



UNIVERSITI PUTRA MALAYSIA

***PREVALENCE OF OCCUPATIONAL ACCIDENTS AT OIL PALM
PLANTATION IN JOHOR***

**BY
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IZYAN NADHIRAH BINTI NOR AZMAN

This thesis submitted in fulfilment of the requirement for the degree Bachelor

Science (Environmental and Occupational Health) from Faculty of Medicine and

Health Sciences, University Putra Malaysia

ABSTRACT

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IZYAN NADHIRAH NOR AZMAN

This cross-sectional study was conducted at oil palm plantations in Johor. The main objective in this study is to determine prevalence of occupational accidents and the association between contributing factors and occupational accidents among oil palm harvesters. Data was collected from 148 male harvesters in Johor using questionnaires to determine socio demographic factors, working information and cases of occupational accidents as well as its contributing factors. Secondary data obtained from the plantation management was used to tally with the workers information while Department of Occupational Safety and Health (DOSH) was used to determine distribution and trend of accidents. The prevalence of reported occupational accidents was 23.0% for accident while 14.2% were dangerous occurrence. On the other hand, the prevalence of underreported occupational accidents was 75.0% due to accident and 45.3% were dangerous occurrence. The prevalence for contributing factors was higher towards human factors for both accident (94.6%) and dangerous occurrence (96.6%). Chi Square test revealed that factor such as time of accident ($P=0.000$, $p<0.05$) was important contributing factors of occupational accidents among oil palm harvesters. As a conclusion, oil palm harvesters are exposed to a combination of contributing factors that may lead to an increased risk of having accidents.

Key words: prevalence, occupational accidents, trend, contributing factors, and oil palm harvesters

ABSTRAK

KELAZIMAN KEMALANGAN PEKERJAAN DI LADANG KELAPA SAWIT DI JOHOR

IZYAN NADHIRAH NOR AZMAN

Kajian keratan rentas ini telah dijalankan di ladang kelapa sawit di Johor. Objektif utama kajian ini adalah untuk menentukan kelaziman kemalangan pekerjaan dan perkaitan antara faktor-faktor penyumbang dan kemalangan pekerjaan di kalangan penuai buah kelapa sawit. Maklumat telah dikumpulkan daripada 148 penuai lelaki di Johor menggunakan borang kaji selidik bagi menentukan faktor demografi, maklumat pekerjaan dan kes kemalangan pekerjaan beserta faktor penyumbang kemalangan. Data sekunder yang diperolehi daripada pengurusan ladang telah digunakan untuk diselaraskan dengan maklumat pekerja sementara Jabatan Keselamatan dan Kesihatan Pekerjaan (JKKP) digunakan untuk menentukan pembahagian dan corak kemalangan. Kelaziman kemalangan pekerjaan yang dilaporkan adalah 23.0% untuk kemalangan sementara 14.2% bagi kejadian berbahaya. Sebaliknya, kelaziman kemalangan pekerjaan yang tidak dilaporkan adalah 75.0% disebabkan oleh kemalangan dan 45.3% bagi kejadian berbahaya. Kelaziman bagi faktor-faktor penyumbang adalah tinggi ke arah faktor manusia bagi kedua-dua kemalangan (94.6%) dan kejadian berbahaya (96.6%). Ujian Chi Square telah mendedahkan faktor seperti masa kemalangan ($P=0.000$, $p<0.05$) adalah faktor penyumbang kepada kemalangan pekerjaan yang penting di kalangan penuai buah kelapa sawit. Sebagai kesimpulan, penuai buah kelapa sawit terdedah kepada gabungan faktor penyumbang yang boleh membawa kepada peningkatan risiko mendapat kemalangan.

