

IDENTIFICATION OF HAZARDOUS CONDITION OF
WORKPLACE IN WOOD-BASED FURNITURE INDUSTRY:
A CASE STUDY

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA
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2018 UTeM



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WORKPLACE IN WOOD-BASED FURNITURE INDUSTRY:
A CASE STUDY**

This report is submitted in accordance with requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for Bachelor Degree of Manufacturing Engineering (Hons.)

by

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2018

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Sesi Pengajian: **2017/2018 Semester 2**

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This report is submitted to the Faculty of Manufacturing Engineering of Universiti Teknikal Malaysia Melaka as a partial fulfilment of the requirement for degree of Bachelor of Manufacturing Engineering (Hons). The member of the supervisory committee is as follow:

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ABSTRAK

Laporan ini akan mengenalpasti keadaan berbahaya tempat kerja dan mencadangkan beberapa penyelesaian untuk menghapuskan bahaya. Bahaya merupakan isu yang amat berbahaya sekiranya tidak dapat diselesaikan di tempat kerja. Oleh itu, industri perabot telah dipilih sebagai kajian penyelidikan kerana pekerja lebih mudah terdedah dengan faktor-faktor potensi penyakit pekerjaan yang pencemaran bunyi, habuk kayu, dan bahaya ergonomik dan sebagainya. Kajian ini memberi tumpuan kepada pendedahan bunyi, bahaya debu kayu, bahaya kimia dan bahaya ergonomik. Untuk pendedahan hingar di tempat kerja perabot, data berbanding dengan peraturan OSHA dan peraturan FMA. Sepuluh mesin dalam pengeluaran dipilih untuk mendapatkan data tahap bunyi dengan digital sound level detector model 407730. Maklum balas pekerja akan dilakukan untuk mengumpul data mengenai debu kayu dan bahaya kimia terutamanya di jabatan pemotong dan penyemburan jabatan. Untuk bahaya ergonomik, analisis RULA akan digunakan untuk menentukan postur kerja pekerja di tempat kerja yang berbeza iaitu tempat kerja pembungkusan, tempat kerja pemotong dan tempat kerja perhimpunan. Semua data yang diambil dalam proses pengumpulan data akan dianalisis dan dibincangkan. Dari hasil penyelidikan yang diperolehi, mencadangkan cadangan dan cadangan untuk membantu syarikat memperbaiki kawasan kerja bagi pekerja mereka dan untuk menghapuskan kemalangan dan risiko di kalangan pekerja.

ABSTRACT

The furniture manufacturing industry is an industry consisting of various types of workplaces, there are many hazards which put manufacturing workers' health and safety at risk. Workers can be exposed to a number of hazards in this industry that can result in serious injuries, occupational illness or even death. Therefore, furniture industry has been chosen as a research study because the workers were more easily exposed with the potential factors of occupational diseases which are noise pollution, wood dust, and ergonomic hazard and so on. This research focus on noise exposure, wood dust hazard, chemical hazard and ergonomic hazard. For the noise exposure in the furniture workplace compare with OSHA regulation and FMA regulation. Ten machines in the production selected in order to get the noise level data by using digital sound level detector model 407730. Feedback of the employee will be done to collect the data on wood dust and chemical hazard especially in cutting department and spraying department. For ergonomic hazard, RULA analysis will be apply in order to determine the working posture of the employee in different department which are packaging department, cutting department and assembly department. All the data taken in the data collection process will be analysed and discussed. From the research results obtained, propose recommendations and suggestions to help the company improve the working area for their workers and to eliminate the accidents and risk among workers.

