery and personnel effectively
- Describe about how to collaborate with site personnel to identify potential hazards
- Describe about importance of effective communication and teamwork in fostering safety culture

5.7.4. Explain

- Describe about national and international safety standards (such as OSHA and ISO)
- Describe about how to follow traffic management protocols and safety signage on-site to manage the flow of machinery and personnel effectively
- Describe about how to collaborate with site personnel to identify potential hazards
- Describe about importance of effective communication and teamwork in fostering safety culture

5.7.5. Activity

Divide the class into small groups (4-5 members per group).
Each group will be assigned a scenario card that involves a specific workplace operation (e.g., construction site, warehouse, or factory) where they need to consider safety standards, traffic protocols, and coordination with site personnel.
Ask each group to review their assigned scenario and identify which national/international safety standards (e.g., OSHA, ISO) apply to their specific situation.
Each group should list the key safety measures required under those standards (e.g., proper signage, equipment checks, personal protective equipment, etc.).
Have the groups share their findings with the class and discuss how these standards impact operations.

5.7.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.

`

- Ensure that every participant answers all the questions

5.7.7. Summary

Following safety standards, traffic management protocols, and coordination with site personnel ensure safety and operational efficiency on any site. It again refers to the need to abide by national and international safety standards, such as OSHA and ISO, when carrying out operations. These standards are meant to reduce risks, ensure worker safety, and achieve legal compliance-a structured approach to safe operational practice.

It is targeting the elements of traffic management protocols and proper usage of safety signs at the installation site. Properly established traffic, proper signage usage, and segregated zones would significantly prevent the occurrence of safety issues, especially in areas with machinery close to vehicles and other personnel. Compliance with this would ensure that the equipment and personnel involved are adequately safeguarded.

Coordination with site personnel is required to avoid accidents and smoothen their operations, as called for by Good communication, team effort, and frequent updates are required to discuss possible risks, adapt to changing conditions, and make sure everyone knows the same thing to ensure safety and efficiency of operations.

All these points reflect a more integrated way of safety management whose adherence to standard, careful traffic management, and a well-coordinated effort from all site personnel positions them strategically in accident prevention and delivery of a fruitful and safe working environment.

5.7.8. Exercise

1.Which of the following is an example of a national or international safety standard that should be followed during operations?
a) ISO 9001
b) OSHA regulations
c) Local government regulations
d) Both a and b
2.Why is traffic management and safety signage important on a worksite?
a) To improve operational efficiency
b) To guide workers and vehicles safely, preventing accidents
c) To make the site look more organized
d) To reduce downtime
3.____ standards are essential to follow to ensure the safety of workers and compliance with legal requirements during operations.
4.Traffic management protocols help ensure that machinery and personnel are directed in a safe manner, preventing accidents like ____ and ____ collisions.
5.National and international safety standards (e.g., OSHA, ISO) should be followed only when there is a safety incident.
6.Traffic management protocols on-site help prevent accidents by ensuring that vehicles and personnel are separated and directed properly.

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6. Unit 6 NOS 5: SSD/N0323 v 1.0 : Lifting and Rigging Operations with Safety

6.1. Key Learning Outcomes

At the end of this module, the trainees will be able to:

- Understand the principles of planning and organizing lifting operations effectively.
- Understand how to identify common hazards associated with lifting and rigging operations
- Understand the importance of regular equipment inspection and maintenance for safety.
- Understand the legal requirements related to lifting and rigging operations.
- Understand how new technologies can improve the safety, efficiency, and effectiveness of lifting operations.
- Understand the importance of accident and near-miss reporting to enhance safety.

6.2. Unit 6.1: Prepare for Lifting and Rigging Operations

6.2.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand and communicated lifting plans, operational procedures, and safety protocols throughout the lifting operation
- To verify that all lifting equipment, including slings, cranes, and pulleys, are inspected, operational, and suitable for the task at hand.
- To understand how the load is correctly secured, balanced, and meets safety standards before the lifting operation

6.2.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

6.2.3. Ask

- Describe about how to understand and communicated lifting plans, operational procedures, and safety protocols throughout the lifting operation
- Describe about how to verify that all lifting equipment, including slings, cranes, and pulleys, are inspected, operational, and suitable for the task at hand
- Describe about how to determine load is correctly secured, balanced, and meets safety standards before the lifting operation.

6.2.4. Explain

- Describe about how to understand and communicated lifting plans, operational procedures, and safety protocols throughout the lifting operation
- Describe about how to verify that all lifting equipment, including slings, cranes, and pulleys, are inspected, operational, and suitable for the task at hand
- Describe about how to determine load is correctly secured, balanced, and meets safety standards before the lifting operation.

6.2.5. Activity

Divide the class into small groups (3-4 participants per group).

Provide each group with a lifting scenario that includes a detailed lifting plan, operational procedures, a list of lifting equipment (e.g., slings, cranes, pulleys), and a description of the load.

Example Scenario:

A construction site requires lifting steel beams weighing 1,500 kg using a crane with slings and pulleys.

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The group needs to ensure all equipment is suitable for the load, inspect it, and verify that the lifting plan is correctly followed.
Groups will review the list of provided equipment and perform a mock inspection (either with real or simulated equipment). They will check:
Whether the slings, cranes, and pulleys are operational.
If the load-bearing capacity is appropriate for the load.
If there are any visible defects that could pose a risk during the operation.
They will record their findings using an inspection checklist.

6.2.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

6.2.7. Summary

Clearly underline that understanding and following means the lifting plan and operational procedure is the clear communication of the lifting plan with all the procedures to be done and the necessary safety procedures, hence all people involved in that operation would understand their roles and sequence of the action and measures for safety, and the safe and effective manner in which that operation should be conducted.
All lifting equipment shall be prepared and in good condition, including such items as slings, cranes, pulleys. Inspection and preparation of the lifting equipment are important and should ensure all equipment is good working condition and suitable for load and certified before commencing with the operation. This will eliminate the possibility of equipment failure, reduce the probability of accidents occurring, and all lifting tasks to be accomplished without risk.
The load should be secured and balanced before lifting operation, ensuring that the load is properly secured and balanced. This step is essential in checking that the load is stable and not likely to tip or shift during lifting, which may result in accidents or damage. Proper load securing ensures control during the lift and a smooth operation.
All the performance criteria blend together to deliver a safe operation, well-prepared lift its procedures obvious and equipment at hand, loads in place-all hazard is reduced too, and provides a successful delivery.

6.2.8. Exercise

1.What is the primary purpose of verifying that the lifting plan and operational procedures are understood before starting the operation?
a) To ensure all equipment is available on-site
b) To ensure safe and effective execution of the lifting operation
c) To determine the best equipment for the task
d) To calculate the total cost of the operation
2.Which of the following should be done to ensure that lifting operational procedures are followed correctly?
a) Assign the tasks to a supervisor only
b) Provide only a verbal explanation to the team
c) Review the procedures and confirm understanding with all involved personnel
d) Skip the safety procedures if the operation is urgent
3.Before lifting, what should be done to ensure the load is safe to lift?
a) Confirm that the load is secured and balanced
b) Ignore load weight and focus only on equipment
c) Start the lift and adjust the load later
d) Ensure that the load is as large as possible

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4.True or False: Lifting equipment should be inspected only once a month, regardless of its use.
5. True or False: Equipment certification ensures that lifting equipment is safe and suitable for the task.
6. All lifting equipment, including slings and cranes, must be _____ before use to ensure they are operational and safe.
7. Lifting equipment should be tested for its _____ capacity to ensure it can safely handle the load.

6.3. Unit 6.2: Execute Lifting and Rigging Operations Safely

6.3.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to operate lifting devices within their specified limits
- To understand how to effective communication using appropriate hand signals and tools
- To understand how to coordinate with the team during lifting operations
- To understand how to monitor load stability and prevent hazards by continuously observing the load during the operation.

6.3.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

6.3.3. Ask

- Describe about how to operate lifting devices within their specified limits
- Describe about how to effective communication using appropriate hand signals and tools
- Describe about how to coordinate with the team during lifting operations
- Describe about how to monitor load stability and prevent hazards by continuously observing the load during the operation.

6.3.4. Explain

- Describe about how to operate lifting devices within their specified limits
- Describe about how to effective communication using appropriate hand signals and tools
- Describe about how to coordinate with the team during lifting operations
- Describe about how to monitor load stability and prevent hazards by continuously observing the load during the operation.

6.3.5. Activity

A group is tasked with lifting a pallet of construction materials weighing 1,000 kg using a crane.
The load needs to be raised to a specific height, moved a short distance, and then lowered onto a platform.
Each group will perform the simulation, following the steps below:
Load Preparation: Team members will simulate checking the load for balance and secure it using a rigging technique (this can be done with a mock load or visuals).
Crane Operation: The crane operator will carefully lift and move the load, making sure not to exceed the crane's weight capacity. The signallers will provide the appropriate hand signals, such as "raise" to lift, "stop" to pause, "lower" to bring the load down, and "hold" to maintain the position.
Load Monitoring: One team member will focus on monitoring the load for stability, ensuring it doesn't sway or tip during movement.
Communication: The team will practice clear, effective communication using the designated hand signals or communication tools (e.g., walkie-talkies).
Throughout the simulation, instructors will observe the team's ability to:
Operate the crane or hoist within its specified limits.
Communicate effectively using hand signals.