Kata kunci: kelaziman, kemalangan pekerjaan, corak, faktor penyumbang, dan penuai buah kelapa sawit

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LIST OF ACRONYMS AND ABBREVIATIONS

ILO	International Labour Organization
DOSH	Department of Occupational Safety and Health
SOCISO	Social Security Organization
JTKSM	Jabatan Tenaga Kerja Semenanjung Malaysia
NADOOPOD	Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease
PD	Permanent Disability
NPD	Non Permanent Disability
DB	Dependent's Benefit
TDB	Temporary Disablement Benefit
PDB	Permanent Disablement Benefit
CPO	Crude Palm Oil
FFB	Fresh fruit bunch
MPOB	Malaysian Palm Oil Board
PORIM	Palm Oil Research Institute of Malaysia
PORLA	Palm Oil Registration and Licensing Authority
SPSS	Statistical Package for Social Science
SHO	Safety and Health Officer
MDS	Malaysian Department of Statistics
OSHA	Occupational Safety and Health Act
OSHMS	Occupational Safety and Health Management System

CHAPTER 1

INTRODUCTION

1.1 Introduction

Occupational accident is an unexpected and unplanned occurrence, or permitting acts of violence originating from or in the series of work which leads to death or any personal injury. In other words, occupational accidents are committed while engaged in an economic activity which ended up with workers getting injured. It can occur between the place of work and the worker's principal or secondary residence; the place where the worker usually takes their meals; or the place where the worker usually receives their remuneration (ILO, 1996).

Data on occupational accidents are not available for all countries in the world (Takala, 1999). The average figure for occupational accidents was estimated to be 264 million cases yearly. In the Asian countries, annually 83,000 fatal occupational accidents take place while non fatal occupational accidents are 63 million. The fatality rate per 100,000 workers is 21.5 and the accident rate per 100,000 workers is over 16,000 (Hämäläinen et al., 2006).

ILO estimates in 1997, out of a total of 330,000 fatal workplace accidents worldwide, there were 170,000 accidents among agricultural workers. Certain industries such as agriculture had the high rates of fatal accidents (Struttman et al., 2001) and non fatal accidents (Feyer et al., 2001; Conway et al., 1999). Agriculture is one of the most hazardous industries of which the risk of injuries is approximately 5 to 10 per 100 persons per year, and is higher in males (McCurdy et al., 2000).

Occupational accidents, work related injuries and fatalities occur from multiple causes of which mostly focus on the worker (Jovanović et al., 2004). The root causes of accidents can be grouped as “immediate” and “contributing”. The immediate causes are unsafe acts and unsafe working conditions. Meanwhile, contributing causes

are management-related factors, environment, also physical and mental condition of the worker. A combination of causes must come together in order to result in an accident (Rivara et al., 2000; Simpson et al., 2000; Ulfberg et al., 2000; Zwerling et al., 1998).

Human error is frequently cited as cause of occupational mishaps and occupational accidents (Dekker, 2003). The psychophysical state of workers also plays a significant role in developing occupational accidents. As results, it will reduce alertness and attention (Ulfberg et al., 2000) as well as having high probability to take fewer safety precautions and turn out to have more injuries (Struttman et al., 2001).

The sources of data can be obtained from reports that usually contain information on fatal accidents at work. Reported figures and corresponding frequency rates are obtained and calculated respectively (Takala, 1999). The basis calculations were the economically active population and the total employment information. For non-fatal accidents, the data of accidents causing at least four days of absence from work is needed (Hämäläinen et al., 2009).

Global estimates by ILO indicate that the occupational problems are larger than earlier believed. Particularly, figures of occupational accidents in developing countries were greatly underestimated (Hämäläinen et al., 2006). A recent study from US has shown that a proportion of all occupational injuries were overlooked from the reported injuries (Leigh et al., 2004). Still, studies from different countries have shown that the magnitudes between fatal and non-fatal accident is quite constant if accurate recording systems exist (Dupré, 2001; Takala, 1999).

1.2 Problem statement

Occupational accidents cause suffers in human and economical losses at different levels in society (Lundqvist et al., 1992). The costs of injury are medical expenses, loss of earnings, property damage, replacement labor, rehabilitation and loss productivity (Tormoehlen et al., 1984). These costs affect the employed persons and to the society of which it makes us ponder how complex and expensive accidents can be so that people will make efforts to prevent accidents from occur.

