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Improving implementation of occupational health and safety of construction company by Job Safety Analysis (JSA) method (study case at PT Arto Moro Sentosa)

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ABSTRACT

The construction sector is a sector that employs many people who have high risk of work accidents, because a lot of work in this sector is possibility carried out by unsafe actions or unsafe conditions. PT. Arto Moro Sentosa is company which operates in general trading, general construction, suppliers, outsourcing, etc., is aware that the business has a high risk of work accidents. The lack of employee awareness will have an impact on the magnitude of the risks that must be borne by the worker and the company. The purpose of this research is determining work accident records for the Occupational Health and Safety (OHS) system, employee risks, and existing improvements at company. By knowing the classification of hazards based on the type of accident, this research uses the Job Safety Analysis (JSA) method, histograms, Pareto diagrams, and cause-and-effect (fish bone) diagrams. Based on the author's observations, company data related to OHS (Occupational Health and Safety) and interviews with the directors, could be obtained a history of work accidents based on the type of accident. Here are ergonomic work accidents (57.89%), physical factor accidents (31.58%), chemical factor accidents (5.26%), biological factor accidents (5.26%), and psychological factor accidents (0%). Several recommendations are performed to avoid repeated accident by providing training programs on OHS to workers, paying more attention to OHS supervision, giving sanctions to workers who violate OHS.

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1. INTRODUCTION

The construction sector is a sector that employs many people who have a high risk of work accidents, this is because a lot of work in this sector is carried out with unsafe actions or in unsafe conditions [1]. There is norm that regulation about health and safety is implemented to protect

workforce, accident risk and disease causing by working environment [2], because accident could disturb project activities, time and material loss, illness even fatal accident [3], effective management of safety and health conditions can also reduce costs, such as medical care, sick leave, and disability benefits [4]. According to Manpower Minister of the Republic of Indonesia [5], working accident is unintentionally or unexpected incident which occurred resulted damage or victims, that may comes from human factor and unsafe environment [6]. The government of Indonesia has implemented OHS policies such as OHS culture promotion program, OHS management system strengthening program, and implementation target program [7]. The implementation of OHS in Indonesia is controlled by the government regulation no. 50/2012 [8]. Natural and human-caused fatalities are more pronounced in the construction industry than in order economic sectors worldwide due to a dearth of sustainably implemented occupational health and safety [9].

PT. Arto Moro Sentosa, which operates in the fields of general trading, general construction, suppliers, outsourcing, etc. The construction duration is essential and strong management is necessary to complete the project on time [10], including avoid the accident happened. Awareness of the risk of work accidents among employees is based on the fact that the business they run is a business that has a high risk of work accidents, so with the awareness raised, company has established a standard OHS system [11]. Establishment of a standard and standardized OHS (*Occupational Health and Safety*) or Safety and Health at working place system at company apparently does not guarantee that implementation will take place as expected. However, good OHS management will lead working place safely and eliminate the accident [12]. A key area where knowledge management may be effectively employed is the field of occupational health and safety management (OHS), many author have found notable differences between large and small organizations in this area [13]. According to a survey conducted in 2021 shows 19 work accidents, ranging from minor accidents such as being hit by a work object to almost fatal work accidents such as falling from a height elevation. Therefore, the use of Personal Protective Equipment (PPE) is very important, because PPE is an equipment used to protect the workers from accidents on the construction [14]. PPE is a kind of protection provided in addition to elimination, substitution, technical engineering and administration methods [15], but also by providing PPE for workers [16]. This is done because the company is also aware of the high potential hazard that exists in the working environment. Previous study shows each 1 fatal accident involving 10 minor accident and 30 property damage and 600 near miss accident, so accident must be prevent since earliest stage, because any of minor or near miss accident could lead to fatality [17].

Based on previous research conducted by Atmaja et al. [18] who conducted research on the implementation of OHS in Padang City, Occupational Safety and Health is a complex problem in a construction project. Apart from that, eliminating *unsafe conditions* and *unsafe actions* is a preventive measure to reduce OHS risks, according to research results by Sulistyo and Maulana [19]. The construction sector is closely related to safety issues, according to Jaya [20]. Safety is a condition that is free from relatively small risks below a certain level. Meanwhile, risk is the level of possibility of a hazard occurring that causes an accident and the intensity of the hazard. Safety is an effort to carry out every work activity in a safe manner so that it does not result in accidents. To achieve safety in carrying out work activities, everyone must always protect themselves from disasters or potential threats by wearing safety equipment [21], meanwhile personal protective is the last guard when elimination, substitution, engineering and administration control have been performed [22]. This is different from the research conducted by Thepaksorn et al. [23] which discusses identified potential safety and health hazards associated with six main processes, including: 1) logging and cutting, 2) sawing, 3) planning and re-arranging, 4) vacuuming and wood preservation, 5) drying and planks re-arranging and 6) grading, packing, and storing.