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Monitor the load and adjust accordingly to prevent instability or hazards.
After each group completes the simulation, hold a debriefing session where the groups can:

Discuss challenges faced during the simulation.
Reflect on how well they managed load stability and followed communication protocols.
Share tips for improving coordination and load monitoring.
Provide feedback on the correct use of hand signals and monitoring techniques.
Discuss any common mistakes made and how to correct them in real-life scenarios.

6.3.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

6.3.7. Summary

In any lifting operation, it is crucial to ensure the safe and efficient operation of lifting devices, including cranes and hoists. It deals with the significance of operating within specified limits and ensures that the equipment is not overloaded or used beyond its capabilities. This adherence helps prevent accidents and ensures that the operation is carried out safely.
Underlines that a constant watch must be kept throughout the operations by monitoring stability of the load. Operators and members must be vigilant throughout the lift, ensuring good balance and securing it from falling hazards such as tipping, swinging, or falling. Prevention of instability and hazards will, therefore ensure safety of personnel and of the load.
It emphasizes the clear communication of the team. It is essential that hand signals and communication tools be used effectively for coordinating the crane operator's action with other members of the team. This helps ensure that instructions are understood and followed promptly to make the lifting operation smoother and safer.
Together, these performance criteria focus on safe, coordinated, and effective lifting tasks in practice through the proper use of lifting devices, load monitoring, and clear communication among team members.

6.3.8. Exercise

1.What is the primary reason for operating cranes, hoists, and other lifting devices within their specified limits?
a) To improve speed of operation
b) To prevent overloading and ensure safety
c) To minimize fuel consumption
d) To save time during the lift
2.Which of the following is critical to ensure that the lifting device is used within its specified limits?
a) Overloading the equipment to complete the task faster
b) Regular equipment maintenance and checking the weight capacity
c) Ignoring the weight limits and using trial and error
d) Using the lifting device without proper certification
3.True or False: It is acceptable to occasionally exceed the lifting device’s specified limits to complete a task faster.
4.True or False: Each lifting device has a specified load capacity that must not be exceeded during operations to avoid accidents.
5.Effective communication using _____ and hand signals is crucial for coordinating a safe and efficient lifting operation.
6.To signal the crane operator to lower the load, the correct hand signal is _____.

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6.4. Unit 6.3: Identify and Address Hazards

6.4.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to identify and assess hazards during lifting operations
- To understand how to implement corrective actions to ensure safety and stability.
- To understand how to report incidents or near-misses

6.4.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

6.4.3. Ask

- Describe about how to identify and assess hazards during lifting operations
- Describe about how to implement corrective actions to ensure safety and stability
- Describe about how to report incidents or near-misses

6.4.4. Explain

- Describe about how to identify and assess hazards during lifting operations
- Describe about how to implement corrective actions to ensure safety and stability
- Describe about how to report incidents or near-misses

6.4.5. Activity

Divide the class into small groups (3-4 participants per group).

Provide each group with a scenario involving a lifting operation that includes potential hazards. The scenario should feature:

An unstable load or environmental hazard

An opportunity for corrective action (e.g., adjusting the load, stopping the operation, changing environmental conditions)

An incident or near-miss situation to report

Scenario:

A crane is lifting a large beam in windy conditions. The load is shifting, and there is a risk of the crane tipping or the load falling. The operator must identify the hazard, stop the operation, and take corrective action, such as lowering the load or securing it differently.

After the near-miss or hazard is resolved, the team will practice reporting the incident to the supervisor.

Each group will perform the following tasks:

Identify Hazards

Groups will analyse their scenario and identify any hazards that could compromise the safety of the operation, such as:

Load imbalance (e.g., slings not evenly placed)

Environmental risks (e.g., wind, rain, or nearby traffic)

Proximity to other workers or structures

6.4.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

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6.4.7. Summary

In lifting operations, it is crucial to identify hazards that may arise during the task, including potential risks such as load imbalance or environmental factors (e.g., high winds, poor visibility, or wet conditions).It emphasizes the importance of being able to quickly recognize these hazards to prevent accidents or equipment damage.

Once hazards are identified, it highlights the need for immediate corrective actions to mitigate the risks. These actions may include stopping the lift, rebalancing the load, adjusting equipment settings, or ensuring the safety of workers and the surrounding environment. The goal is to eliminate or reduce the potential for harm as quickly as possible.

It stresses the importance of reporting incidents or near-misses to supervisors for further investigation. Timely and accurate reporting allows the team to analyse the situation, implement preventive measures, and continuously improve safety practices to avoid future occurrences. Effective communication and reporting are essential for maintaining a proactive safety culture and ensuring that corrective actions are taken promptly.

Together, these performance criteria focus on maintaining a safe working environment by identifying hazards, taking corrective actions, and reporting incidents to improve safety standards.

6.4.8. Exercise

1.When a load imbalance is identified during a lift, what is the best course of action?

a) Continue with the operation until the load reaches the desired height

b) Immediately stop the operation and reassess the load balance

c) Report the imbalance to the supervisor without stopping the lift

d) Ignore the imbalance if the load is not excessively unstable

2.If a worker is located too close to the lifting operation and is identified as being at risk, what immediate action should be taken?

a) Continue the lift and hope the worker moves on their own

b) Stop the lift and move the worker to a safe area

c) Ignore the risk as it is unlikely to cause harm

d) Proceed with the lift without adjusting

Identify any hazards during the operation, such as load imbalance or environmental risks

3.True or False: Identifying hazards such as load imbalance or environmental risks is a critical first step in preventing accidents during a lifting operation.

4.True or False: Environmental risks like high winds or rain should not be considered hazards if the lift is being conducted indoors.

5.Why is it important to report incidents or near-misses to supervisors?

a) To avoid liability

b) To ensure the supervisor has a record for insurance purposes

c) To help identify potential safety improvements and prevent future incidents

d) To cover up the mistake and avoid responsibility

6.What should be included in an incident report following a near-miss?

a) A description of the hazard, corrective actions taken, and recommended follow-up

b) Only the name of the equipment involved

c) Just a general statement that the situation was resolved

d) An apology for the incident

6.5. Unit 6.4: Ensure Compliance with Safety Standards

6.5.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to monitor team compliance with safety standards and protocols
- To understand how to ensure proper use of PPE by all personnel involved in the operation to reduce the risk of injury.

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- To understand how to conduct post-operation inspections to identify and report any equipment issues.
- To understand how to assess the condition of equipment, identify potential issues, and report findings to ensure continued safety and operational efficiency.

6.5.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

6.5.3. Ask

- Describe about how to monitor team compliance with safety standards and protocols
- Describe about how to ensure proper use of PPE by all personnel involved in the operation to reduce the risk of injury.
- Describe about how to conduct post-operation inspections to identify and report any equipment issues.
- Describe about how to assess the condition of equipment, identify potential issues, and report findings to ensure continued safety and operational efficiency.

6.5.4. Explain

- Describe about how to monitor team compliance with safety standards and protocols
- Describe about how to ensure proper use of PPE by all personnel involved in the operation to reduce the risk of injury.
- Describe about how to conduct post-operation inspections to identify and report any equipment issues.
- Describe about how to assess the condition of equipment, identify potential issues, and report findings to ensure continued safety and operational efficiency.

6.5.5. Activity

Divide the class into small teams (3-4 participants per team).
Assign roles within each team:
One person will act as the safety monitor, responsible for ensuring the team follows all safety protocols and uses PPE correctly.
One person will act as the equipment inspector, tasked with checking equipment for any signs of wear or malfunction after the operation.
The rest of the group will simulate lifting tasks and demonstrate the proper use of PPE and adherence to safety protocols.
Monitoring Safety Compliance and PPE Use
Each team will simulate a lifting operation, either using mock lifting equipment (e.g., ropes, pulleys, or a small crane model) or a video demonstration.
The safety monitor must observe the team throughout the operation to ensure:
All team members are wearing the correct PPE (helmet, gloves, high-visibility vest, etc.).
The team is following safety protocols, such as checking the load, ensuring proper rigging, and maintaining a safe distance from the lifting equipment.
If any PPE is not being used correctly or safety protocols are violated, the safety monitor should intervene and provide corrective instructions.

6.5.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.

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- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

6.5.7. Summary

In lifting operations, it's of paramount importance to maintain high standards of safety and ensure every team member works within the established standards and protocols. It monitors compliance with team members to the safety standards adopted, ensuring that everyone keeps up with the required safety procedures in the operation. This is through proper use of equipment, safe working practices, and alertness in recognizing potential risks.
Personal Protective Equipment. PPE stands out. Every individual at a work station and operating machine wears appropriate personal protective equipment like helmet, gloves, high visibility jacket, and boots to ensure not getting hurt or injured at workplaces. Worn properly, safety shoes or boots can save knees and prevent strain in muscles during activities.

Inspection after the job is done for post-operation inspections to check on the condition of equipment used in the operation. Checking tools and machinery after the job is completed helps identify any wear, damage, or malfunctions. Equipment issues found should be reported to supervisors immediately so that they can be maintained or repaired to avoid future incidents and ensure safe continuation of operations.
In short, these performance criteria signify that, through continuous safety monitoring, proper PPE utilization, and equipment examination, a safe as well as an efficient working environment can be pursued.