The main reason of these accidents is many agricultural workers do not realize that their work is dangerous. There is lack of awareness of the workers and lack of training needed to reduce the risks and improve working conditions by learning appropriate work habits. Besides, machinery and other equipment used in agriculture such as tractors and cutting tools cause the highest frequency and fatality rates of injuries (Amuko, 1999).

Underreporting weakens the efforts to acquire worldwide information on occupational accidents as well as in establishing the employment status of agricultural workers. The information from proper accident recording and notification systems can really be useful to estimate the severity of occupational problems and the figures can give an insight whether the official data are accurate (Forastieri, 2001).

1.3 Study justification

This study provides information regarding the number of accidents in the palm oil industry. The figures assist in providing estimates regarding occupational accidents to determine the extent of this problem. Besides, this study will act as a

baseline to other research. Other countries in the same region can use this data and make comparison. The estimates should promote for better occupational safety work.

Moreover, this study will help many people as the result can be used by the authority such as DOSH to come up with the related guidelines or standard requirement indicating the best practices for agriculture sector. The management can also use this data to improve safety at work and provide a better workplace to the workers. The workers will benefit in a way that it will reduce the costs of accidents from the medical expenses or loss of profits.

This study also intends to identify the shortcomings in the system. The shortcomings can be detected through high accident cases. The information can be used to determine the magnitude of the problem. In other words, the organization has to investigate and identify where the problems originating from as well as deciding on the actions that need to be taken in order to minimize the incident. In addition, they also have to decide on the best way to communicate to the employees.

1.4 Study objectives

1.4.1 General objective

The goal of this study is to determine prevalence of occupational accidents among oil palm harvesters at oil palm plantation in Johor.

1.4.2 Specific objectives

1. To determine the socio demographic factors and working information among oil palm harvesters.
2. To determine the prevalence of reported occupational accidents among oil palm harvesters.
3. To determine the prevalence of underreported occupational accidents among oil palm harvesters.
4. To determine the association between occupational accidents and the contributing factors between workers.

1.4.3 Study hypothesis

1. There is a significant association between occupational accidents and the contributing factors between workers.

1.5 Conceptual framework

Occupational accident present in various sector of industry including agriculture industry. Agriculture in Malaysia is characterized by plantation sector and the smallholders' sector. Agriculture comprises of cash crops, commodities, fruits, vegetables and livestock. Major crops planted are oil palm, rubber, rice, mixed horticulture, coconut and orchard (Statistic Department, 2001).

Fatal occupational accidents can be classified corresponding to several causal factors. One of the factors is the working conditions which are not being adequately adapted to workers' capacities. Combination of heavy physical work and

strenuous working positions will produce early exhaustion and fatigue. Therefore, reduces alertness and enhances reaction time (Clerc, 1985; ANACT, 1980).

Another factor is organizational factors which play a major role in determining accident levels. Combination of fragmented and repetitive tasks with long and irregular working hours as well as inadequate rest will create “accident-prone” situations. Besides, systems of remuneration also can affect safety. “Danger money” is usually where workers who are striving to increase their wages become a volunteer to perform dangerous tasks which they will be paid in placement to their speed of work. This situation occurs because of work pressure for personal monetary gain (Faverge, 1983).

Many analysis of accident causes have focused on the “human factor”. The causative features such as lack of experience, and youthful attitudes or carelessness are the properties of individual workers (Cazamian, 1983; Chhokar, 1987). Almost a quarter of the fatal accidents were due to negligence of the injured persons themselves (Grundström et al., 1980). Two out of three fatal accidents were evaluated as the result of human error (Williamson and Feyer, 1990; Feyer and Williamson, 1991).

Work-related non-fatal injuries have not received sufficient attention. However, the incidence is much higher than fatal injuries (Li et al., 1999). According to Male (2003), human factors are likely to contribute to this problem including factor relating to individuals, the nature of the job (e.g. design of the workplace), and the organizational (e.g. training procedures and management systems).

In the less developed countries, usually the causes of injuries from the use of hand tools are higher (Litchfield, 1999). Similarly, in a survey of agricultural accidents in 8 states of Brazil in 1985-6, 39.5% were due to the use of hand tools (Meirelles, 1996). A notable finding for most countries is the number of injuries caused by animals (Litchfield, 1999).

