Vol-05 Issues 05, May-2021 ISSN: 2456-9348
Impact Factor: 5.004

iJETRM
International Journal of Engineering Technology Research & Management

HAZARD IDENTIFICATION AND RISK ASSESSMENT IN GARMENTS CHEST PRINTING AND FABRIC STROAGE AREA

Kaviya K[1]
Dr Subrata Das [2]
[1]Student (Industrial Safety Engineering, Bannari Amman Institute of Technology, Tamil Nadu, India)
[2]Professor (Dept. of Fashion technology, Bannari Amman Institute of Technology, Tamil Nadu, India)

ABSTRACT
The paper is to identify the hazards and analysis the risks present in the garments printing and fabric storage areas. It is not possible to eliminate all hazards, so the objective is to eliminate and / or control all the possible hazards with critical and high potential and to reduce the rest of the possible hazards to the minimum reasonable risk level so as to protect workers from harm. The risk rating was depending upon the multiplication of severity and probability. The risk level has been divided in four categories low, medium, high and medium. The existing control measures and additional control measures were identified and ensure safe workforce in the garment industry.
KEYWORDS:
Hazards, severity, probability, fabric, risks.

I. INTRODUCTION

For garment industry to be successful, it has to be safe , reliable and sustainable in its operations, the industry is to identify the hazards and assess the associated risks and to bring the risk to tolerable level. Hazard identification and risk assessment (HIRA) is carried for identification of undesirable events that can lead to a hazard, the analysis of hazard of this undesirable event, that could occur and usually the estimation of its severity, probability and risks of harmful effects.

Objective:

The objective of this work of hazards and risk analysis is to identify and analyze hazards, the event sequences leading to hazards and the risk associated with hazardous events. Many techniques ranging from the simple qualitative methods to the advanced quantitative methods are available to help identify and analyze hazards. The use of multiple hazard analysis techniques is recommended because each has its own purpose, strengths, and weaknesses.

II. METHODOLOGY

Hazard identification and risk analysis (HIRA) is a collective term that encompasses all activities involved in identifying hazards and evaluating risk at facilities, throughout their life cycle, to make certain that risks to employees, the public or the environment are consistently controlled within the organizations risk tolerance level. These studies typically address three main risk questions to a level of detail commensurate with analysis, objective, life cycle stage, available information, and resources.

HIRA PROCESS

The HIRA process includes:

- Hazard identification
- Assessment of risk
- Analysis of risks
- Monitoring and review of the controls

iJETRM
International Journal of Engineering Technology Research & Management

Fig1: HIRA process

III. HAZARD IDENTIFICATION RISK ASSESSMENT IN GARMENTS CHEST PRINTING AND FABRIC STORAGE AREA:

1. CHEST PRINTING

Table 1: chest printing

ACTIVITY	HAZARDS	AFFECTED MEMBERS	EXISTING CONTROL MEASURES	P	S	R	ADDITIONAL CONTROL MEASURES
Movement of cloth bundle from cutting section to printing division by using trolley	Fall hazards Ergonomics	Operators	Check trolley condition before use, always ensure free movement of wheels. Call helpers to load, unload & transport. Do not do repetitive tasks	3	3	9	Refresher training to be given to the employees about ergonomics.

iJETRM
International Journal of Engineering Technology Research & Management

			without break.				
Material arrangement	Ergonomics	Operators	Ask for help if unable to reach top areas of rack. Do not climb on the rack with material in hand.	3	2	6	Refresher training to be given to the employees about ergonomics.
Setting up machine for operation	Leg injury	Operators	The operator must be cautious & must seek help if unable to carry.	2	3	6	Awareness given to the employees about the SOP.
	Ergonomics	Operators	Proper ergonomic means of carrying should be done.	2	2	4	Provide awareness training to the employees about ergonomics.
	Cut Injury	Operators	The operator must be cautious. If necessary PPE can be used.	3	3	9	Awareness given to the employees about the importance of PPE usage.
	Eye Injury	Operators	The Operator should not stare into the laser beam.	3	2	6	Preventive maintenance will ensure safe working area.
Chemical	Health hazard	Operators	Proper PPE's were used by the	3	4	12	Awareness given to the employees

iJETRM
International Journal of Engineering Technology Research & Management

handling			operators.				about the importance of PPE usage.
Machine operation	Injury	All	The operator must be cautious & must maintain safe distance from the pallet.	4	3	12	Awareness given to the employees about the SOP.
	Fire	All	Functioning of sensors must be checked periodically.	3	3	9	Provide training to employees about usage of extinguishers.
	Injury	Operators	The operator must keep their hair tied & must wear cap.	3	3	9	Provide awareness training to the employees about usage of caps.
	Eye Injury	Operators	Operators must not look into bright light for a prolonged duration.	4	3	12	Preventive maintenance will ensure safe working area.
	Electric shock	Operators	Ensure no damages in machine wiring connection. Proper maintenance to be done periodically.	3	3	9	Avoid improper earthing and loose connection.

