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IMPLEMENTATION OF ERGONOMICS IN THE WORK ENVIRONMENT FOR EMPLOYEE HEALTH AND SAFETY

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<p>ARTICLE INFORMATION Received: 10th April 2020 Revised: 30th April 2020 Issued: 05th May 2020</p> <p>Corresponding author: Rangga</p> <p>E-mail: ranggagamayudha@gmail.com</p>  <p>DOI: 10.38035/DIJEFA</p>	<p>Abstract: This reserach based on health issues because of the employee that Appear ergonomical failure. This condition can be a burden for the company peroductivity and performance. Many industries look this issue as a minor issue and they concern not to take this into serious discussions to solve the issue, but this minor issue can effect spesifically Become a major issue for the health and safety of the employees in the company. This research objectives is to describe the implication of ergonomical failure to health and safety of emplyee that can effect the company productivity and performance. By comparing some of Articles that already discuss about this issue, the author want to give insight about how important this issue and give solution from ergonomical view.</p> <p>Keywords: Health, Safety, Ergonomy</p>
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INTRODUCTION

Indonesia are plotting and trying to start entering the era of the industrial revolution 4.0. The Industrial Revolution 4.0 emphasizes the employee's ability to control or operate machines - machines that have diautomisasi, therefore skilled employees in operating the machine has become one of the important factors for the development of the company in order to compete and survive in the era of industrial revolution 4.0.

Is the duty of the management to the employees who spearhead the company's production to be felt secure and safe work in the workplace. As mandated by Article 8,9,11, and 14 Act - Act 1 of 1970 (Kemnaker, 1970), Every organization needs to do maintenance on one of its employees with regard occupational health and safety (OHS) condition of the company. Occupational health and safety (OHS) is a program that recently became much attention to the organization because it was felt that the human resources are capital for the organization because it attempts to make its employees safe, healthy and safe at work has been widely considered the organization now this (Simamora, 2004).

The science of ergonomics became one of the sciences that can be applied by the company in anticipation of accidents that may occur to the employees. The application of good ergonomics to be one of the main factors that can maximize the safety of its employees (King, Fisher, & Garg, 1997),

Seeing a very important effect of the application of the science of ergonomics to the health and safety employees in accordance with the mandate of law - author law lifting the title "Evaluation of Ergonomics in the Workplace Health and Safety for Employees".

LITERATURE REVIEW

Understanding Health and Safety

1. Definition and Objectives OHS

Every organization needs to do maintenance on one of its employees with regard OHS condition of the company. Occupational health and safety (OHS) is a program that recently became much attention to the organization because it was felt that the human resources are capital for the organization because it attempts to make its employees safe, healthy and safe at work has been widely considered the organization now this (Simamora, 2004),

The use of the term OHS is a term that is quite comprehensive and interrelated. Health itself has a coverage about the physical, mental to the stability of the employees themselves (Simamora, 2004), More safety refers to the protection of one's physical wellbeing (Simamora, 2004), Two things are essential aim of which is interrelated prevent accidents and maintain the welfare of the individual as a whole. According to (Sedarmayanti, 2009) safety and health management system of work has a purpose as a tool to achieve the degree of health workforce either full height workers, farmers, fishermen, civil servants or free labor; as an effort to prevent and eradicate diseases and occupational accidents, memelihara dan improve workforce health and nutrition, maintain and improve the efficiency and productivity of human labor, combat fatigue and multiply a passion and a pleasure to work; provide protection for communities around the company, in order to avoid the danger of fouling materials industrialization process is concerned, and broad community protection from the possible dangers posed by industrial products.

2. Terms of Safety

Based on (Kemnaker, 1970) some safety requirements are as follows:

- a. Prevent and reduce accidents;
- b. Prevent, reduce and extinguish the fire;
- c. Prevent and reduce the danger of explosion;
- d. Provide an opportunity or a way to save themselves at the time of fire or a dangerous occurrence;
- e. Giving help to the accident;
- f. Giving personal protective equipment to employees;
- g. Preventing and controlling timbulnya or menyebarkan temperature, humidity, dust, dirt, smoke, steam, gas, wind, weather, sea rays or radiation, Suara and vibration;

- h. Prevent and control the incidence of occupational diseases both physically and psychologically, poisoning, infection and transmission;
- i. Obtaining sufficient and appropriate lighting;
- j. Organizing air temperature is good and sufficient;
- k. Maintaining hygiene, health and order;
- l. Obtain harmony between work processes;
- m. Securing and facilitate the transport of people, animals, plants or goods;
- n. Securing and facilitate all types of buildings;
- o. Securing and expedite the work of loading and unloading, treatment and storage of goods;
- p. Prevent electric shock;
- q. Adjust and refine the observations on the work accident hazards become taller.

Understanding Ergonomics

Ergonomics and OHS (Occupational Safety and Health) are the two things that can not be separated. Both lead to the same goal of improving the quality of working life (quality of working life). Aspects of quality of working life is one important factor that affects the sense of trust and belonging to employers, which led to the productivity and quality of work (Arif, 2009).

More specifically, the IEA (International Ergonomics Association) defines ergonomics as "the study of anatomy and psychology of human beings in relation to the equipment and the working environment, where it aims to improve the efficiency, health, safety and comfort for workers both at work, at home, or while playing ". From the above definition, it can be concluded that ergonomics is the science that specifically learn about the interaction between man, machine / tool work, and the work environment ".