Poisonous animals can be the cause of occupational adverse reactions in agricultural workers in tropical regions (Nogueira, 1987; Datta et al., 1969; Gordon et al., 1962; Private communication, 1997). Research in Brazil indicated that there is a significant number of snake bite victims had been engaged in a variety of agricultural activities (Meirelles, 1996).

Figures of occupational accidents from the survey of occupational injuries, workers' compensation records, and accidents reporting systems can sometimes be unreliable and inconsistent. In addition, they have been shown to underestimate the incidence of work-related injuries, and even fatalities. This is because the workers who report problems to supervisors may risk disciplinary action, denial of overtime or promotion opportunities, stigmatization, harassment, or job loss (Azaroff et al., 2002).



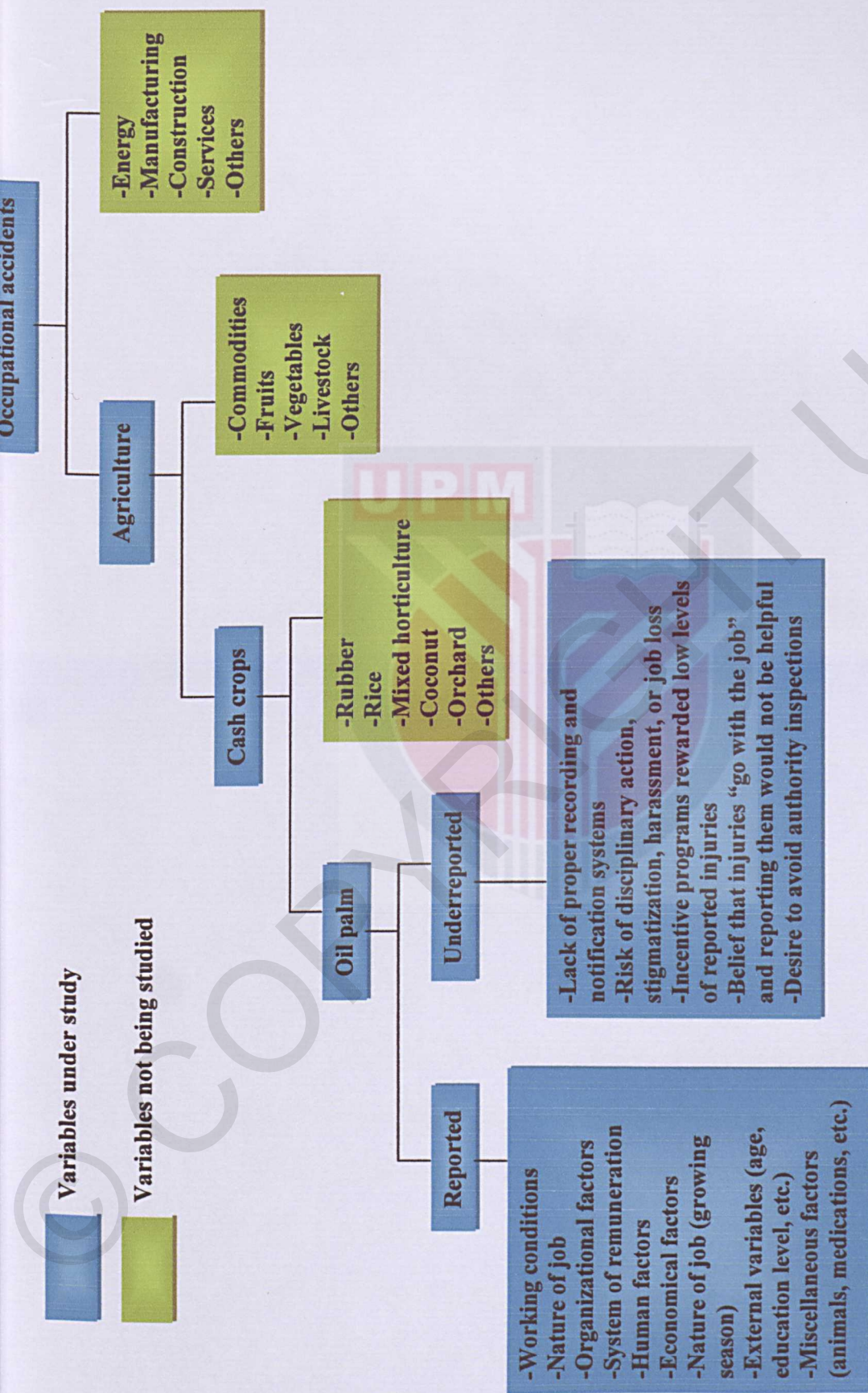


Figure 1.5 Conceptual Frameworks

1.6 Definition of term

1.6.1 Conceptual definition

1.6.1.1 Prevalence

Prevalence (in epidemiology) is defined as the number of total (new and old) cases of a disease or occurrences of an event in a particular period. Prevalence is expressed as a ratio in which the number of events is the numerator and the population at risk is the denominator (Dictionary, 2009).

1.6.1.2 Occupational accident

An occupational accident is an incident arising out of or in the course of work and resulting in a fatal or non-fatal occupational injury (ILO, 1996).

1.6.2 Operational definition

1.6.2.1 Prevalence

In order to estimate the frequency of accident within a population over certain period of time, the total number of cases in the population is divided with the number of individuals in the population.

1.6.2.2 Occupational accident

Expected numbers of occupational accidents are the number of workers injured or killed (Hämäläinen et al., 2009). The data for fatal occupational injury can be obtained through record from the company, report from Department of Occupational Safety and Health (DOSH), Social Security Organization (SOCISO), and Department of Labor (JTKSM). On the other hand, information on non-fatal occupational injury can be generated by administering questionnaire and interview.

CHAPTER 2

LITERATURE REVIEW

2.1 Accidents

According to Occupational Safety and Health (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease) Regulations 2004, accident means an occurrence arising out of or in connection with work which results in fatal or non-fatal injury. Fatal injury here refers to injury that lead to immediate death or death within one year of the accident, while non-fatal injury is a lost-time injury which prevents a worker from performing normal work and leads to permanent or temporary incapacity for work; or a no lost-time injury where no work time is lost which is required for medical attention.

