

# Hazard Identification and Risk Assessment in Welding shop and Telescopic Forklift

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**Abstract:** Hazard Identification and Risk Assessment is a procedure that procedure that comprises of various consecutive advances. It is a chance of estimation depends on the current controls and suggestions to lessen those dangers which are not under adequate points of confinement. It also suggests additional control measures to reduce the risk to an acceptable level. The hazard identification process improves the efficiency of occupational and health safety. It is used to predict the severity rate and probability of the risk in the hazard process. According to the HIRA process, we can improve the work efficiency. The HIRA process in the welding shop and powder coating shop alert the people. We can eliminate the hazard with the help of HIRA by calculating the risk factors. The aim of this work is to identify those potential hazard that could be the risk of job place accidents and to take preventive measure to reduce the intensity of accidents.

**Keywords:** Control Measures, Hazard Identification process, Risk Factors, Welding shops.

## INTRODUCTION

Due to the absence of work supervision and lack of training in the work place, many accidents occurred in the industry.

Each industry is having own machines which may create hazards. Recognizing risks related to the activities and select most pessimistic scenario situations for the estimation of outcomes. Presumed programming models will be utilized for outcome estimation. In view of the evaluated recurrence of the event, hazard decrease estimates will be recommended to the administration for powerful execution.

The threats that welders are presented today by day can cause life-changing wounds or result in their demises. Some of these injuries include electrical shocks, electrical burn, lung diseases, nerve damages, skin diseases. Due to the high warmth of the welding circular segment and the risky exhaust, gases, and synthetic concoctions welders work with, they face a genuine danger of being harmed or murdered in a fire or other blast. The forklift operator has a certain procedure to

lift the load. The most recent accident statistics show forklifts are officially the most dangerous form of workplace transport in the company and injuring more people than heavy goods vehicles or large goods vehicles. because it involves the.

The HIRA process includes the following studies.

- Study of the plant operations
- Identification of the individual tasks involved in carrying out the above operations
- Identification of potential health and safety hazards in these tasks.
- Assurance of the degree of hazard by consolidating the probability of a danger happening with its seriousness utilizing the Risk framework
- Analyzing the existing control measures available to control these risks. Provide recommendations for additional risk control measures to bring the risk to an acceptable level

SL.NO	ACTIVITY	HAZARDS	CONSEQUENCES	CONTROL MEASURES	RISK LEVEL		
WELDING UNIT					P	S	R
1	Operator's hands are bending frequently	Chances of hand overexertion, sustained awkward postures or repetitive movement can cause muscular strain	Unnecessarily time loss, Body injuries	Frequent time changing is required	5	3	15
2	The operator doing welding operation without leather shoes and safety gloves and apron.	Chances of body injuries	It may create health hazards.	The employer should follow safety equipment to handle the product	5	3	15
3	The operator doing welding operation without face shields.	Chances of eye irritation, weakening eye vision.	Dermatitis disease and burn injury	The operator must follow the safe operating procedure	4	4	16
4	The operator doing welding operation without proper grounding.	Fire hazard	Electrical shock	The proper grounding should be given	3	4	12
5	The operator storing combustible materials near to the gas cylinders.	Fire hazard	The explosion may occurred	The combustible material should not store near gas cylinders	4	4	16

The welders are should follow standard operating procedures. Electric stun is a standout amongst the most genuine and impending dangers confronting a welder. Electric stun can prompt extreme damage or passing, either from the stun itself or from a fall brought about by the response to a stun. It's nothing unexpected that overexposure to welding exhaust and gases can be risky to your wellbeing. Welding smoke contains conceivably hurtful complex metal oxide

mixes from consumables, base metal and the base-metal coatings, so it's imperative to keep your head out of the vapor and utilize enough ventilation and additionally fumes to control your introduction to substances in the smoke, contingent upon the sort of bar and base metal being utilized.

SL.N O	ACTIVITY	HAZARDS OR RISK	CONSEQUENCES	CONTROL MEASURES	RISK LEVEL		
					P	S	R
TELESCOPIC FORKLIFT							
1	Preoperation safety check	Untrained operator	It may create accident.	Training on forklift design, controls and instrumentation.  Training on the forklift stability and the proper way to transport, load, and stack on the forklift.	5	3	15
2	Operating the light Forklift	Falling (Below) Rolling the wheels off the edge or ramps and loading docks.	It may create and injuries.	Buckle your seat belt when you're in the truck. Stay well back from the edge. Never turn around on the slope.  Drive with your load on the uphill side. This means you drive up slopes with your load in front and drive down slopes in reverse.	5	3	15
3	Lifting	Uneven ground, Unstable load Hydraulic failure, Adverse weather Suspended load Lifting beyond rated capacity of the crane  Property Damage/injury	Head injury	Position machine a level flat surface Do not lift beyond machine rated lifting capacity Do not do lifting under adverse weather condition (storm, thunder, windy environment, heavy rain)	4	4	16
4	Lifting	(Struck By) Load falling off forklift. (Struck Against) Damage to material by loading improperly.	It may create and injuries.	Proceed slowly and insert the forks into the base of the load. Ensure that at least 2/3rd the length of the fork enter the base of the load.  Lift forks approximately 8 inches for the load to clear the floor.	4	5	20