DEDICATION

For my adored parents:

Lee Boon Chee

Tee Lian Hia

And for my respected brother:

Lee Cheang Yu

Lee Cheang Chin

For giving me moral support, money and encouragement

Thank you so much

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LIST OF ABBREVIATIONS

COSHH	-	Control of Substances Hazardous to Health
CNC	-	Computer Numerical Control
DOSH	-	Department of Occupational Safety and Health
FMA	-	Factories Machinery Act
FYP	-	Final Year Project
HPDs	-	Hearing Protective Devices
HIRARC	-	Hazard Identification Risk Assessment Risk Control
LEV	-	Local Debitate Ventilation
MSD	-	Musculoskeletal Disorders
NIOSH	-	National Institute for Occupational Safety and Health
OEM	-	Original Equipment Manufacturer
OSHA	-	Occupational Safety and Health Administration
PE	-	Polyethylene
PEL	-	Permissible Exposure limit
PPE	-	Personal Protective Equipment
RULA	-	Rapid Upper Limb Assessment
TWA	-	Time Weighted Average
UTeM	-	Universiti Teknikal Malaysia Melaka
UV	-	Ultraviolet
VOC	-	Volatile Organic Compound, Voice of Customer
WHO	-	World Health Organization

LIST OF SYMBOLS

°C	-	Degree Celsius
DB	-	Decibel
G	-	gram
mg/m ³	-	Milligram per cubic meter
mm	-	millimeter
sq.ft	-	Square Feet

CHAPTER 1

INTRODUCTION

1.1 Research Background

Occupational safety and health is a multidisciplinary field concerned with the safety, health, and welfare of people at work. According to Jerie (2012) occupational safety and health is very important to the employee. Every employee has a basic human rights to be safe and working in safe environment. Method and solution for the purpose of improving the hazard condition in working environment must be implemented. Accident and injuries in the furniture workplace are caused by the exposure to occupational hazards. Any types of work activity that sticks to risks are consider as hazard.

As noted by Judd and Wiedenbeck (2004), manufacturing sector especially wood product has a highest percentage of life-threatening to the employee. Employees are endangered to the different kind of machining process to produce the raw material-wood. Awodele *et al.* (2014) studied about the employees will meet different types of hazard when doing different types of work, including physical hazard, chemical hazard, safety hazard and also ergonomics hazard.

Industry plays a very important role and become a very important factor in economical financial for a country. Industry is defined as “*an economic activity concerned with the processing of raw material and manufacturer of products in a working place or factory*”. In the early 19th century, Industrial Revolution occurrence has turned human from agricultural activity to industrial activity where technology and resources involved.

Industries can be divided into four different sectors or categories, which are primary, secondary, tertiary and quaternary sector of industry. Primary sector includes the activity of

mining, raw material extraction and agriculture. Secondary sector includes manufacturing, tertiary sector is service production and last quaternary is involving intellectual services. It gives chances to industry to optimize quantity of their finish product where they can fulfil the customers' requirement and satisfaction due to industrial progression towards financial increases. The top management urged among the employee to work harder without considering safety and health of their employee.

For Malaysia Government, OSHA law has been applied in the industry since year 1994. OSHA plays an important role that should be applied in organization or working place. The law and rule are always updated from time to time to make sure employee safety and health and to solve new potential risk so that the employee always had been protected.

1.2 Problem Statement

From the statistics the highest number of reported occupational disease and poisoning cases is from Penang consists of 2656 cases or 34%, the second highest is from Selangor consists of 14.3% or 1125 cases of the overall and Sabah consists of 854 cases or 10.9% have reported. Then increase to number of 3860 cases was affirmed as work occupational infections and poisonings and work environment enhancement in terms of work occupational and health was carried out. An increasing number of 2876 cases were related to work occupational noise-induced hearing disarranges, counting noise-induced hearing loss, hearing impedance and lasting standard limit move and these clutters are still the most common work occupational illness experienced by specialists (74.5%) as compared to other illnesses. This was taken after by work occupational musculoskeletal infections, for illustration increase to number of 173 cases (4.5%) and word related lung illnesses, of 98 cases (2.5%). There were no affirmed cases of word related cancer or psychosocial issue in 2016.

There are 7820 cases of work occupational illness and poisoning related to the Occupational Safety and Health Administration in 2016 as compared with a number of 5960 cases detailed to the Occupational Safety and Health Administration in the year 2015.