Heinrich (1941) defined an accident as an event in which the contact or exposure of a person with an object, substance, another person or conditions causes personal injury or suggests the probability of such injury. Strasser et al. (1981) extends the concept of an accident by including outcomes in the definition and adds another dimension to the accident definition which is that accidents are unplanned. An accident may be thought of as an unplanned act or event resulting in injury or death to persons or damage to property.

An accident at work is defined as a discrete occurrence in the course of work which leads to physical or mental harm. This includes voluntary acts of other persons but excludes intentional self-inflicted injuries and accidents on the way to and from work. The definition also includes accidents occurring during work but off the company's premises (Jacinto et al., 2004).

2.2 Occupational accidents

Similarly, ILO Code of Practice (1996) has come up with the definition of occupational accident as an occurrence arising out of or in the course of work which will result in fatal or non-fatal occupational injury. This definition only differs in the

word “occupation” of which ILO definition is specific to any incident that occurs during performing the work whereas DOSH defined the accident as a whole. In the EU countries, the practices on occupational accidents are classified as fatal accidents and accidents causing at least four days of absence from work.

An occupational injury is any injury or physical damage to body tissues. Injuries are the leading cause of morbidity and mortality among the workers. Many workers suffered from job related injuries that resulted in lost work time, medical treatment, loss of consciousness, restriction of work or motion, or transfer to another job. Nowadays, injuries continue to claim the lives, damage the physical and psychological well-being and consume the resources of workers and their families (Jovanović et al., 2004).

A study by Leigh et al. (1999) globally estimated that approximately 100 million of occupational injuries happen each year. This is supported by Concha-Barrientos et al. (2005) which stated that the injuries responsible for an estimated 350,000 deaths. Similarly, accidents reported to ILO presented only 3.9% of the approximated accidents took place in the world (Hämäläinen et al., 2006). In addition, ILO has taken into account 335,000 of fatal occupational accidents happened in 1998 (Takala, 1999).