The risk analysis and assessment has been a beneficial tool in the safety management of systems and the prevention of accidents [24]. In construction, Job Safety Analysis (JSA) is very important to determine the level of safety and to reduce the risk of work accidents in construction project implementation work. JSA is kind of method to identify hazard that exist in working environment, also controlling and mitigation to avoid the accident [25]. JSA in OHS is a safety management technique that focuses on identifying hazards related to the series of work or tasks carried out [26]. JSA focuses

on the relationship between workers, tasks/jobs, work environment and equipment. This is in accordance with the method of investigating the causes of accidents in the workplace which begins with conditions that can cause accidents in the workplace [27]. The aim of implementing JSA is to identify potential hazards in each work activity so that workers are expected to be able to recognize these hazards before accidents or work-related illnesses occur [28].

In addition to the JSA method, the Risk/Hazard Control Hierarchy is used in reducing the problem of work accidents in construction projects, the Risk and Hazard Control Hierarchy that has been identified and evaluated requires steps to reduce the risk or hazard to a tolerable level [29]. Risk shall be managed by organization effectively as part of company strategic to transform from weakness become value added or opportunity [30]. Controlling risk by elimination source of hazard is the most effective, reliable, and protects other controls , and the next hierarchical order, the level of effectiveness, reliability and security decreases [31]. Risk control is a procedure that starts from a high to a low level, which conditions become safer. The control hierarchy includes elimination, substitution, design, administration and personal protective equipment [32]. Other diagrams such as histograms and Pareto diagrams are needed to determine the percentage of problems based on the number of events. The sequence starts with the number of frequent problems, increasing to rare problems. On the chart, the highest (leftmost) bar is followed by the lowest (rightmost) bar [33].

According to Ghaisani and Nawawinetu [34] hazard are divided into 5 types, namely:

1. Chemicals (gas, vapors, liquids or dust that workers' bodies such as cleaning products, battery acid, or other chemicals) [35].
2. Biology (living organisms that can disease and harmful environmental biological conditions.
3. Physics (sources energy are strong to harm the body such as heat, light, vibration, noise, pressure).
4. Ergonomics (work methods, work positions of equipment, poorly designed equipment, or repetitive monotonous movements that reduce work concentration).
5. Psychology (personal relationships, roles and responsibilities, such as unclear work orders and worker role conflicts).

In order to reduce the number of work accidents at company, safety activities must be improved. Good OHS management can have a positive impact not only on accident rates, but also on competitiveness and financial performance [36]. This effort is intended to find and maintain the most effective form of improvement. This is the most effective solution to an existing problem that will persist and even escalate. The method used in making improvements is the 5W&1H method, 5W&1H are six basic types of questions used to collect information (information gathering) [37]. This method is widely used by journalists to obtain the desired detailed and detailed information [38].

The objectives to be achieved in this research are to know the work accident records at company, understand the system of occupational health and safety being implemented, knowing what risks may occur to employees who carrying out field duties and find out improvements and giving recommendation to company.

2. MATERIALS AND METHODS

The research method was carried out by directly visiting the location of the project work, namely at Merak port, Banten. The research consisted of three stages, namely:

a) Stage 1: Identification & Initial Study

The Identification & Initial Study stage is carried out by researchers including reading books, journals, previous research reports, seeking information from the media, discussing with other people, and observing conditions and phenomena in the field.

b) Stage 2: Data Collection and Processing

In compiling this research journal, the author compiled it based on data obtained during research on the Merak Port pier repair work. At initial direct observation is performed on the work being carried out during the research, especially aspects that have the potential for work accidents. Very varied and complex conditions are very likely to occur during implementation in the field, so the smooth implementation of the dock repair work is very dependent on good conditions among all workers. Then data collection through interviews to engineers, supervisors, foremen and craftsmen relating with

practical solutions that will be used to overcome problems that arise. On top of that literature study also necessary, the comparisons study is performed through books and journals related to problem rising and analysis during implementation of dock repairs. Finally, the data processing carried out is from data on work accidents that occurred during the repair process. This data will be processed using the Job Safety Analysis method to determine the risks and hazard of the work carried out.