6.5.8. Exercise

1.What is the primary responsibility of the safety monitor during a lifting operation?
a) Operate the lifting equipment
b) Ensure that the team follows safety standards and protocols
c) Report to the supervisor about the equipment
d) Focus on the load rather than team compliance
2.What is the primary purpose of Personal Protective Equipment (PPE) during lifting operations?
a) To look professional
b) To prevent injuries from hazards such as falling objects or contact with equipment
c) To increase the weight workers can lift
d) To ensure better visibility for camera
3.It is important to continuously monitor the team's compliance with _____ and protocols to ensure a safe working environment during lifting operations.
4.A key aspect of monitoring safety compliance is ensuring that all workers are following _____ and procedures, such as staying out of the lifting zone.
5.True or False: A safety monitor is responsible for ensuring all lifting operations follow established safety standards and protocols.
6.True or False: Safety protocols can be skipped if the operation is running behind schedule.

7. Unit 7 NOS 6: SSD/N0324 v 1.0 : Inspection, Maintenance, and Certification of Lifting Equipments

7.1. Key Learning Outcomes

At the end of this module, the trainees will be able to

- Conduct pre-operation and scheduled inspections of lifting equipment.
- Perform maintenance activities according to manufacturer guidelines.
- Identify and report defects, malfunctions, and non-compliance.

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- To understand Risk Assessments & Emergency Procedures.
- To understand digital Systems for Inspection and Maintenance & Non-Destructive Testing (NDT) Techniques.
- Ensure certification and testing documentation is valid and up-to-date.
- Coordinate with technicians and operators to ensure proper equipment functionality

7.2. Unit 7.1: Inspect Lifting Equipment for Safety and Performance

7.2.1. Unit Objectives

At the end of this unit, students will be able to:

- To carry out adequate visual inspections so that all lifting components.
- To understand how to conduct pre-use inspections of equipment, including slings, chains, hooks, and cranes
- To check all lifting gears
- To point out any signs of fraying, corrosion, or damage that may compromise safety during lifting operations.
- To understand how to document inspection findings and inform relevant personnel of any issues

7.2.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

7.2.3. Say

- Describe about process of visual inspections
- Describe about how to conduct pre-use inspections of equipment, including slings, chains, hooks, and cranes
- Describe about how to identify defects, wear and tear, or other signs of equipment malfunction
- Describe about how to document inspection findings and inform relevant personnel of any issues

7.2.4. Explain

- Describe about process of visual inspections
- Describe about how to conduct pre-use inspections of equipment, including slings, chains, hooks, and cranes
- Describe about how to identify defects, wear and tear, or other signs of equipment malfunction
- Describe about how to document inspection findings and inform relevant personnel of any issues

7.2.5. Activity

Divide the class into small teams (3-4 participants per team).
Provide equipment for inspection (if possible, using actual or mock lifting equipment like slings, chains, hooks, or crane models; otherwise, use images or videos to simulate the inspection process).

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Assign Roles:
Inspector: Responsible for examining the equipment closely for defects, wear, and damage.
Recorder: Documents the findings, taking note of the equipment condition and any issues discovered.
Reporter: Communicates the findings to the supervisor (instructor) and recommends corrective actions (e.g., equipment maintenance, replacement).
3. Equipment Inspection Simulation (30 minutes)
Each team will inspect their assigned equipment:
Slings and Chains: Check for any visible damage such as cuts, frays, and corrosion.
Hooks: Look for cracks, wear, and ensure the locking mechanism is functional.
Cranes: Inspect the structure, moving parts, and ensure all bolts are secure and the crane operates smoothly.
The inspector will examine the equipment and identify any potential hazards or defects.
The recorder will note each inspection detail, including the type of equipment inspected, any issues found, and the severity of the defects.
The reporter will inform the instructor (acting as a supervisor) about the findings and suggest corrective actions.

7.2.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

7.2.7. Summary

Any lifting operation must be carried out with the safety and reliability of the equipment used. According to there must be pre-use inspection made for all tools involving lifting equipment made up of slings, chains, hooks, and cranes to indicate proper signs of potential hazards or malfunctions that can be found prior to operation.
It aims at seeking defects, wear and tear, or any kind of equipment failure. For instance, it includes checking for frays or cuts in slings, inspecting hooks to ensure that they are free from cracks or deformation, checking the chains for any corrosion, or ensuring cranes work normally without loose or worn parts. These prevent accidents and failures of equipment while lifting.
Underlines the documentation of inspection results and reporting problems found to supervisory personnel, maintenance teams, etc. In this way, any defects are tracked taken care at the right time; cannot cause any safety issues or operational delay.
Hence, conducting inspections before use and recording defects identified as well as documentation of such findings are essential to ensure proper safe and effective lifting operations with the reduction in risk of occurrence of accidents related to lifting, among other concerns.

7.2.8. Exercise

1.Which of the following is NOT part of a pre-use inspection for lifting equipment?
a) Checking for corrosion on chains
b) Ensuring hooks are free of cracks
c) Verifying if lifting slings are properly color-coded
d) Inspecting the crane for loose bolts
2.Which of the following signs could indicate wear and tear on lifting chains?
a) Corrosion or rust
b) Smooth, shiny surface
c) Bright colour

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d) Over-tightening of links
3.True or False: Pre-use inspections should only focus on visual checks for slings and chains, while ignoring other lifting equipment such as cranes and hooks.
4.True or False: A pre-use inspection of lifting equipment helps identify potential issues before an operation begins, minimizing the risk of accidents
5.If a defect is identified in a piece of equipment, it should be _____ and reported to the supervisor for further action.
6.Proper documentation of inspection findings helps track the condition of the equipment and ensures that _____ are promptly addressed.

7.3. Unit 7.2: Perform Routine Maintenance and Repairs

7.3.1. Unit Objectives

At the end of this unit, students will be able to:

- To perform routine and preventive maintenance tasks to ensure the crane operates at peak efficiency and within the recommended safety standards.
- To understand how to detect and diagnose minor faults in crane systems,
- To able to perform basic repairs
- To collaborate effectively with maintenance teams for more significant repairs and replacements.

7.3.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

7.3.3. Say

- Describe about routine and preventive maintenance
- Describe about how to detect and diagnose minor faults in crane systems
- Describe about how to perform basic repairs

7.3.4. Explain

- Describe about routine and preventive maintenance
- Describe about how to detect and diagnose minor faults in crane systems
- Describe about how to perform basic repairs

7.3.5. Activity

Divide participants into small groups (3-4 people per group).
Assign each group one of the following tasks:
Group 1: Perform scheduled maintenance on lifting equipment (checking fluid levels, greasing parts, checking bolts and connectors, etc.).
Group 2: Identify and carry out minor repairs (replacing worn-out slings, adjusting hook positions, fixing loose bolts, etc.).
Group 3: Prepare a report for coordination with specialized technicians (e.g., diagnosing a hydraulic problem, electrical fault, or crane malfunction).

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Group 1 – Scheduled Maintenance:
Use mock lifting equipment or visual aids to demonstrate checking hydraulic fluid levels, greasing moving parts, inspecting cables or chains for wear, and ensuring that bolts and safety locks are securely fastened.
Participants should refer to a sample manufacturer's maintenance manual to follow a checklist of required tasks and ensure they are following correct procedures.
Group 2 – Minor Repairs and Adjustments:
Provide tools (or mock tools) for minor repairs such as tightening bolts, adjusting hooks, or replacing a damaged sling.
Participants will perform the repairs, ensuring safety protocols are followed and that the repairs maintain the integrity of the equipment.
Group 3 – Coordinating with Technicians:
Present a case scenario in which a complex issue (e.g., a malfunctioning hydraulic system, electrical failure, or structural damage) has been identified during the inspection.
Participants must prepare a report outlining the problem, its potential impact on operation, and a recommendation for involving a specialized technician for repair.
Use a mock report template to guide their documentation.
Group 1 Presentation: Share the maintenance activities performed and how they ensured the equipment was ready for safe use. Discuss any issues encountered.
Group 2 Presentation: Explain the minor repairs completed, why they were necessary, and how they ensure the safe operation of the equipment.
Group 3 Presentation: Present the case report on the complex issue identified and the steps to coordinate with specialized technicians for further action. Discuss the process of communicating effectively with technicians and supervisors.

7.3.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

7.3.7. Summary

Regular inspection and maintenance services are very necessary to ensure safety and efficiency during lifting operations with equipment. According to it scheduled maintenance should be executed according to manufacturer's guidelines and includes routine inspection and activities that include lubricating moving parts of the equipment and checking safety equipment, ensuring safety systems, etc. In following these guidelines, operators can achieve longer life expectancy for the equipment and avoid abrupt breakdowns.
It represents the ability to make minor repairs and adjustments in order to ensure that the equipment is safe and operational. This could include tightening bolts, adjusting hooks, replacing worn slings, or fixing loose connections. The sooner such tasks are completed, the better, as it avoids bigger problems and maintains safety standards during operations.
Emphasizes that sometimes it is necessary to coordinate the work of more specialized technicians to do the kind of repairs needed. For example, in a failure discovered with the hydraulic system, electrical component failure, or damage to the structural integrity, the repair will have to involve people with skills and equipment specifically related to these areas.
In essence, routine maintenance, minor repairs that are managed and major repairs handled by technicians, will ensure that lifting equipment is safe and reliable and performing optimally. While

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adequate attention to the above areas can minimize downtime, lowers risk, and generally makes lifting operations safer.

