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HIRA IN FOUNDRY

MUTHU KUMAR .K

Abstract -.Danger recognizable proof and hazard appraisal can be utilized to focus on so the most dangerous condition can be addressed soonest, and later, the smallest liable to happen and the smallest prone to cause principal issue. Tasks included Sand plant, Knock out, Short impacting and fettling, Inspection. In HIRA Analysis Severity, Likelihood, Risk Score, Risk Ranking are determined. by utilizing Hazard Identification and Risk Assessment instrument

1.INTRODUCTION

Fettling the deduction of feeders and over-burden material from a projecting is that the essential phase of shutting a projecting. The metal evacuation is frequently accomplished misuse actual cutting or granulating. Associations for the most part receive security the executives framework or conduct based framework ways to deal with dealing with their wellbeing capacities with an end goal to accomplish execution greatness. The association builds up the ideas around an arrangement of wellbeing the executives rehearses security the board frameworks are regularly wont to anticipate representative commitment levels; and worker commitment levels go about as arbiters between the assurance the executives framework and security execution results, (for example, mishap rates). Suggestions: in any event, assuming the presence of security the board framework rehearses is associated with occurrence decrease and will address an important initial phase in mishap impedance, wellbeing execution may depend on intercession by wellbeing centered mental element and enthusiastic commitment by staff. Hence, when associations contribute during a security the board framework way to deal with lessening/forestalling mishaps and up wellbeing execution, they should even be included concerning prevailing upon the personalities and hearts of their staff through human execution based wellbeing the executives frameworks intended to market and improve representative commitment. Danger Identification and Risk Assessment (HIRA) might be an organized and efficient assessment of arranged or existing cycles or activities to spot and evaluate issues that will make a danger faculty or instrumentation or stop successful activity..

Literature Survey

Clean, unobstructed aisles and gangways, well-defined working areas, and adequate storage areas contribute to safe and healthful working conditions. Ignoring these factors may undermine the safety and health program. Housekeeping can also have a marked effect on production efficiency. Special attention should be given to: storing raw materials and scrap in bins, compartments, or other appropriate forms of containment or separation. providing a constantly maintained means of access for operations such as metal pouring; removing items not required for immediate use from the foundry working area; and providing and encouraging the use of specified areas for tools, lubricants, and other equipment [1]

When the molten metal in a mold has solidified to a point where it will not distort when removed from the sand, the casting is removed from the flask in an operation called knockout or shakeout. Except for those molds produced without flasks or bottom boards, this procedure consists of opening the flask or mold frame and removing the casting. Usually the casting is then cleaned in the shakeout operation, which involves shaking off adhering sand and binder materials from the casting and sometimes breaking out the cores. The castings are then taken to the cleaning department and the flasks and sand are returned for recycling. These operations generally produce dust, and a green sand knockout gives off steam as well as dust. The shorter the interval between pouring and knockout, the larger the amount of steam but the smaller the quantity of dust liberated. When the knockout process is performed at one location, local exhaust ventilation can be used to control the dust and steam [2], [3].

Musculoskeletal Disorders are the most common work related injuries/ disabilities problem in any manufacturing industry,especially in manual assembly line. Forceful exertions, awkward posture, pulling, lifting and prolonged standing in the manualassembly line can increase the MSD risk level. MSD can be reducing by proper design of workplaces, implementing the job rotation and use of mechanical material handling equipment. Proper ergonomics principles can improve productivity, comfort to the workers and reduce work- related disorders [3]. The types of exhaust ventilation that can be used to control the dust and steam are total enclosure, sidedraft, downdraft, and updraft[4]

Care must be taken to prevent dust plugging when designing ventilation systems where steam and moist dust are involved. Recommended ventilation designs are presented in detail in Industrial Ventilation— A Manual of Recommended Practices [4] In one foundry without the enclosure, the noise level permitted an allowable exposure of about 3 hours per day. With the shakeout enclosure, the overall noise level was reduced by about 16 dBA. Noise levels at the operator position were 89 dBA with the enclosure and about 105 dBA without the enclosure. The enclosure reduced the noise level of all the frequencies above about 100 Hz by 8 to 25 dB [5].