c) Stage 3: Analysis and Conclusion

At the beginning, safety record of company is provided in check sheet by previous stage. Check sheet will be showed typical of accident, injured part of body and timing. It is useful to determine hazard hierarchy, then Job Safety Analysis (JSA) is performed and risk matrix class is considered, as shown in Table 1 [39]. Every single accident is scored in term of severity, likelihood and probability to get risk classification, either low, medium even high risk [40]. The matrix will help prioritize improvement based on urgency of risk [41]

There are five types of accidents, here are chemical, biological, physical, ergonomic and psychological accident. Each of accident is identified based on type and put in histogram diagram and followed by pareto diagram. Pareto rule said that priority problem shall be solved at least 80% contribution. To know the root causes of problem, interview and survey is conducted with engineers, supervisors, foremen and craftsmen through fishbone diagram and followed by 5W&1H, to capture various information about the incident, such as: who was involved in the incident, what exactly happened, where, when, why and how [42]. Since root causes is identified then some recommendation is proposed also, to improve safety performance and avoid similar accident occurred in near future.

Table 1. Risk matrix [43]

		RISK MATRIX	**PROBABILITY**		
			B1 VERY LIKELY events that occur more than 3 times or are repeated	**B2** POSSIBLE has happened but not more than 3 times	**B3** LITTLE POSSIBLE Can happen, but not more than once
SEVERITY	**A1**	pollute the work environment and areas around the workplace Death Permanent illness/disability	**9**	**7**	**4**
	A2	pollute the work environment injuries accompanied by medical treatment Serious injury	**8**	**5**	**2**
	A3	does not pollute the work environment First aid medical care Minor injuries	**6**	**3**	**1**

3. RESULTS

3.1. Check Sheets

Check sheets can be used to analyze and analyze OHS data, such as OHS equipment, OHS activities and work accidents that occur. With this check sheet, company directors or work project leaders can find out problems based on the frequency of types or causes of work accidents and can make decisions to prevent work accidents from occurring in ongoing or future projects in order to create a healthy and safe work environment for workers.

The results of data collection via check sheet can be seen in Table 2.

Table 2. Routine pier repair work accident data January-December 2021

Date Incident	*Causes of Work Accidents*	*Types of Work Accidents*	*Information*	
			Wounds/Injuries	**Injured body organs**
January 14, 2021	Hand cut by steel plate while taking measurements	Ergonomics – Careless measurements	The skin on the hands peels off	hand
February 8, 2021	Feet get pinched when moving workpieces	Ergonomics – The workpiece falls on the feet	Feet become bruised	foot
April 15, 2021	Head hit the dock fender while measuring	Ergonomics – Dock measurements pay little attention to surroundings	The head becomes swollen	head
April 30, 2021	Body muscle weakness due to excessive lifting of the plate	Ergonomics – Incorrect lifting of plates/materials	The hip becomes sprained or muscle strained	Body/hips
May 3, 2021	Eyes exposed to sparks during welding	Physics – The welding heat source creates sparks that have the potential to injure	The right eye became swollen	Eye
May 17, 2021	Eye pain due to exposure to light during welding	Physics – The light source from the welding heat dazzles the eyes	The eyes go blind for a moment	Eye
May 28, 2021	The leg hit while lifting the steel plate	Ergonomics – The position of lifting the workpiece creates an obstructed view and tripping of the feet	Feet become bruised	Foot
June 4, 2021	The hand was hit by sparks from the grinding machine while cutting	Physics – Iron flakes bounce off the grinding wheel	Injured hand	Hand
July 23, 2021	Slipping when trying to move the work object	Chemical – The work area is contaminated by oil spills from leaking machines	Sprained leg	Foot
July 6, 2021	Hand cut while lifting steel plate	Ergonomics – The edges of the steel plate are still sharp	Injured hand	Hand
August 2, 2021	Falling from scaffolding	Ergonomics – Workers who stand for too long make workers bored and distracted	Sprained leg	Foot
August 20, 2021	Hands are cut when trying to move work objects	Ergonomics – The process of moving using human power is not correct	Injured hand	Foot
September 3, 2021	The eyes become swollen due to exposure to the welding beam during welding	Physics – The light source from the welding heat dazzles the eyes	The eyes are momentarily blind and exposed too often so they often water and swell	Eye
September 15, 2021	Cut your hand when you want to measure a workpiece	Ergonomics – The way things work when measuring is less careful	Injured hand	Hand
September 28, 2021	The foot hits the work object	Ergonomics – Repetitive worker mobility makes workers bored and careless, not seeing work objects while walking	Sprained leg	Foot
October 9, 2021	Hands exposed to sparks during welding	Physics – Welding sparks cause burns	Injured hand	Hand
October 21, 2021	Slipped due to slippery work area	Biology – Heavy rain causes lots of puddles in the work area	Head hit the floor	Head
November 17, 2021	Swollen eyes exposed to workpiece splashes during cutting	Physics – Iron scraps bounce off the grinding blade	The eyes become swollen	eye
December 10, 2021	Feet hit by work object	Ergonomics – Poor hand grip position	Feet become sore	neck