7.3.8. Exercise

1.What is the primary purpose of carrying out scheduled maintenance on lifting equipment?
a) To make repairs when equipment is already broken
b) To ensure the equipment operates efficiently and safely by following the manufacturer's guidelines
c) To clean the equipment for aesthetic purposes
d) To replace all equipment after a certain period
2.Which of the following is an example of a minor repair that can be performed on lifting equipment?
a) Replacing the hydraulic system of a crane
b) Replacing a worn-out sling or adjusting a hook
c) Repairing the electrical wiring of the crane
d) Replacing the entire lifting mechanism
3.True or False: Scheduled maintenance should only be performed when the equipment has already broken down.
4.True or False: Manufacturer's guidelines for maintenance include regular checks for wear, lubrication, and safety system inspections.
5.Minor repairs such as adjusting a hook or replacing a damaged sling help to ensure _____ of lifting equipment during operation.
6.If a bolt is loose or a sling is frayed, it is important to _____ the issue immediately to avoid equipment failure.

7.4. Unit 7.3. Ensure Compliance with Certification Standards

7.4.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand and apply national and international safety standards, including OSHA and LOLER
- To be able to verify that all equipment is certified and complies with national and international standards (e.g., LOLER, OSHA).
- To understand how to maintain records of equipment certifications and inspection reports.
- Understand how to report non-compliance issues to management for corrective action

7.4.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

7.4.3. Ask

- Describe about national and international safety standards, including OSHA and LOLER
- Describe how to verify that all equipment is certified and complies with national and international standards (e.g., LOLER, OSHA).
- Describe process to maintain records of equipment certifications and inspection reports
- Describe how to report non-compliance issues to management for corrective action

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7.4.4. Explain

- Describe about national and international safety standards, including OSHA and LOLER
- Describe how to verify that all equipment is certified and complies with national and international standards (e.g., LOLER, OSHA).
- Describe process to maintain records of equipment certifications and inspection reports
- Describe how to report non-compliance issues to management for corrective action

7.4.5. Activity

Divide participants into small groups (3-4 participants per group).
Assign each group one of the following tasks:
Group 1: Verify if the lifting equipment complies with national/international standards (e.g., checking a mock certificate).
Group 2: Maintain and organize certification records and inspection reports (e.g., creating a sample log or checklist).
Group 3: Identify non-compliance issues and prepare a report to management for corrective action.
3. Compliance Verification Simulation (20 minutes)
Group 1 – Verify Equipment Certification:
Provide mock equipment and certification documents (real or simulated) for inspection.
Groups will check the validity and compliance of the equipment certificates (e.g., are they up-to-date, do they meet LOLER/OSHA requirements, and are the certifications correctly documented?).
They will also verify the equipment's compliance with specific safety standards outlined in the documents.
Group 2 – Record Maintenance:
Provide sample certification records and inspection reports (or templates) for the groups.
They will organize and maintain the records, ensuring they are clear, up-to-date, and easy to access. This includes checking the frequency of inspections and ensuring that all necessary documentation is present.
Groups should also ensure that records are properly logged (e.g., equipment identification, date of certification, inspector name, next inspection due, etc.).
Group 3 – Non-Compliance Reporting:
Present a non-compliance scenario (e.g., missing or expired certification, unregistered inspections, or expired safety checks).
Participants will prepare a written report addressing the non-compliance issue, outlining the corrective actions needed, and explaining how to prevent such issues in the future.
Discuss how the report should be structured for effective communication with management, including clear recommendations and steps for follow-up.
4. Group Presentations (15 minutes)
Each group will present their findings:
Group 1: Present the verification of certification and any discrepancies or issues they found.
Group 2: Demonstrate how they organized records and highlight the importance of maintaining complete and accurate documentation.
Group 3: Share their non-compliance report, explain the identified issues, and describe the steps taken to address them.
Provide feedback on the effectiveness of each group's work and discuss best practices for compliance.

7.4.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.

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- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

7.4.7. Summary

It is through adherence to the certification standards that the safety, functionality, and legal position of lifting equipment in any operation is upheld. It emphasizes the need to check the certification of all lifting equipment before use and against national and international standards, among them LOLER (Lifting Operations and Lifting Equipment Regulations) and OSHA (Occupational Safety and Health Administration). Ensuring the equipment meets all these standards ensures it is checked regularly, tested and maintained in accordance to every safety requirement to reduce accidents and improve its efficiency in the operations.

It provides emphasis on documentation of equipment certification and inspection records. This entails the maintenance of a detailed record of dates for inspections, certification renewal, and any maintenance work performed. Such documentation ensures ease of verification for compliance during audit purposes and communicates all stakeholders of the status of equipment.

Lastly, it emphasizes the responsibility of identification and reporting nonconformity to management. Whenever equipment fails to meet the necessary standards or certification is expiring, it should be documented and presented to management. Corrective actions then will follow in the form of either repairment or removing it from service unless it meets the necessary minimum safety standards.

7.4.8. Exercise

1.Which of the following regulations is a key certification standard for lifting equipment?

a) ISO 9001

b) OSHA

c) ANSI

d) ASTM

2.What is the most important reason for maintaining records of equipment certifications and inspections?

a) To have a record of equipment purchase date

b) To verify compliance during audits and inspections

c) To track the manufacturer's warranty period

d) To keep a log of equipment operators

3.What should be done when a non-compliance issue is identified with equipment certification?

a) Ignore the issue as long as the equipment still works

b) Report the issue to management for immediate corrective action

c) Continue to use the equipment and report the issue later

d) Replace the equipment without reporting the issue

4.True or False: It is important to verify that lifting equipment complies with relevant national and international standards, such as LOLER and OSHA, to ensure safety.

5.True or False: Equipment certification is only necessary if the equipment is new or has just been purchased.

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6.Equipment certification ensures that the equipment meets the necessary _____ standards for safety and performance.

7. Certification records should include details like the equipment's _____ and the date of the last inspection or certification

7.5. Unit 7.4. Maintain Inspection and Maintenance Records

7.5.1. Unit Objectives

At the end of this unit, students will be able to:

- To accurately identify and document defects, faults, or non-compliance issues in crane equipment.
- To use appropriate documentation tools and formats to record issues
- To understand how to ensure records are up-to-date and easily accessible for audits and certifications.
- To understand how to prepare reports on equipment status and recommend actions to management

7.5.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

7.5.3. Ask

- Describe about how to identify and document defects, faults, or non-compliance issues in crane equipment
- Describe how to use appropriate documentation tools for recording issues
- Describe process how to ensure records are up-to-date and easily accessible for audits and certifications
- Describe how to prepare reports on equipment status and recommend actions to management

7.5.4. Explain

- Describe about how to identify and document defects, faults, or non-compliance issues in crane equipment
- Describe how to use appropriate documentation tools for recording issues
- Describe process how to ensure records are up-to-date and easily accessible for audits and certifications
- Describe how to prepare reports on equipment status and recommend actions to management

7.5.5. Activity

Divide the participants into small groups (3-4 participants per group).

Assign each group one of the following tasks:

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Group 1: Organize a set of mock inspection and maintenance records, ensuring they are complete and up-to-date.

Group 2: Identify any gaps or missing information in a set of records and update them accordingly.

Group 3: Prepare a report based on the records, detailing the equipment's status and making recommendations for management (e.g., repairs, replacements, or safety improvements).

Group 1 – Organizing Records:

Provide mock inspection reports, maintenance logs, and repair records.

The group will organize the records into a cohesive and structured format, ensuring that they are easy to follow and complete.

They will check that all essential information is included, such as equipment identification, inspection dates, actions taken, and next scheduled inspection or maintenance.

Group 2 – Updating Records:

Present a set of incomplete or outdated records (e.g., missing inspection dates, incomplete repair information, or outdated status).

The group will review the records and update them based on provided fictional scenarios (e.g., an equipment breakdown, a recent repair, or an overdue inspection).

They will add any missing details and ensure the records are consistent and up-to-date.

Group 3 – Report Preparation:

Provide sample records with information on equipment status (e.g., past inspections, recent repairs, maintenance schedules).

The group will prepare a management report summarizing the current status of the equipment, highlighting any issues (e.g., recurring faults, overdue inspections), and recommending corrective actions (e.g., repairs, re-certification, or replacement).

The report should include suggestions for improving equipment performance or safety based on the findings.

Each group will present their findings:

Group 1: Demonstrate how they organized the inspection and maintenance records for clarity and completeness.

Group 2: Show how they updated the records and explain the changes they made based on the provided scenarios.

Group 3: Present the management report, including their analysis of the equipment status and recommended actions.

7.5.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions.

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7.5.7. Summary

Maintenance and inspection records are essential to ensure safety, performance, and compliance with lifting equipment. It states that all inspections, repairs, and maintenance activities must be documented in detailed records. The records form a documented history of the condition of the equipment, and any potential issues are identified and addressed proactively.

It states, "Records to be kept as up-to-date and readily available as possible: Audits, certification, inspections by regulatory bodies will be carried out more readily if records are current and legible." If the records of a firm or company are correctly maintained, proof of safety requirements and regulatory adherence can be exhibited.

It deals with the reporting of the status of equipment as prepared from recorded inspections and maintenance activities. Reports are important to management because they indicate the status of the equipment, identify routine problems, and recommend further action, such as repairs, replacements, or enhanced safety measures.

It means record maintenance is key for a complete and effective inspection and maintenance procedure, which gives and helps to ensure the three elements of the compliance process: safety audit support, right equipment management, and maintenance strategies.

7.5.8. Exercise

1. What type of information should be included in an equipment inspection record?

a) The equipment’s purchase price

b) The equipment's serial number, inspection date, and any repairs or maintenance done

c) The equipment's previous owner

d) The equipment’s market value

2.Why is it important for maintenance records to be up-to-date and easily accessible?

a) To ensure compliance with safety and regulatory standards during audits and certifications

b) To calculate the depreciation of equipment

c) To track the financial expenditure on equipment

d) To determine the age of the equipment

3.What should be included in a report about equipment status?

a) Only the equipment’s purchase date

b) A summary of maintenance and repair history, equipment condition, and recommended actions

c) The personal details of the equipment operator

d) A list of equipment suppliers

4.True or False: Keeping equipment maintenance and inspection records up-to-date is important for compliance with regulations and ensuring safety during audits.