In iron and steel foundries, after the shakeout operation, the sprue or pouring hole is knocked off or cut off and the castings are sorted and cleaned. The main hazard in this process is respirable silica dust. Dust can be controlled by using a conveyor belt made of a metal mesh with a downdraft exhaust system [7]. Control of torch cutting and arc-air gouging operations is not within the scope of this document but is discussed in the NIOSH criteria document on welding, brazing, and thermal cutting [6]

Excess sand is removed from the castings by abrasive blasting operations and/or in tumbling mills. These operations produce

high noise and dust levels. The engineering control of air contaminants in abrasive blasting booths is addressed in the NIOSH document, Abrasive Blasting Operations: Engineering Control and Work Practices Manual [7].

for every action. Hazard: The workplace can cause harm (ie, can result in personal injury, occupational-related illness or death).

Risk: The possibility of actual danger of injury or illness. It is based on the consequences and the possibilities. Risk Assessment is defined as a method of assessing the risks connected with each recognized hazard in order to recognize the nature of the risk. This includes the nature of the hazards that may result, the severity of the hazards, and the probability of the hazard occurring.

Risk control: Take measures to remove health and safety risks as far as are reasonably practicable. Where the risk cannot be eliminated, controls need to be put in place to minimize the risk as much as reasonably possible. The level of control has been developed and is described below to help select the most appropriate risk control measures.

Monitoring and review: This involves continuously monitoring the identified hazards, assessing the risk and risk control processes and reviewing them to ensure their effective functioning.

SEVERITY 1= Minor 3= Seriously 6= Major10= Fatal

PROBABILITY 1= Unlikely2= Possible4= Probable6=Certain

FREQUENCY 1= No recorded occurrence 2= One occurrence 3= Two occurrence 4= More than two occurrence

RISK RATING 1-7 = Low 8- 14 = Medium 15- 20 = High

S.no	Activity	R / N R	Hazards / Concern	severity x	probability y	frequency z	risk Rating X+y+z	EXISTING CONTROL MEASURE	ADDITIONAL CONTROLS
1	KNOCKOUT	R	Loading the hot mould trolley in the knockout bed which creates emission of hot fumes	1	6	4	11		All the work is done in the closed structure minimum of 0.9m for each machineries and 1.2m for rapid movement machineries to be provided along with proper ventilation.
			Using crane to load the hot mould trolley on knockout bed which creates dust scattering	1	4	4	9	Respirators are provided.	To follow SOP and to do regular behavioural analysis among the workers for the better

			leading to inhalation of dust particles			
			During the separating of sand from casting material dust is accumulated.	1	2	4
2	SHOT BLASTING		Splashing of metal balls from the shot blasting machine from the minute gap			
			Metal balls were spread around the machine in ground surface will cause slip hazards			
			Doors in shot blasting machine will open in outward direction, If people are standing near the door will cause hit injury.			
			After completion of each cycle a person is closed entering into machine to insert or remove the component, because conveyer belt fault which will cause sudden slip leads fall of person			
3	Sand plant	R	Exposure to dust generation	5	2	4
		N R	Exposure to hot sand & steam	3	2	3
		R	Exposure to dust	3	4	2

									checked
4	Inspection	R	Exposure to ultra violet light	3	5	4	12	Eye protection	Warning signal can installed
		R	Improper handling of casting	5	5	4	14	Proper sop	
		R	Continuous working in x ray	4	3	2	9		Change the working person in area

CONCLUSION

Hazard investigation in fettling measure has been acted in this examination. Various Activities Knockout cycles, Shot blasting& fettling, Inspection workplace were examined for potential risks. Perils in every action were distinguished and rating has been alloted to comprehend the force of hazard related with every movement in the fettling unit. Henceforth it tends to be closed from this investigation that medium danger is related in performing different exercises in a fettling cycle. Distinctive control measures have likewise been recommended

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