3.2. Job Safety Analysis

In construction work, *Job Safety Analysis* (JSA) is needed to identify risk and potential hazards related to a series of jobs [29]. The JSA also kind of technique could helps improve productivity by detecting errors in production processes [44]. The JSA for the Merak Port repair work is mention in Annex 1, including the scoring is performed. By using a job safety analysis form, the author describes the causes of accidents and minimizes the possibility of work accidents based on the risk/hazard control hierarchy. By JSA mentioned that the accident were occurred in the past showing higher risk in several activities, there are no high, 9 medium and 10 low risk category. Some risk mitigation are shall be performed to reduce risk and accident could be eliminated. However analysis and discussion will be elaborated in chapter 4.

3.3. Histogram Diagram

Based on Table 1 according to Ghaisani and Nawawinetu [34] hazard are divided into 5 types, frequency of work accidents and histogram diagram can be shown in Table 3 and Figure 1 respectively.

Table 3. Frequency of work accidents for the period January-December 2021

No	Types of Accidents	Number of Accidents
1	Chemical Accidents	1
2	Biological Accidents	1
3	Physical Accidents	6
4	Ergonomics Accidents	11
5	Psychological Accidents	0

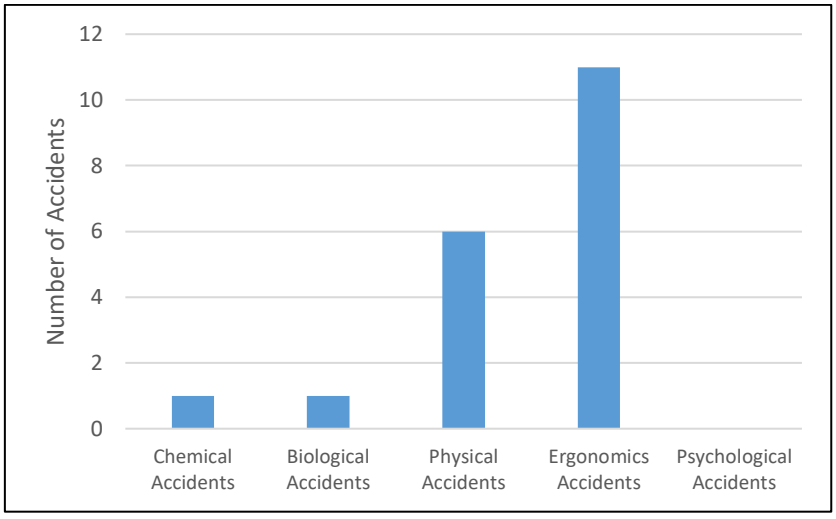

Figure 1. Histogram of work accidents

Figure 1 illustrates the number of accidents that occurred based on the results of previous JSA filling. It can be seen that during the period, ergonomics work accidents often occurred because many work accidents were found due to poor work methods, so that causing harm to the workers themselves.

3.4. Pareto Diagram

A Pareto diagram is a bar graph that depicts problems based on the order of the number of events. The sequence starts with the number of frequent problems, increasing to rare problems. On the chart, the highest (leftmost) bar is followed by the lowest (rightmost) bar . Percentage type of accident is calculated as shown in Table 4 below.

