

Hazard Identification and Risk Assessment in Automobile Industry

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ABSTRACT

Hazard identification and risk assessment were carried out in different department of the brakes India manufacturing plant. Risk has been calculated by the risk table range between 1 to 25 were consequence and frequency of occurrence rating between 1 to 5. This study was aimed to identify the potential hazards that might may cause accident and risk to the workers in the workplace so that preventive action should be encounter to minimize such unpleasant accidents and events. Different control measures were submitted has a report to the Brakes India Pvt Ltd to reduce the chances of unexpected events and maintain safe workplace. The use of the HIRA technique is found very fit to be applicable in the manufacturing process in Brakes India Pvt Ltd. In addition to that, it may also be applied to other manufacturing process.

KEYWORDS: hazards, risk assessment, hira

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1. INTRODUCTION

Hazard identified in different areas in brakes India manufacturing plant in that different process has been carried out. These activities have been classified into 4 processes and risk assessment has been carried out severity, probability and frequency of occurrence.

1.1. Brakes India manufacturing plant process

1. Press shop
2. Assembly
3. Construction activity
4. Welding shed

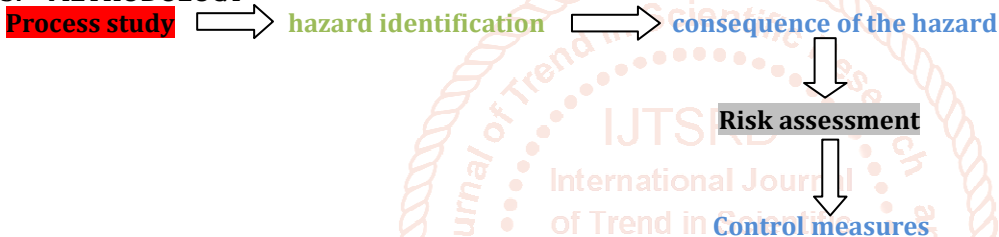
2. LITERATURE REVIEW

SL. NO	TITLE OF THE PAPER	NAME OF THE AUTHOR	OUTCOME
1	Dangerous Properties of Industrial Materials	Lewis, R. J. Sax's	Toxicity data
2	Standard System for the Identification of the Hazards of Materials for Emergency response	NFPA	To identify the risks posed by hazardous materials
3	From criticality to the vulnerability of resource supply: The case of the automobile industry	Viktor Knobloch, Till Zimmermann, Stefan Gößling-Reisemann	Exposure of hazard
4	On the completeness of scenario identification in process hazard analysis	Paul Baybutt	Complete identification of major hazard scenarios
5	Natural and Technological Hazards and Risk Assessment	George D. Haddow, Jane A. Bullock, Damon	Brief description of the hazard.

6	Better safe than sorry: Methods for risk assessment of psychosocial hazards	Yannick A.Metzler ^a GeorgvonGroeling-Müller ^b SiljaBellingrath	Evaluation of risk and criteria of Risk rating
7	Safety assessment approach of hazard and operability (HAZOP) for sulfur recovery unit Claus reaction furnace package; blower; heat exchanger equipment in South Pars gas processing plant	RezaAlaei ^a Seyed Ali AkbarMansoori ^{ab} AsgharHaeriMoghaddam ^a	Detail description of chemical process how it will affect the workers and environment.
8	Assessment of the potential human health risks from exposure to complex substances in accordance with REACH requirements. "White spirit" as a case study	Richard H.McKee ^a RosalieTibaldi ^a MoyinoluwaD. ^a CarlosCarrillo ^b AlisonMargary	Different health hazards due to the chemicals subsatance.
9	Characterization and workplace exposure assessment of nanomaterial released from a carbon nanotube-enabled anti-corrosive coating	Jonathon A.Brame ^a ErikM.Alberts ^b MaryK.Schubauer- Berigan ^c KevinH.Dunn ^d KelseyR.Babik ^e Ef tihiaBarnes ^e RobertMoser ^e AimeeR.Poda ^a AlanJ.Kennedy ^a	Classification of workplace and hazards

Table 1: literature review

3. METHODOLOGY



3.1. Identification of potential hazards and risk:

A) Hazards can be identified by different methods :

- PHA, HAZOP, FMEA, HIRA, etc
- Here I have adopted HA-hazard analysis to visually inspect and cross-verification to the operator learned about the process flow
- Evaluating and analysing the risk
- Control measures to reduce the risk and if possible eliminate the hazards
- By applicable control methods elimination, substitution, engineering, administrative, PPE.

B) Evaluation of Risk based on the following criteria:

- **Severity due to hazard:** effects of hazard to the personnel/machine/environment T
- **Probability:** period of occurrence
- **Frequency:** how long the hazard will affect the workers
- **Control Ranking:** hierarchy of control to prevent hazard and risk

4. Result and discussion:

HIRA CHART									
severity		Probability			frequency			Risk rating	
1-minor		1-unlikely			1-no occurrence			1-7 low	
2-serious		2-possible			2-one occurrence			8-14 medium	
6-major		4-probable			3-two occurrence			15-20 high	
10-fatal		6-certain			4-more than two occurrence				
Risk Assessment									
s.no	Activity	R/NR	Hazards	severity	probability	frequency	Risk rating	Exsiting measures	Additional measureas
				x	y	z	x+y+z		
1	press shop	R	NIHL due to High noise in the press shop	2	6	4	12	PPE	Awarness about NIHL and Ear muff should be provided
		R	Fall of person due to damaged working platform	2	1	2	5	-	working platform should be change immediately
		R	Electrical Hazard due to faulty earthing	10	1	2	13	-	earthing should be checked once in a year
		R	Ergonomical hazard	1	1	1	3	-	material handling training provided
2	welding shed	R	NOISE	6	2	2	10	PPE	Awarness about NIHL and Ear muff should be provided
		R	contact with welding steel	6	2	3	11	hand gloves	welder should always wear ppe while working
		R	welding with naked eye	6	2	3	11	PPE	welder should always wear ppe while working
		NR	Inhalation of paint fumes	1	2	2	5	-	PPE
		R	Damaged wires	6	6	3	15	no controls	damged wires should be changed imeediately
3	construction	R	Noise	6	2	2	10	PPE	Awarness about NIHL and Ear muff should be provided
		R	vibration	6	2	4	12	no controls	PPE
		R	dust	6	2	2	10	no controls	PPE
		R	Ergonomical hazard	1	1	1	3	-	material handling training provided
		R	Damaged wires	6	6	3	15	no controls	damged wires should be changed imeediately
4	Assembly	R	Ergonomical hazard	1	1	1	3	-	material handling training provided
		R	Fall of person due to damaged working platform	2	1	2	5	-	working platform should be change immediately
		R	hit against fork lift	1	1	1	3	trained operator	-

Table 2: Results

5. CONCLUSION

During my visit to the plant I have noticed mostly all safety measures have been taken however there is scope for improving in the area of ergonomics. I was astonished to see the workers participation and eagerness to adopt safe practices. This type of Safety culture is only possible by management’s commitment and motivation towards safety. Apart from Ergonomics some minor improvements brought out in the HIRA study may be considered for implementation

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