TELESCOPIC FORKLIFT					P	S	R
5	Transporting the load	Struck Against)Running into objects (Struck by )Collisions with other equipment- <i>Property damage/injury</i> Load could fall if not properly secured	It may create accident.	Be Alert Wear gloves to protect your hands. Keep your arms and hands in the truck. Keep the controls and your hands clean and dry.	5	3	15
6	Unloading	Falling load Standing close to the machine operating area <i>Injury to other personnel</i>	It may create accident and injuries.	Once the load is set, slowly back away from the load. When clear of the load, place the forks at the proper height for traveling. Do not stand close to the machine while loading/unloading is ongoing	5	3	15
7	Parking the Forklift	Running over and crushing the operator. Not activating the reverse alarm/siren	It may create accident and injuries.	Never leave the truck until you lower the lifting mechanism, put controls in neutral and set the brakes. If you're 25 feet away or can't see the truck, turn the truck off. Never give rides or let anyone stand on the forks. Always administer the emergency brake.	4	4	16
8	While operating the forklift	Not staying far right, not blowing horn in a blind spot / deep curve	It may create accident and injuries.	Stay far right, blow horn before approaching blind spot / deep curve	3	4	12

The forklift operator must have valid license to handle the machine. The following key points should be checked for handling the forklift.

- Importance of ensuring the forklift operator are trained and competent.
- Importance of ensuring any machineries such as forklifts are safe and without risk or workers.
- Important of conducting risk assessment to identify the hazards.
- The Workplace Safety and Health(Risk Management) Regulations require risk assessment to be carried out before starting any work. Through risk assessment, employers and workers can identify potential hazards and take appropriate actions to eliminate the hazards or reduce the risks involved. Control measures and safe work procedures must be established, communicated and implemented to ensure the safety and health of the workers involved.
- It is important for the Management to show commitment and have an effective workplace safety and health management program. Through this, operations within the organization would be guided by a safety policy and safety management system and proper work procedures would be established.
- Only trained and authorised operators, who have passed the Forklift Driver's Training Course, are permitted to operate the forklift. Managers and Supervisors should implement a control system to prohibit the unauthorised use of forklifts.
- Forklifts are primarily designed for lifting, moving and stacking of materials. It should not be used to transport or lift person(s) to height.
- Injuries caused by forklift trucks are often very serious. Head and brain injuries can result where a person is dropped from height or where a load falls onto them.
- Post warning signs and apply floor tape to designate forklift zones.
- The forklift operator should be careful while turning in the path.
- Using forklifts to elevate personnel has become common practice however it presents many hazards. If you must lift an employee for them to perform a task you should:
  - Use an approved lifting cage. According to OSHA the cage must have guardrails or another safety device like a harness to keep the personnel from falling off the platform. Ideally it would have both. Additionally the lifting cage must have a barrier between the personnel and the mast.
  - Ensure the cage is secured properly to the lifting carriage or the forks
  - Provide a way for the elevated employee to shut down power to the vehicle.
  - Even if the operators and pedestrians are properly trained and they follow all the safety procedures in place, forklift accidents can still happen. Malfunctioning equipment can turn minor operating mistakes into disasters and turn a safe workplace into a hazard which is why pre-operation inspections can't be forgotten and planned maintenance should never be neglected.
  - While operating the forklift, the operator should wear the helmet and maintain the speed limit.
  - Don't exceed the capacity of your forklift. The capacity can be found on the forklift's load capacity data plate. The plate will include the load capacity, lift height and load center. Variations of this information based on certain forklift attachments may also be provided on the data plate.

Likelihood (L)	Severity (S)				
	1	2	3	4	5
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5

  

High	<span style="display:inline-block; width:10px; height:10px; background-color:red;"></span>
Medium	<span style="display:inline-block; width:10px; height:10px; background-color:yellow;"></span>
Low	<span style="display:inline-block; width:10px; height:10px; background-color:green;"></span>

Fig 1: Risk rating

## RESULT AND DISCUSSION

The hazard identification and risk assessment shows the frequency and probability of the hazards. The management should record the hazard report for future reference and also eliminate the hazards with suitable control measures. The management should consider the HIRA report for any emergency situations. The red color shows maximum risk factor which may cause severe accidents in the industry. The green color shows that minimum risk which may cause a minor accident.

The risk factor formula:

$$\text{Risk} = \text{severity} \times \text{Likelihood}$$

## CONCLUSION

The hazard identification and risk assessment report will help to identify the hazard-prone area in the industry. One of the most hazardous areas is the welding shop which may create burn injuries and health diseases. The management should follow the standards to eliminate hazards. The mock drill should conduct periodically to eliminate unnecessary time loss while in emergency situations. This hazardous report shows the severity rate and risk factor. The maximum risk factor shows the most important hazardous part of the industry

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