Table 4. Percentage of work accidents

No	Types of Accidents	Amount	Percentage	Cumulative Percentage
1	Ergonomics Accidents	11	57.89%	57.89%
2	Physical Accidents	6	31.58%	89.47%
3	Chemical Accidents	1	5.26%	94.74%
4	Biological Accidents	1	5.26%	100%
5	Psychological Accidents	0	0%	100%
	Total	19	100%	

With data on the frequency of the number of work accidents and the percentage of work accidents, a Pareto diagram can be created by applying the 80:20 ratio to identify several important problems. The Pareto diagram that the author created is as shown in Figure 2 below.

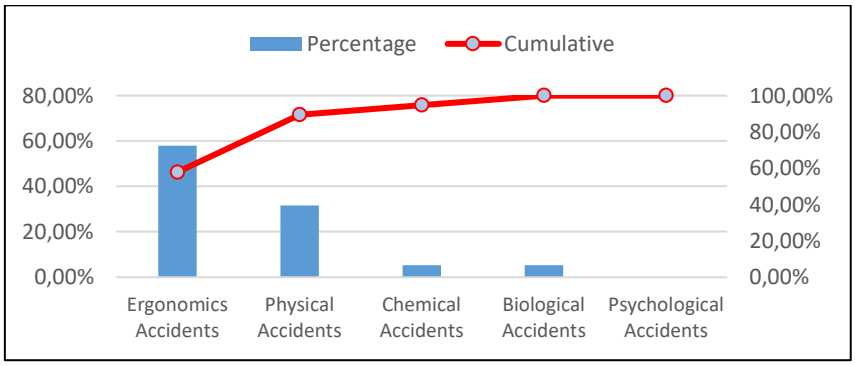

Figure 2. Pareto diagram

3.5. Cause and Effect Diagram (Fishbone)

In process , the researcher conducted an interview with the person in charge of the Merak Port pier repair project. The results of the interview were then used to create a cause and effect diagram (fishbone diagram) as shown in Figure 3.

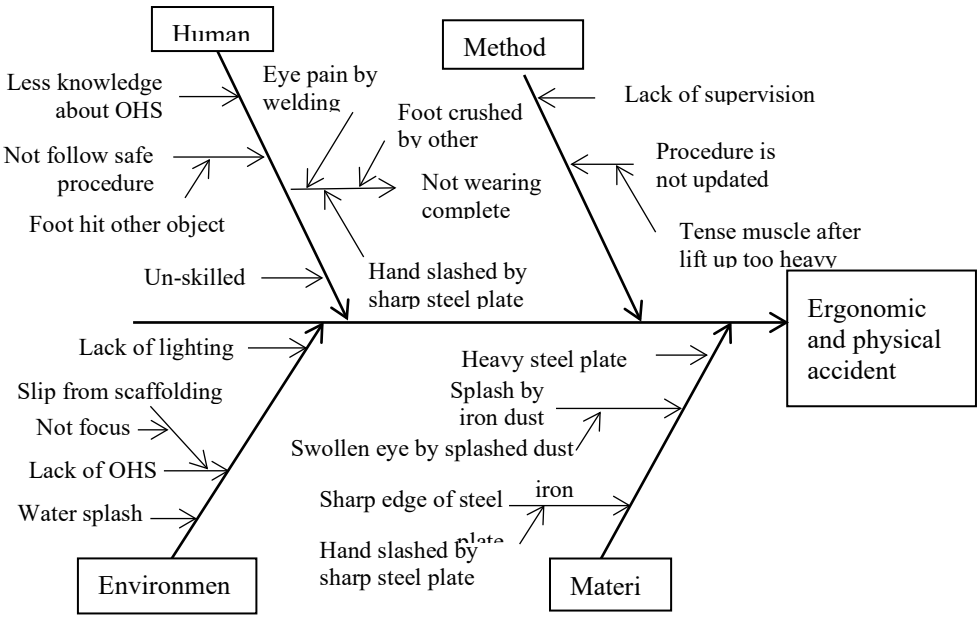

Figure 3. Cause and effect diagram (fishbone) for dominant accidents

The cause and effect diagram was created using 2 (two) types of accidents based on check sheets/log books (notebooks) and Job Safety Analysis (JSA), namely types of ergonomic accidents due to work methods, work positions, equipment, poorly designed equipment, or repeated monotonous movements that reducing work concentration and types of physical accidents due to energy sources strong enough to harm the body such as heat, light, vibration, noise, pressure or radiation. The dominant types of accidents are used to help identify and explain the causes of these frequent accidents.

3.6. 5W+1H

To help determine improvement decisions, the author uses the 5W+1H table as shown in Table 5 based on the causes and effects that have been described in the previous cause and effect diagram.