5.True or False: Once equipment maintenance records are created, there is no need to update them unless an issue arises.

6.For effective audits and certifications, it is essential that maintenance records are _____ and organized in a way that they can be easily accessed when needed.

7.Maintaining records in a _____ format ensures that they are easily accessible for future audits and inspections.

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8. Unit 8 NOS 7 : SSD/N0325 v 1.0 : Plan, Organise, Communication & Emergency Protocols in Lifting & Rigging

8.1. Key Learning Outcomes

At the end of this module, the trainees will be able to:

- Understanding types of Emergencies
- Understanding levels of Emergency Management
- Understanding roles and responsibilities: Emergency Responders; Contingency Planners; Incident Commanders; Crisis Communication Specialists; Business Continuity Planners; and Health and Safety Officers
- Understanding about Risk Assessment and Analysis; Crisis Management; Communication Skills; Resource Coordination and Logistics, Legal and Ethical Awareness; and Post-incident Analysis and Continuous Improvement
- Understanding about Regulatory and Policy Frameworks: National Disaster Management Policies; International Guidelines; Industry-Specific Regulations

8.2. Unit 8.1. Develop and Implement Emergency Response Plans

8.2.1. Unit Objectives

At the end of this unit, students will be able to:

- To prepare an all-inclusive emergency response plan in conformity with organizational policies
- To explain the roles and responsibilities of those involved in emergencies
- To ensure that critical emergency equipment such as alarms, fire extinguishers, and rescue kits are available and in good working order.
- To establish adequate measures for emergency preparedness, improve teamwork during emergencies, and ensure equipment is prepared and ready to respond efficiently in case of an emergency.

8.2.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

8.2.3. Ask

- Describe about emergency response plan
- Describe about roles and responsibilities of those involved in emergencies
- Describe about critical emergency equipment such as alarms, fire extinguishers, and rescue kits

8.2.4. Explain

- Describe about emergency response plan
- Describe about roles and responsibilities of those involved in emergencies
- Describe about critical emergency equipment such as alarms, fire extinguishers, and rescue kits

8.2.5. Activity

Divide the class into small groups (4-5 participants per group). Assign each group a specific emergency scenario (e.g., fire, hazardous chemical spill, medical emergency). Each group will:

Develop a detailed emergency response plan for their assigned scenario. The plan should align with organizational policies and include key components such as:

Procedures for alerting and evacuating personnel

Communication strategies

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Specific actions to be taken

Identification of key emergency contacts

Present their plan to the class, explaining how it aligns with organizational policies and why it is effective for the scenario.

8.2.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

8.2.7. Summary

Prepare Detailed Emergency Response Plans Aligned with Organizational Policies

The importance is given to establishing all-around comprehensive emergency response plans, keeping within the policy and procedures already determined for the organization. Learners will learn to establish clear and effective, step-by-step responses for all possible kinds of emergencies-emergency responses on fire, medical, and disaster scenarios-including communication lines and evacuation schemes along with the contact for outside help, all put in a system to enable speed and effectiveness at every level during any event of this kind.

Define Team Member Roles and Responsibilities During Emergency Situations

This requirement shows the necessity of role definition and responsibilities during an emergency. Who does what—coordinating evacuation, first aid, or emergency service call—is clarified to avoid confusion and delay when responding to emergencies. This activity involves the designation of specific roles, establishment of a chain of command, and ensuring everyone is trained and ready for their task, thereby strengthening teamwork and effectiveness in crisis response.

Provide Access to Available and Functional Emergency Equipment

This criterion emphasizes the need to ensure that all emergency equipment, including alarms, fire extinguishers, rescue kits, and first aid supplies, are available and in good working condition. Checks, maintenance, and replacement of equipment are necessary to ensure that they work effectively when needed. This also involves ensuring that all team members know the location and proper use of emergency equipment, making sure that it is accessible and fully functional in an emergency.

8.2.8. Exercise

1.What is the primary purpose of preparing a detailed emergency response plan?

a) To comply with legal requirements

b) To ensure everyone knows how to react during an emergency

c) To reduce costs associated with emergencies

d) To create paperwork for insurance purposes

2.Which of the following should be included in an emergency response plan?

a) Procedures for employee evaluations

b) Communication protocols during an emergency

c) Financial records

d) Employee performance reviews

3.Emergency response plans should be regularly reviewed and updated to align with organizational policies and changes.(T/F)

4.The roles and responsibilities of team members during an emergency should be flexible and undefined to allow for improvisation.(T/F)

5.An emergency response plan should be aligned with _____ policies to ensure that the organization's procedures and protocols are followed.

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6.During an emergency, it is crucial that every team member knows their specific _____ and tasks to ensure an organized response.

8.3. Conduct Risk Assessments and Drills

8.3.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand risk assessment should be performed to identify vulnerabilities in lifting operations and analyse those vulnerabilities
- To understand how to conduct safety drills that simulate an emergency.
- To understand how to review the results of the drills and risk assessments and update emergency response plans

8.3.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

8.3.3. Ask

- Describe about risk assessment and to identify vulnerabilities in lifting operations
- Describe about how to conduct safety drills that simulate an emergency
- Describe how to review the results of the drills and risk assessments and update emergency response plans

8.3.4. Explain

- Describe about risk assessment and to identify vulnerabilities in lifting operations
- Describe about how to conduct safety drills that simulate an emergency
- Describe how to review the results of the drills and risk assessments and update emergency response plans

8.3.5. Activity

Divide the class into small groups (4-5 participants per group).
Provide each group with a scenario related to lifting operations (e.g., using a crane to lift heavy materials, a forklift operation in a crowded warehouse).
Each group must perform a risk assessment on the given scenario by identifying potential hazards, evaluating the risks, and suggesting safety measures or controls.
Have each group present their findings to the class, explaining the risks and the mitigation strategies they would implement.
In the same groups, students will organize a safety drill based on the risks identified in their assessment. They should outline the emergency procedures, key roles of participants, and the steps taken to simulate the emergency (e.g., lifting equipment malfunction or load dropping).
Have each group develop a brief safety drill checklist that outlines the procedures and responsibilities during the drill.

8.3.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

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8.3.7. Summary

Risk Assessments: Risk assessments are a starting point in ensuring a safe lifting operation. It helps identify the vulnerabilities of an organization, which can be equipment failures, erroneous operating, environmental relatedness, or poor safety measures. Knowing these risks beforehand helps systems prevent such measures before accidents happen.

Safety Drills: The organization and performance of safety drills allow the personnel to prepare for the response to emergency situations in a controlled environment. The drills are basically simulations of real-life emergency situations, such as a lifting failure, load drop, or equipment malfunction, where workers will be prepared to respond quickly and effectively in high-pressure situations. It also allows the testing of effectiveness of emergency procedures, communication, and coordination among the team.

Evaluation and Update Plans: Safety drills must be evaluated after they are conducted. This will include assessing the outcome of the drill, such as checking vulnerabilities in the response, and extracting participants' perceptions of the incident. Informed conclusions made from such information are used as the basis for updating emergency response plans. Most importantly, regular updates maintain a good level of preparedness that truly ensures actual emergency procedures would stand valid and workable.

8.3.8. Exercise

1.What is the primary purpose of conducting regular risk assessments in lifting operations?

a) To increase production rates

b) To identify and mitigate potential hazards

c) To train workers on lifting techniques

d) To reduce operational costs

2.After conducting a safety drill, what should be the next step?

a) Ignore the feedback and continue as usual

b) Evaluate the outcomes and update emergency plans accordingly

c) Increase the frequency of lifting operations

d) Reassign workers to different tasks

4.True or False: Organizing safety drills is only necessary after an accident occurs.

5.True or False: Evaluating the outcomes of safety drills helps identify gaps in the emergency procedures and allows for updates to improve future responses.

6.During a safety drill, it is important to _____ emergency scenarios to assess the preparedness of personnel in lifting operations.

7.After conducting a safety drill, it is necessary to _____ the outcomes to identify areas for improvement in the emergency response plan.

8.4. Coordinate with Emergency Services

8.4.1. Unit Objectives

At the end of this unit, students will be able to:

- To coordinate emergency protocols and team actions effectively by working along with the crane operators, riggers, and supervisors
- To ensure that the emergency procedures are executed without a hitch.
- To understand clear lines of communication and designated emergency leaders will enhance coordination during crises.
- To ensure that emergency equipment (e.g., fire extinguishers, first aid kits) is accessible and functional

8.4.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.

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- Activities (role plays)

8.4.3. Ask

- Describe about emergency protocols
- Describe about process of clear lines of communication of emergency
- Describe how to monitor and check compliance with emergency procedures
- Describe about how to ensure that emergency equipment (e.g., fire extinguishers, first aid kits) is accessible and functional

8.4.4. Explain

- Describe about emergency protocols
- Describe about process of clear lines of communication of emergency
- Describe how to monitor and check compliance with emergency procedures
- Describe about how to ensure that emergency equipment (e.g., fire extinguishers, first aid kits) is accessible and functional

8.4.5. Activity

Divide the class into small groups (4-5 participants per group). Assign each group a different emergency scenario related to lifting operations (e.g., crane malfunction, load slippage, worker injury during a lift).