iJETRM
International Journal of Engineering Technology Research & Management

			Proper earthings were provided.				
	Head Injury	Operators	The operator must be cautious while lifting & lowering machine head.	3	4	12	Awareness training to the employees about usage of SOP.
Loading & unloading of cloth	Hit Injury	Operators	The operator must be cautious & must not place hand in between pallets.	3	3	9	Awareness training to the employees about usage of SOP.
Curing machine	Heat burns	Operators	Operators must be cautious & must maintain safe distance from hot parts of machine.	3	3	9	Awareness training to the employees about usage of SOP.
	Heat stress	Operators	Proper exhaust system must be provided to reduce heat stress.	3	2	6	May be providing additional exhaust system.
Screen washing area	Exposure to chemicals(on eyes, breathing)	Operators	Proper PPE's must be used by the operator.(goggles, gloves, gum boots, respirator) Body wash & eye wash must be	3	3	9	Awareness given to the employees about the importance of PPE usage.

iJETRM
International Journal of Engineering Technology Research & Management

			provided.				
Coloring room	Exposure to chemicals(on eyes, breathing)	Operators	Proper PPE's must be used by the operator. SOP to be followed. Eye wash must be provided.	4	3	12	Awareness given to the employees about the importance of PPE usage.
Duct	Fire	All	Periodic cleaning of duct must be carried out.	3	4	12	Preventive maintenance will ensure safe working area.

2. FABRIC STROAGE AREA:

Table 2: Fabric store area

ACTIVITY	HAZARDS	AFFECTED MEMBERS	EXISTING CONTROL MEASURES	P	S	R	ADDITIONAL CONTROL MEASURES
Movement of fabric bundle from loading point to storage section by using trolley/ hydraulic	Fall hazards Ergonomics	Loadmen	Safety shoes to be worn by all Loadmen. Check trolley condition before use; always ensure free movement of wheels.	3	3	9	Provide training to the employees for promoting awareness on effective usage of safety shoe.

iJETRM
International Journal of Engineering Technology Research & Management

			Call helpers to load, unload & transport. Do not do repetitive tasks without break.				
Stacking of fabrics at high level	Fall hazard	Operators	Ladders were provided for stacking the fabrics at high level. Only trained employees were used to handle the ladder. Helmets were provided to the operators.	3	2	6	Provide training to the employees about usage of ladder.
Handling of fabric materials	Dust	Operators	Usage of facemasks.	2	3	6	Awareness given to the employees about the importance of PPE usage.
	Ergonomics	Loadmen	The employees must be trained about the musculoskeletal disorders.	3	3	9	Anti-fatigue mats may be provided.
	Head Injury	Loadmen	Usage of helmets.	3	2	6	Provide training to the employees

iJETRM
International Journal of Engineering Technology Research & Management

							for promoting awareness on effective usage of helmets.
	Slips & trips	Loadmen	The floors must be cleaned & maintained routinely.	2	2	4	
	Fire	All	Functioning of sensors must be checked periodically.	3	3	9	Provide training to employees about usage of extinguishers.
	Injury	Operators	The operator must keep their hair tied & must wear cap.	3	3	9	Provide training to the employees for promoting awareness on effective usage of Caps.
	Eye Injury	Operators	Operators must not look into bright light for a prolonged duration.	4	3	12	Preventive maintenance will ensure safe working area
	Electric shock	Operators	Ensure no damages in machine wiring connection. Proper maintenance to be	3	3	9	Avoid improper earthing and loose connection.

iJETRM
International Journal of Engineering Technology Research & Management

			done periodically. Proper earthings were provided.				

IV. CONCLUSION:

Risk analysis for different activities was undertaken in the garment printing and fabric storage areas. The risk level was ranging from 4-12 for the printing process and fabric storage area. This study has been performed in various hazards under physical, chemical, ergonomic hazard, manual handling, health and electrical hazards were identified and controlled by the hierarchy of elimination, substitution, engineering controls, administrative controls and PPE. Hazards in each activity were identified & the risk level has been assigned. Different existing control measures and additional control measures have been suggested for each activity.

REFERENCES:

1. K.Kavin Kishor, I.Sirajudeen, R.Sasikumar, "Hazards Measuring and Risk Controls in Textile industry"vol.8,Issue 5, May 2019.
2. Ashok kumar T C, Dr.Muthukumar K, Manojkumar R M "Hazard Identification and Risk Assessment (HIRA) in Textile Industry" Vol: 07 issue:03, March 2020.
3. D.S Padmini..," Unsafe work environment in garments industries", journal of environmental research and development, volume 7 no.1A 2012.
4. Subrata Das and Anindya Ghosh, "Eco hazards and remedial steps in textile industry", The Indian Textile Journal, 2005, Vol. CXVI, No. 3, December, 17-24.
5. Devdatt P Purohit, Dr.N A Siddiqui, Abhishek Nandan & Dr.Bikarama P Yadav "Hazard Identification and Risk Assessment in Construction Industry" Volume 13, No.10 (2018)
6. Golam Kibria M D, "Identifying and eliminating industrial hazards in RMG industries", International journal of scientific research engineering and technology, Vol. 3, pp. 159-166, 2014.
7. Legget, David J, "Lab-HIRA: Hazard Identification and Risk Analysis for the Chemical Research Laboratory Part 2. Risk Analysis of Laboratory Operations", Journal of Chemical Health & Safety, September-October, (2012), pp 25-36.
8. Faisal Hannan 2015,Risk Assessment and Evaluation of Basic Health and Safety Facilities (A Report of Textile Industry Gujrat, Pakistan) (2014) Safety View Magazine.
9. Subash k, Dr Subrata Das "Occupational Health and Safety in Textile Industries" Volume: 06 Issue: 10 | Oct 2019.