Table 5. Proposed work risk improvements with 5W + 1H

Cause of accident	***Why (why repairs need to be made)***	***What (what causes work accidents)***	***Where (where it will be tested)***	***When (when will it be tested)***	***Who (who is responsible)***	***How (how the repairs were carried out)***
Human factors	To avoid work accidents for employees	- Workers have minimal knowledge about OHS - Not following safe work procedures - Not wearing complete PPE	Place where work projects are carried out	When implementing work projects	div. company OHS	1. Carry out TBM before work is carried out 2. Carry out routine inspections of the work area 3. Provide strict sanctions against workers who violate them 4. Provide OHS training to workers
Method Factors	So that workers are safe when doing their work	- Work procedures are not updated - Lack of supervision	Place where work projects are carried out	During the implementation of work projects	div. company OHS	1. Updates in using work methods 2. Supervision is carried out
Environmental factor	To avoid work accidents	- Lack of OHS signs - Minimal lighting - Water splash due to tidal waves	Place where work projects are carried out	During the implementation of work projects	div. company OHS	1. Put OHS signs 2. Provide adequate work lighting 3. Carrying out work away from the seafront
Material Factors	To avoid work accidents	- Sharp workpiece - Sparks and residual material from cutting workpieces - Heavy workpiece	Place where work projects are carried out	During the implementation of work projects	div. company OHS	1. Wear complete and appropriate PPE when doing work
Machine Factor	To avoid work accidents	- Using the wrong machine/not according to procedures - Not setting the machine/tool properly - Broken machines are still used	Place where work projects are carried out	During the implementation of work projects	div. company OHS	1. Training is carried out in the correct use of the machine 2. Set up the tool/machine correctly 3. Updates to machines that are not suitable for use

4. DISCUSSION

Based on data obtained, work accidents were dominated by ergonomic types of accidents which include poor working methods, equipment or how to use tools, and monotonous or repetitive activities such as tripping and being pinched due to high worker mobility. Ergonomic accidents contribute 57.89% and physics accidents 31.58%. Some recommendation arise which comes from 5W+1H analysis, such as training and education, provide strict sanctions against workers when doing violation and use work tools properly and correctly. The recommendations are put as risk mitigation and resulted medium risk reduce from 10 to zero will be expected, and accident will be eliminated.

Meanwhile some researchers stated to reduce risk perceptions associated with unsafe behaviors and accidents, companies must implement a variety of safety programs to improve their safety climate beyond simple safety-related education and training [45], management commitment [46] and build team who administrates ergonomics [47].

5. CONCLUSION

By reviewing the data processing carried out, we conclude that there were 19 work accidents. There are 5 types of work accident factors was occurred. Herewith typical and frequency percentage ergonomic factors 57.89%, physics 31.58%, chemistry 5.26%, biology 5.26%, and psychological factors 0%. The company actually already has an Occupational Safety and Health (OHS) system, but its implementation is not consistent due to the work culture of field workers who are not used to it and feel unproductive when using Personal Protective Equipment (PPE).

There are several risks that can occur when carrying out Port Pier Repair work carried out by PT. Arto Moro Sentosa, including Measurement Risks: hit leg, pinched hands, h ands cut by steel plate, hit his head on the dock vender; Welding Risks: hands exposed to sparks, eyes exposed to sparks and welding rays; Cutting Risks: cut hands, eyes exposed to sparks from a grinding machine; Assembly Risks: leg hitting a steel plate, pinched Hands, slipping into the sea, falling from a Height.

With several potential work accidents may occurred again, the company should carry out improvements by providing training programs on OHS to workers, paying more attention to OHS supervision, giving sanctions to workers who did OHS violation.

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JOB SAFETY ANALYSIS

Prepared date : August 29, 2022
Working period : January - December 2021
Location : Merak harbour Banten
Activity :