Each group will:

Designate roles: crane operator, rigger, Lifting and Rigging supervisor, and emergency leader.

Develop an action plan to respond to the emergency, including the coordination of all roles.

Execute the scenario through role play, ensuring that communication flows smoothly and each role is clearly defined. The supervisor should provide instructions, the crane operator should adjust operations, and the rigger should manage the load while the emergency leader oversees the protocol execution.

After completing the role play, each group will present their actions and explain how they coordinated the emergency protocol with the team.

8.4.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

8.4.7. Summary

Effective communication and coordination during an emergency are the keys to the safety of personnel and the prevention of damage or injury. It emphasizes that clear communication must be established with emergency services, such as fire brigades, medical teams, or rescue personnel. This will ensure that the external emergency responders are informed and ready to take immediate action when necessary.
It defines coordination with site personnel in regard to evacuation and other emergency action. Internal coordination with emergency preparedness would also help support the exiting staff on safety and diminish panic while the site is working according to set emergency procedures.
This PC affirms that all emergency equipment should be accessible and serviceable. Checking of emergency equipment in terms of maintaining fire extinguishers and first aid kits requires regular check-up and maintenance that would provide ready action during the emergency. Minimizing risks and giving a helping hand on how to effectively manage the emergency until professional helpers arrive will have to be facilitated by this essential equipment in working condition.

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8.4.8. Exercise

1. Why is it important to establish clear communication with emergency services during an emergency?
a) To ensure that personnel can resume work as soon as possible
b) To inform external responders and ensure a coordinated and effective response
c) To delay emergency services until the situation is under control
d) To avoid legal complications
2. When managing an evacuation, what is the most important factor to coordinate with site personnel?
a) Ensuring that all equipment is turned off
b) Making sure that all personnel are aware of their designated evacuation routes and assembly points
c) Checking inventory levels of emergency supplies
d) Giving out bonuses for quick evacuations
3.True or False: Clear communication with emergency services is only necessary for major accidents and is not required for smaller incidents.
4.True or False: Providing precise information to emergency services can significantly improve the response time and effectiveness during an emergency.
5.Emergency communication should be made as soon as the emergency is identified to ensure a _____ response from external services.
6.Site personnel should be trained in emergency protocols, including _____ evacuation routes and roles during an emergency.

8.5. Document and Report Incidents

8.5.1. Unit Objectives

At the end of this unit, students will be able to:

- To coordinate emergency protocols and team actions effectively by working along with the crane operators, riggers, and supervisors
- To ensure that the emergency procedures are executed without a hitch.
- To understand clear lines of communication and designated emergency leaders will enhance coordination during crises.
- To ensure that emergency equipment (e.g., fire extinguishers, first aid kits) is accessible and functional

8.5.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

8.5.3. Ask

- Describe about emergency protocols
- Describe about process of clear lines of communication of emergency
- Describe how to monitor and check compliance with emergency procedures
- Describe about how to ensure that emergency equipment (e.g., fire extinguishers, first aid kits) is accessible and functional

8.5.4. Explain

- Describe about emergency protocols
- Describe about process of clear lines of communication of emergency
- Describe how to monitor and check compliance with emergency procedures

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- Describe about how to ensure that emergency equipment (e.g., fire extinguishers, first aid kits) is accessible and functional

8.5.5. Activity

Divide the class into small groups (4-5 participants per group). Assign each group a different emergency scenario related to lifting operations (e.g., crane malfunction, load slippage, worker injury during a lift).

Each group will:

Designate roles: crane operator, rigger, Lifting and Rigging supervisor, and emergency leader.

Develop an action plan to respond to the emergency, including the coordination of all roles.

Execute the scenario through role play, ensuring that communication flows smoothly and each role is clearly defined. The supervisor should provide instructions, the crane operator should adjust operations, and the rigger should manage the load while the emergency leader oversees the protocol execution.

After completing the role play, each group will present their actions and explain how they coordinated the emergency protocol with the team.

8.5.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

8.5.7. Summary

Effective communication and coordination during an emergency are the keys to the safety of personnel and the prevention of damage or injury. It emphasizes that clear communication must be established with emergency services, such as fire brigades, medical teams, or rescue personnel. This will ensure that the external emergency responders are informed and ready to take immediate action when necessary.
It defines coordination with site personnel in regard to evacuation and other emergency action. Internal coordination with emergency preparedness would also help support the exiting staff on safety and diminish panic while the site is working according to set emergency procedures.
This PC affirms that all emergency equipment should be accessible and serviceable. Checking of emergency equipment in terms of maintaining fire extinguishers and first aid kits requires regular check-up and maintenance that would provide ready action during the emergency. Minimizing risks and giving a helping hand on how to effectively manage the emergency until professional helpers arrive will have to be facilitated by this essential equipment in working condition.

8.5.8. Exercise

1.What is the primary purpose of maintaining records of emergency drills and response evaluations?
a) To reduce the number of drills conducted
b) To track worker performance in lifting operations
c) To monitor preparedness levels and identify areas for improvement
d) To reduce the cost of lifting operations
2.Which of the following is essential when documenting incidents or accidents?
a) Only include the information that favours the company
b) Document the incident in detail and report it to the relevant authorities
c) Do not record any safety drills
d) Ensure that the documentation is kept secret
3.True or False: All incidents and accidents, regardless of their severity, must be reported to the relevant authorities.

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4.True or False: A root-cause analysis is performed to identify the causes of an incident and to develop actions to prevent similar incidents in the future.
5.After an incident occurs, conducting a _____-cause analysis helps identify the underlying factors contributing to the event and implement corrective actions.
6.Maintaining records of emergency drills and response evaluations allows for continuous _____ in safety protocols and helps identify areas for improvement.

8.6. Train Personnel in Emergency Response

8.6.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to conduct trainings that are based on emergency procedures
- To understand worker's roles and responsibilities when an emergency arises to provide effective communication and decision-making for the team
- To understand how to do teamwork and coordination of all the team members in terms of the overall efficiency to be able to respond to emergency situations and to avoid risks.

8.6.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

8.6.3. Ask

- Describe about how to conduct trainings that are based on emergency procedures
- Describe about worker's roles and responsibilities during emergency
- Describe about how do teamwork and coordination of all the team members in terms of the overall efficiency to be able to respond to emergency situations and to avoid risks

8.6.4. Explain

- Describe about how to conduct trainings that are based on emergency procedures
- Describe about worker's roles and responsibilities during emergency
- Describe about how do teamwork and coordination of all the team members in terms of the overall efficiency to be able to respond to emergency situations and to avoid risks

8.6.5. Activity

Divide the class into small groups (4-5 participants per group).
Assign each group a specific emergency scenario (e.g., fire, medical emergency, lifting equipment malfunction).
Assign roles within each group, such as emergency responders, first-aid providers, safety officers, or team coordinators. Clearly explain each role and its responsibility during the emergency.
Instruct each group to practice handling the relevant emergency equipment (e.g., fire extinguisher, first aid kit, emergency stop buttons) under supervision.
Demonstrate the proper usage of each piece of equipment, emphasizing safety and correct handling.
Allow participants to practice using the equipment, providing feedback and guidance on their technique and procedures.

8.6.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.

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- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

8.6.7. Summary

Training personnel for emergency response in any workplace would ensure a rapid, effective, and coordinated response to emergencies in the workplace.

Training on emergency protocols and proper use of equipment: Employees should be given proper training on safety procedures, protocols for emergency operations, and equipment handling. In case of a fire, employees can be prepared in handling the right fire extinguisher. They may also be skilled in providing basic first aid services.

A clear definition of specific roles is essential to each worker in the event of an emergency. It may be evacuation, helping the injured, or operating emergency equipment; the existence of clear roles allows for easy and synchronized response. Definition of role ensures that one does not get confused with what to do and also saves time in critical instances.

Teamwork and Coordination: Proper teamwork and coordination are essential for the efficient management of emergencies. Employees should be trained to communicate clearly, collaborate under pressure, and support each other to complete tasks quickly and effectively. Properly coordinated teams can minimize risk, prevent further harm, and ensure that the emergency response is successful.

8.6.8. Exercise

1.Why is it important to provide training on emergency protocols and equipment handling?

a) To increase productivity in non-emergency situations

b) To ensure workers can respond effectively to emergencies and use equipment safely

c) To reduce the need for emergency drills

d) To promote competition among workers

2.Which of the following is essential for handling emergencies efficiently?

a) Individual action without consulting others

b) Teamwork and coordination among all workers

c) Delaying action to assess the situation more

d) Avoiding the use of any equipment

3.True or False: Understanding specific roles during an emergency helps reduce confusion and ensures tasks are carried out efficiently.

4.True or False: Teamwork is only important during non-emergency situations and does not affect how efficiently an emergency is handled

5.The ability to _____ and coordinate actions during an emergency is essential for handling the situation efficiently and ensuring safety.

6.Training sessions help workers become familiar with _____ and response procedures that are critical in an emergency.

9. Unit 9 NOS 8 SSD/N0326 v 1.0 : Health, Hygiene, Environmental, and Psychological Health Protocols (Lifting & Rigging)

9.1. Key Learning Outcomes

At the end of this module, the trainees will be able to:

- Promote personal hygiene, health practices, and PPE usage.
- Ensure compliance with environmental health protocols to reduce hazards.
- Manage psychological health through stress management and work-life balance.
- Identify and mitigate environmental risks (e.g., weather conditions, noise, and pollution).
- To understand address ergonomic risks and promoting safe work practices.
- To comply with occupational health, safety, and environmental standards.