The basis for the discussion of problems in ergonomics is the interaction between man, machine / tool work, and the work environment. Where the interaction is not always beneficial for any human.

Purpose of Ergonomics

Implementation and application of ergonomics in the workplace in the range from the simple and individual padatingkat first. The design ergonomics can improve the efficiency, effectiveness and productivity of work, and to create a system and a suitable environment, safe, comfortable and healthy. The purpose of the application of ergonomics are as follows:

1. Improving the physical and mental well-being by eliminating the extra work load (physical and mental), to prevent occupational disease, and increases job satisfaction
2. Improving social welfare by improving the quality of workers sesame contacts, organizing better and turn the system together in the workplace.
3. Contributing in a rational balance between aspects of engineering, economics, anthropology and culture of human-machine systems for the purpose of improving the efficiency of human-machine systems.

Ergonomics very broad scope of its aspects, among others, include:

1. Technics
2. Physical
3. psychic experiences
4. Anatomy, primarily related to the strength and movement of muscles and joints
5. Sociology
6. Physiology, relation to body temperature, oxygen up take, and muscle activity
7. Design, etc.(Bagaskara, Creative, and Telkom, 2008)

The relationship between Ergonomics and OHS

In essence, ergonomics and OHS are two things that can not be separated. One of the goals of the OHS is to reduce the risk of work due to occupational disease of accident. One effort to minimize accidents is to design systems that are customized work with human physical condition. With this highly worker comfort in priority in this process in needed disciplines of ergonomics in the design of work systems. There are several examples of cases that do not have a system ergonomics, among others:

1. The work (quality and quantity) that do not fit
2. Often work accidents
3. human error
4. Workers complain of soreness and pain in body parts
5. Working tools that are not in accordance with the worker's physical
6. Irregular working environment
7. Low job commitment

Ergonomics is a discipline that utilizes information about the properties, capabilities and limitations of human beings in order to create an effective working system, convenient, safe, healthy and efficient(Tappin, Bentley, & Ashby, 2015),

ENASE concept in terms of ergonomics create methods, environment and work equipment are capable of stimulating ENASE fit the job. ENASE not only be felt by physical workers but also can be felt psychologically as well. The human body when working continuously loaded (in a static state) will cause fatigue and may develop into pain in certain body parts(Bagaskara et al., 2008),

To reach the Health and Safety (OHS), the workers must be protected from workplace accidents or occupational diseases. Efforts should be made to meminimalisasir occupational accidents and occupational diseases is to design a system of work (job / task) (working tools, elements of work, work procedures, work environment, even the organization of work, etc.) are adjusted (fit) with the human condition (man) like behavior, abilities, limitations, capacity, and human characteristics(Yeow & Nath, 2003),

Application of Ergonomics

Ergonomics can be applied to several aspects of the work. Application of ergonomics, among others, can be done at the working position, the work process, the layout of the workplace, and how to lift weights ([http://www.depkes.go.id/downloads/ Ergonomi.PDF](http://www.depkes.go.id/downloads/Ergonomi.PDF), 2011).

1. Working Positions

Consists of sitting and standing position, sitting where the feet are not weighed down with body weight and a stable position during work. While standing position where the vertical position of the spine and the weight is concentrated in balance on two legs.

2. Work process

The workers can reach work equipment in accordance with the position of working time and in accordance with the size of anthropometry. Anthropometric measure must be differentiated from the west and east.

3. Layout Workplace

The display must be visible when performing work activities. While the prevailing international symbol is used more than words.

4. Lifting Load

An assortment of ways to lift loads, namely, the head, shoulders, arms, back and forth. Load that is too heavy can cause spinal injuries, muscle tissue and joints due to excessive movement.

5. Medical supervision

All workers must continuously receive regular medical supervision. Inspection before working to adjust to the workload. Periodic inspections to ensure worker in accordance with his work and detect if there are any abnormalities. Advice should be given on hygiene and health, particularly in young women and the aged.

RESEARCH METHODS

The method used in this research is the study of literature, using the literature regarding the application of ergonomics to solve the problem of OHS in various industries.

FINDINGS AND DISCUSSION

The use of ergonomic approaches to reduce or minimize the health and comfort of employees abnormality has been widely applied and researched by various experts, here are some of the results of research on ergonomics approach to increase employee OHS.

Total ergonomic approach to the pottery industry made to reduce complaints musculoskeletal by 87.8%, decreasing by 77.5% employee fatigue, increase worker productivity by 59.49% and by implication to increase the company's revenue amounted to 76.19% (Kasongan, 2006),

Another study was carried out on an industrial powerhouse and showed that all work stations in Yogyakarta workshop is an ergonomic work station and at risk of accidents, illness due to work, and decreased employee productivity (Hariyono, Soebijanto, Husodo, and Maurits, 2010),

Ergonomics approach that is supported by a high staff engagement and strong leadership will contribute to the safety and awareness on health karyawan (Baumann, Holness, Norman, Idriss-wheeler, and Boucher, 2012),

Improvements in working conditions in the metal industry also showed an improvement in workplace ergonomics will show an increase in productivity of around 30% (Adiatmika, Manuaba, & Adiputra, 2004),

CONCLUSION AND SUGESTION

Overall system maintenance work or working conditions in accordance with the ergonomic approach will lead to increased productivity of employees that will positively impact the productivity and performance of the company. However, in Indonesia there are still many industries and companies are looking at this eye and ignore it. There still need more research for another industries in Indonesia to make sure that ergonomical solution can be implemented for all condition for every industries

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