Project name : Repairment Job at Merak harbour
Executor : PT. Arto Moro Sentosa

No	Date	Type of Accident	Risk Assessment			Category	Hazard	Risk Mitigation	Risk Assessment			Category
			S	P	R				S	P	R	
1	1/14/2021	Hands were cut by a steel plate while taking measurements	A3	B2	3	Low	sharp steel plate edge	Wear complete PPE when doing work, such as gloves	A3	B3	1	Low
2	2/8/2021	Pinching a foot while moving a workpiece	A3	B2	3	Low	work equipment toppled over onto foot	1. Carry out routine inspections of the work area by put work equipment in a flat place 2. Wear complete and appropriate PPE such as safety shoes	A3	B3	1	Low
3	4/15/2021	hit head on dock fender during measurement	A3	B2	3	Low	dock fender	1. Carrying out work away from the seafront and be vigilant when surveying under the dock 2. Wear complete and appropriate PPE such as safety helmet	A3	B3	1	Low
4	4/30/2021	Muscle strain due to excessive lifting of plate	A3	B2	5	Medium	the weight of the material being lifted was too heavy	Training is carried out in the correct use of the machine, such as using lifting tools and/or use leverage and transport planes (pry bars, trolleys, etc.).	A3	B3	1	Low
5	5/3/2021	eyes exposed to sparks when welding	A2	B2	5	Medium	welding sparks	Wear complete PPE when doing work, such as gloves and welding glasses	A2	B3	2	Low
6	5/17/2021	eye pain due to exposure to light when welding	A3	B1	6	Medium	welding flame light source	Wear complete PPE when doing work, such as welding glasses	A3	B2	3	Low
7	5/28/2021	bumped foot while lifting a steel plate	A3	B2	3	Low	stack of steel plates	1. Set up the tool/machine correctly and lifting carefully and by using a transport plane (trolley) 2. Wear complete and appropriate PPE when doing work such as safety shoes.	A3	B3	1	Low

S = Severity P = Probability R = Risk

No	Date	Type of Accident	Risk			Category	Hazard	Risk Mitigation	Risk			Category
			S	P	R				S	P	R	
8	6/4/2021	hand was hit by a spark from a grinding machine while cutting a workpiece	A3	B2	3	Low	splashing iron pieces from the grinding wheel	Wear complete PPE when doing work, such as long-sleeved work clothes and project gloves	A3	B3	1	Low
9	7/23/2021	slipped while moving an object	A2	B2	5	Medium	spilled oil	Carry out routine inspections of the work area by avoiding oil spills, placing oil in a special place, cleaning up work areas that have oil spills.	A3	B3	1	Low
10	7/6/2021	cut his hand while lifting a steel plate	A3	B2	3	Low	sharp edges of steel plates	Wear complete PPE when doing work, such as gloves	A3	B3	1	Low
11	8/2/2021	fell from scaffolding	A2	B1	6	Medium	slip	1. Supervision is carried out by checking the strength of scaffolding, 2. Wear complete and appropriate PPE , such as using body harness when working at hight elevation 3. Put OHS signs	A3	B3	1	Low
12	8/20/2021	cut his hand while moving the workpiece	A3	B2	3	Low	sharp edge of steel plate	Wear complete PPE when doing work, such as gloves	A3	B3	1	Low
13	9/3/2021	eyes became swollen due to welding spatter during welding.	A3	B2	5	Medium	source of welding sparks	1. Provide adequate work lighting 2. Wear complete and proper PPE when doing work, such as safety glasses and welding masks	A2	B3	2	Low
14	9/15/2021	cut hands when measuring a workpiece	A3	B2	3	Low	iron and plate materials that have	Wear complete PPE when doing work, such as gloves	A3	B3	1	Low
15	9/28/2021	hit your foot on a workpiece	A3	B2	3	Low	stack of workpieces	1. Provide OSH training to workers 2. Carry out routine inspections of the work area by placing workpieces in easily visible and neatly organized, 3. Wear complete and appropriate PPE , such as safety shoes 4. Put OHS alert signs	A3	B3	1	Low
16	10/9/2021	hand was hit by sparks while welding	A3	B1	6	Medium	welding sparks	1. Carry out TBM before work is carried out to let operator know the hazard. 2. Wear complete PPE when doing work, such as gloves when using welding equipment.	A3	B3	1	Low
17	10/21/2021	slipping due to slippery work area	A2	B1	6	Medium	puddles of rainwater	Drying the rainwater puddle area, put warning OHS signs	A3	B3	1	Low
18	10/17/2021	eye swollen by splashing workpiece when cutting	A2	B2	5	Medium	splashing iron pieces from	Wear complete PPE when doing work, such as safety glasses	A2	B3	2	Low
19	12/10/2021	foot hit by a workpiece	A3	B2	3	Low	slippery hands when lifting workpieces	1. Wear complete PPE when doing work, such as project gloves 2. Put OHS signs.	A3	B3	1	Low

S = Severity P = Probability R = Risk