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9.2. Health Protocols

9.2.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to maintain proper body mechanics when performing tasks
- To understand how to designed working stations and equipment ergonomically
- To understand how to educate workers on appropriate workplace practices to reduce the chances of musculoskeletal injuries, combining proper body mechanics with ergonomic equipment and workspace design.

9.2.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

9.2.3. Ask

- Describe about how to maintain proper body mechanics when performing tasks
- Describe about how to designed working stations and equipment ergonomically
- Describe about how to educate workers on appropriate workplace practices to reduce the chances of musculoskeletal injuries, combining proper body mechanics with ergonomic equipment and workspace design.

9.2.4. Explain

- Describe about how to maintain proper body mechanics when performing tasks
- Describe about how to designed working stations and equipment ergonomically
- Describe about how to educate workers on appropriate workplace practices to reduce the chances of musculoskeletal injuries, combining proper body mechanics with ergonomic equipment and workspace design.

9.2.5. Activity

Divide the class into small groups, each tasked with creating a workstation setup using ergonomic principles. Provide items like adjustable chairs, desks, or lifting devices (or use diagrams if actual items aren't available).

Each group will assess the workstation's design for proper height, angle, reach, and other ergonomic factors. For example:

How high should the desk or work surface be for optimal posture?

What should the angle of the chair seat be to reduce strain on the legs and back?

Where should tools be placed to minimize repetitive strain?

Ask each group to make adjustments and present their ideal ergonomic workstation setup to the class, explaining the reasoning behind each change.

9.2.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

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9.2.7. Summary

Health protocols play a significant role in preventing injury and enhancing employee welfare within any workplace. In this regard, they would gain two main bodies regarding body mechanics and the ergonomic design of an office workstation.

Proper Body Mechanics Workers should be taught proper body mechanics, especially when lifting or performing tasks that require physical strain. This involves lifting with the legs and not the back, keeping the back straight, and bending at the knees. Through these principles, workers can easily reduce the risks of musculoskeletal injuries, which are highly prevalent in jobs that require much physical exertion.

Ergonomically designed workstations and equipment: This is also a health protocol worth the ergonomically designed workstation and equipment. It refers to the space design to avoid straining the body, for instance, adjustable desks, ergonomic chairs, and lifting devices that would avoid awkward movements or efforts to derive much physical exertion. Properly designed workplaces will ensure appropriate posture without causing fatigue and can prevent long-term injuries.

9.2.8. Exercise

1.What is the correct body mechanic to use when lifting a heavy object?

a) Lifting with the back

b) Bending at the waist

c) Lifting with the legs while keeping the back straight

d) Twisting the body to lift

2.Why is using correct body mechanics important in the workplace?

a) It improves the speed of work

b) It reduces strain and prevents musculoskeletal injuries

c) It helps workers become more productive

d) It reduces the cost of equipment

3.An ergonomically designed workstation includes tools like _____ lifting devices and adjustable chairs to reduce physical strain.

4.Proper body mechanics involves keeping the _____ straight and bending at the knees when lifting objects.

5.True or False: Lifting with the back instead of the legs can lead to musculoskeletal injuries.

6.True or False: An ergonomically designed workstation has fixed, non-adjustable components.

9.3. Hygiene Protocols

9.3.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to ensure proper use of Personal Protective Equipment
- To understand worker's roles and responsibilities related to hygiene at workplace
- To understand how to promote proper personal hygiene to workers

9.3.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

9.3.3. Ask

- Describe about how to ensure proper use of Personal Protective Equipment
- Describe about worker's roles and responsibilities related to hygiene at workplace
- Describe about how to promote proper personal hygiene to workers

9.3.4. Explain

- Describe about how to ensure proper use of Personal Protective Equipment

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- Describe about worker's roles and responsibilities related to hygiene at workplace
- Describe about how to promote proper personal hygiene to workers

9.3.5. Activity

Demonstrate proper handwashing techniques, including the correct duration (at least 20 seconds), using soap and water, and covering all surfaces of the hands.
Show how to use hand sanitizers properly when handwashing is not possible.
Discuss the importance of cleaning hands before and after handling chemicals, PPE, or any potentially contaminated surfaces.
Encourage students to practice hand sanitizing and demonstrate the correct technique

9.3.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

9.3.7. Summary

Hygiene procedures are important elements in ensuring safe and healthy environments at work place, especially considering the exposure to dangerous substances or chemicals and harmful materials. It is comprised of two essential requirements: proper PPE use and personal hygiene maintenance.
PPE Means the proper use of the Personal Protective Equipment, which is to include gloves, masks, and protective clothing, without which workers come into direct contact with harmful substances. This allows PPE to act as a barrier which reduces the risk exposure to chemicals, toxins, or even infectious material. Properly trained workers should be able to wear, use, and remove PPE to make it effective and prevent contamination.
Personal Hygiene: Personal hygiene is equally essential while handling hazardous material or chemicals. Workers must wash their hands properly; if soap and water are not available, use hand sanitizers and keep their clothes and equipment cleaned so that there would not be the risk of contamination. It reduces illness and injury risks and ensures that the employees do not carry harmful products back into the other areas of the organization.

9.3.8. Exercise

1.Why is it important for workers to maintain good personal hygiene when handling hazardous materials?
a) It improves work performance
b) It helps reduce the risk of contamination and illness
c) It prevents workers from feeling uncomfortable
d) It reduces the need for PPE
2.Which of the following is the correct way to wear gloves when handling hazardous materials?
a) Gloves should be worn only for short periods and removed quickly.
b) Gloves should be put on before entering the work area and removed properly to avoid contamination.
c) Gloves are unnecessary if the hazardous material is in small amounts.
d) Gloves should be worn without checking for any tears or damage.
3.True or False: Personal hygiene, including handwashing and using hand sanitizers, is unnecessary if PPE is worn.
4.True or False: Protective clothing, such as gowns and masks, should be removed in a manner that prevents exposure to contaminants.
5.After handling hazardous materials, workers should practice _____ by washing hands thoroughly or using hand sanitizers to prevent contamination.
6._____ should be properly worn and adjusted to cover the body and face, reducing the risk of exposure to harmful substances.

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9.4. Environmental Protocols

9.4.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to encourage usage of energy saving lifting equipment
- To understand about safe storage and handling of chemicals and hazardous materials
- To understand about sustainable practices and minimization of waste practices

9.4.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

9.4.3. Ask

- Describe about how encourage usage of energy saving lifting equipment
- Describe about safe storage and handling of chemicals and hazardous materials
- Describe about sustainable practices and minimization of waste practices

9.4.4. Explain

- Describe about how encourage usage of energy saving lifting equipment
- Describe about safe storage and handling of chemicals and hazardous materials
- Describe about sustainable practices and minimization of waste practices

9.4.5. Activity

Ask the class to discuss the potential benefits and challenges of using energy-efficient lifting equipment in various industries (e.g., construction, manufacturing, warehouses).
Write key points on the whiteboard, focusing on reducing carbon emissions, saving energy, and lowering operating costs.
Discuss how using energy-efficient equipment fits into a larger environmental strategy within a company or industry.

9.4.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

9.4.7. Summary

Environmental protocols in the workplace help to promote environmental protection and safety. The technologies include minimizing the company's impact on the environment, safe handling of hazardous materials, and using energy-efficient equipment.

The other best way for reducing carbon emission is by providing lifting equipment energy efficiency, particularly promoting electric cranes. It means that instead of using fossil fuel, this method reduces its dependency on such a fuel and hence decreases its hazardous emissions into the atmosphere, while it presents an alternative approach towards heavy lifts more sustainably. Energy efficiency contributes to reduced operating costs as well as efficient operation in the long run.
Safe Handling and Storage of Hazardous Materials: Proper methods of handling and storage of chemicals and hazardous materials ensure no spills, leakage, or contamination. Hazardous substances must be handled carefully with proper conditions of storage, hence in well-ventilated and secure areas, which

include proper abolement on hazardous material storages and additionally safety measures. This decreases the risk of the environment since human health and the surroundings are protected. The workers should also be trained how to use such protective equipment to avoid contamination from spills, along with how they should dispose of wastes.

9.4.8. Exercise

Why is it important to promote energy-efficient lifting equipment in industrial operations?
a) It helps increase the speed of production
b) It contributes to energy savings and environmental sustainability
c) It requires less workforce training
d) It decreases the need for safety protocols
What is the most effective way to prevent spills and leaks when storing hazardous materials?
a) Store chemicals in large open containers for easy access
b) Use secure, well-ventilated storage areas with proper labelling
c) Place chemicals in areas without ventilation
d) Allow hazardous materials to be stored in areas with poor organization
To prevent environmental contamination, chemicals and hazardous materials should be _____ in secure and properly labelled storage areas.
Proper handling of hazardous materials includes wearing the appropriate _____ (e.g., gloves, masks) and using spill containment measures.
Which of the following is a key safety protocol when handling hazardous materials?
a) Storing chemicals in an open area for easy access
b) Using proper protective equipment and following spill containment procedures
c) Ignoring safety labels and working quickly to complete tasks
d) Storing hazardous materials in the same room as food supplies

9.5. Safety Protocols (Cross-cutting)

9.5.1. Unit Objectives

At the end of this unit, students will be able to:

- To understand how to conduct a job safety analysis or risk assessment to identify any hazards and implement all pertinent mitigations during rigging and lifting activity
- To understand how to train and certify all workers on lifting and rigging techniques
- To understand how to communicate safety procedures and emergency response to worker
- To understand how to implement emergency response protocols.

9.5.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

9.5.3. Ask

- Describe about how to conduct a job safety analysis or risk assessment to identify any hazards and implement all pertinent mitigations during rigging and lifting activity
- Describe about how to train and certify all workers on lifting and rigging techniques
- Describe about how to communicate safety procedures and emergency response to worker
- Describe about how to implement emergency response protocols

9.5.4. Explain

- Describe about how to conduct a job safety analysis or risk assessment to identify any hazards and implement all pertinent mitigations during rigging and lifting activity

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- Describe about how to train and certify all workers on lifting and rigging techniques
- Describe about how to communicate safety procedures and emergency response to worker
- Describe about how to implement emergency response protocols

9.5.5. Activity

Divide the students into small groups and give them a risk assessment template or JSA form. Each group should:
Identify the potential hazards involved in the lifting operation.
Discuss and list the necessary control measures to mitigate those hazards (e.g., securing the load, clearing the area of workers, using spotters).
Assess any specific safety equipment required (e.g., PPE, helmets, gloves).
Have each group present their JSA, discussing the hazards identified and their proposed mitigation strategies.

9.5.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

9.5.7. Summary

There should be safety procedures put in place to prevent an accident and, therefore, the well-being of the people working in an organization, particularly for high-risk operations such as lifting. The above cross-cutting safety protocols entail hazard identification, proper training of the employees, and effective measures in case of emergencies.
The prior to each lift, there needs to be an analysis that was either a risk assessment or JSA, it identifies hazards pertinent to the lifting operation in the task. They evaluate risks then implement measures meant to control risks. In assessing risks beforehand helps prevent accidents that may result when lifting is executed.
All workers must be given proper training and certification, involving proper instruction and safety practices about lifting and rigging, especially about lifting safety techniques and response to an accident in a hazardous operation, all for workers being prepared on handling tasks appropriately to minimize chances of getting hurt or failing in machinery.
Additional aspect: Provide for an appropriate emergency response protocol at the workplace so that whatever be the unexpected incident, it is always well prepared to handle it. Protocols should include evacuation plans, immediate access to first aid kits, and controls over spills so that damage to the system can be limited, and response also effective and more quick.

9.5.8. Exercise

1.What is the primary purpose of conducting a Job Safety Analysis (JSA) before each lifting operation?
a) To increase lifting speed
b) To identify and mitigate hazards
c) To train new workers
d) To evaluate the cost of lifting equipment
2.Which of the following is NOT a requirement for lifting and rigging safety protocols?
a) Workers must be properly trained and certified
b) Only one person needs to be certified for lifting operations
c) Workers should follow safety procedures during operations
d) Workers should know emergency response protocols
3.All workers involved in lifting operations must be properly trained and certified in lifting, rigging techniques, and safety procedures.(T/F)

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4.Emergency response protocols for lifting operations should include only evacuation plans and no access to first aid kits.(T/F)
5.Workers involved in lifting and rigging operations must be _____ in lifting techniques, safety procedures, and emergency response.
6.Emergency response protocols must include _____ plans, access to first aid kits, and spill control equipment to ensure quick and effective action during an emergency.

10. Unit 10 NOS 9: Employability Skills (DGT/VSQ/N0102)

10.1. Key Learning Outcomes

- Introduction to Employability Skills Constitutional values - Citizenship
- Becoming a Professional in the 21st Century Basic English Skills
- Career Development & Goal Setting Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy Essential Digital Skills
- Entrepreneurship Customer Service
- Getting ready for Apprenticeship & Jobs

10.2. Unit 12.1: Preparing for Employment & Self Employment

10.2.1. Unit Objectives

At the end of this unit, students will be able to

1. Develop Job Readiness Skills
2. Create Effective Job Search Strategies
3. Prepare for job interviews and networking opportunities
4. Identify potential self-employment ideas and business opportunities
5. Understand Employment Rights and Responsibilities
6. Enhance Personal Branding
7. Develop Financial and Organizational Skills

10.2.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

10.2.3. Say

Tell the participants that when an interviewer asks you to say something about yourself, he/she is not asking you to present your life history.
• Introduction should be short and crisp, and should present you in a positive light. It should include the following points:
o Any work experience that you might have
o A brief summary of your educational qualifications
o Your strengths and achievements
o Any special projects that you might have been part of
• The following topics should be avoided during an introduction:
o Detailed description of your family (unless you are specifically asked to do so)
o Too much information about your weaknesses
o Information that is not true

10.2.4. Do

- Congratulate each participant for making their first attempt towards creating an effective resume.

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- As a follow up activity, you can suggest them to prepare their own resume and show it to you the next day.

10.2.5. Role Play

Conduct a role play for the situation given.

Role Play –

• The interviewer will start by asking the interviewee a few generic questions such as:

o What is your name?

o Tell me something about yourself?

o Can you tell me something about your family?

• Then, at the end of the interview, ask the interviewee:

o There are over 200 people who have applied for this job, some with excellent work experience.

Why should I hire you?

10.2.6. Notes for Facilitation

Summarize the important points and terms explained in the session.

- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

10.2.7. Summary

Job Readiness:

Develop skills for seeking and securing employment or starting a business.

Job Search Tools:

Create a professional resume, cover letter, and online presence.

Prepare for job interviews and networking.

Self-Employment:

Identify and explore potential self-employment or business ideas.

Understand the basics of starting and managing a small business.

Workplace Rights

Learn about employment laws, rights, and responsibilities.

Personal Branding:

Build a strong personal brand for career or business growth.

Financial Planning:

Develop essential financial and organizational skills for employment or entrepreneurship.

10.2.8. Exercise

1.What is the first step in preparing for employment?

A) Writing a resignation letter

B) Creating a resume

C) Opening a business

D) Networking with friend

2.Which of the following is NOT typically required for self-employment?

A) A business plan

B) An employer to answer to

C) Financial management skills

D) Marketing and sales strategies

3.What should be included in a self-employment business plan?

A) The business idea and goals

B) A list of personal contacts

C) A resume

D) A job offer letter

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4.True or False: In self-employment, you are responsible for your own business operations, including financial management and legal compliance.
5.True or False: Having relevant qualifications and work experience is the only factor to consider when preparing for employment.
6.True or False: Personal branding is important for both self-employment and traditional employment opportunities.

10.3. Unit 12.2. Understanding Entrepreneurship

10.3.1. Unit Objectives

At the end of this unit, students will be able to

1. Discuss the concept of entrepreneurship
2. Discuss the importance of entrepreneurship
3. Discuss the characteristics of an entrepreneur
4. Describe the different types of enterprises
5. List the qualities of an effective leader
6. Discuss the benefits of effective leadership
7. List the traits of an effective team
8. Discuss the importance of listening effectively
9. Discuss how to listen effectively
10. Discuss the importance of speaking effectively
11. Discuss how to speak effectively
12. Discuss how to solve problems
13. List the important problem solving traits
14. Discuss ways to assess problem solving skills

10.3.2. Resources

- Whiteboard, erasable marker, board cleaner, projection screen, laptop, speaker, notebook, pen, participant handbook, etc
- Flip chart
- Participant Manual
- Projection screen and PowerPoint presentations.
- Activities (role plays)

10.3.3. Say

Let's start this session with some interesting questions about Indian entrepreneurs

10.3.4. Do

Tell them that you will ask them few questions about a few entrepreneurs.
• Divide the class in to two groups.
• In turns ask the quiz questions to the groups.
• If the answer is incorrect pass the question to the other group.
• Share the answer if the groups are not able to answer.
• Congratulate the participants who answered correctly

10.3.5. Team Activity

Divide the class into small teams (4-5 participants per team).
Each team needs to come up with a unique business idea. Encourage participants to think creatively, focusing on solving a real-world problem.
Teams should discuss and finalize their business idea
Business Plan Development
Teams will work together to develop a simple business plan for their idea. The plan should cover the following key points:
Business Idea: What is the product or service? How does it solve a problem?
Target Market: Who are the customers? What are their needs?

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Unique Value Proposition: Why is the business idea different or better than others in the market?
Revenue Model: How will the business make money (e.g., sales, subscriptions, ads)?
Marketing Strategy: How will the business attract customers?
Launch Plan: How will they introduce the business to the mark

10.3.6. Notes for Facilitation

- Summarize the important points and terms explained in the session.
- Ask participants if they have any doubts. Encourage them to ask questions.
- Answer questions, as needed, providing concrete and brief answers.
- Tell participants to complete the questions at the end of the unit.
- Ensure that every participant answers all the questions

10.3.7. Summary

Close the discussion by summarizing about the opportunities for entrepreneurs in India

10.3.8. Exercise

1. Which of the following is a good practice for writing a professional email?
A) Using a casual tone and slang
B) Including a clear subject line
C) Writing long paragraphs without breaks
D) Not using a greeting
2. Which research method is often used to assess market opportunities for a new business?
A) Historical analysis
B) Surveys and questionnaires
C) Personal opinions
D) Guesswork
3. Which of the following is a primary motivation for entrepreneurs?
A) Seeking a stable salary
B) Solving problems and creating value
C) Avoiding risk
D) Working within a corporate structure
4.True or False: An entrepreneur's role in the economy is limited to running a business for profit.
5.True or False: The entrepreneurial mindset involves risk-taking, resilience, and the ability to adapt to challenges.
6. True or False: Entrepreneurship only applies to individuals who start their own businesses and does not include individuals who work within large corporations.