The occupational accidents are described by Hämäläinen (2009) as a huge problem in the world. There were more than 350,000 fatalities occurred in 2001. Therefore, it can be predicted that everyday nearly 1000 people die because of occupational accidents. Besides, the study also estimated that approximately 270 million occupational accidents causing at least 3 days absence from work took place in the same year.

2.2.1 Fatal occupational injuries

A fatal accident is defined as an accident which leads to the death of the victim within one year after the day of the accident. The important part of this definition is the time interval of one year because other countries would define it differently (Jacinto et al., 2004). Data on occupational accidents were not available from all countries in the world. The average estimated fatal occupational accident rate in the whole world was 14.0 per 100,000 workers. The highest rates (23.1 per 100,000 workers) are found in Asia (Takala, 1999).

In other countries (Takala, 1998), construction is the economic activity that contributes the most for the high numbers of fatal accidents in Portugal although it is not the activity with more employees (Macedo et al., 2005). A study by Hämäläinen et al. (2009) provides new estimation of which over 2.3 million of people died each year due to fatal occupational accidents that mean each day nearly 7,000 people died from this cause and over 960,000 workers a day injured at work.

2.2.2 Non-fatal occupational injuries

For non-fatal accidents, European statistics definition is based on the criterion of more than 3 days absence from work. An accident at work resulting in more than 3 days absence from work is an accident followed by a resumption of work on the 5th day (or later) after the day of the accident (Jacinto et al., 2004). The number of recordable nonfatal occupational injury cases for agriculture, forestry, fishing and hunting decreased from 51,800 in 2004 to 47,300 in 2007. The number of cases reported in 2007 declined to 47,300, a reduction of 2.5% when compared to 48,500 cases reported in 2006 (CDC, 2009).

Occupational injuries have the potential to cause fatality or disablement. In 1997, the Ministry of Labor and Employment, Brazil (2000) approximated that 2802 of the workers lost their lives as an outcome of work-related injuries and that 11,152 individuals accepted compensation for permanent disability influenced by work accidents.

2.3 Occupational accidents in Malaysia

The statistics of occupational accidents in Malaysia can be obtained through the governmental department (e.g. DOSH and Department of Labor) and organization (e.g. SOCSO). Information from DOSH is mainly based on reports and complaints made by the industry and DOSH clients. Investigations were carried out according to NADOOPOD Regulations 2004. Meanwhile, information from SOCSO and Department of Labor basically comes from the compensations and claims by the victims.

2.3.1 Department of Occupational Safety and Health (DOSH)

The Department of Occupational Safety and Health (DOSH) is a department under the Ministry of Human Resources. This department is responsible for ensuring the safety, health and welfare of people at work as well as protecting other people from the safety and health hazards arising from the activities sectors listed under Occupational Safety and Health Act, OSHA 1994.

As a government agency, the department is responsible for the authorization and enforcement of legislations related to occupational safety and health, with the aim to become an organization that leads in establishing a safe and healthy work culture which contributes towards enhancing the quality of working life. According to the Department, accident reports have been increasing from year to year.

Corresponding to Table 2.3.1.1, the number of accidents reported had increased by 23.2% in 2006 compared to the previous year. Of the 4,731 accidents reported in 2006, 91.9% were non-permanent disability (NPD) accidents, 3.7% were permanent disability (PD) accidents and the remaining 4.4% were fatal accidents.

Compared with the previous year, PD accidents decreased by 4.3%. NPD accidents increased by 25.7% while fatal accidents increased by 4.4%.

From a total of 3,941 investigations reported, 76.3% are accidents causing non permanent disability, 5.5% are fatal accidents and 4.3% are accidents causing permanent disability in 2007. In 2008, a total of 2535 accidents were reported while in 2009, a total 2,386 of accident has been reported. There is a reduction of accident cases as much as 149 compared to previous year. In 2010, there were 2534 accident cases have been reported. There is an increment of accident cases for 150 cases compared to year before.

Table 2.3.1.1 Number of accidents according to type of injury between year 2005 and 2010

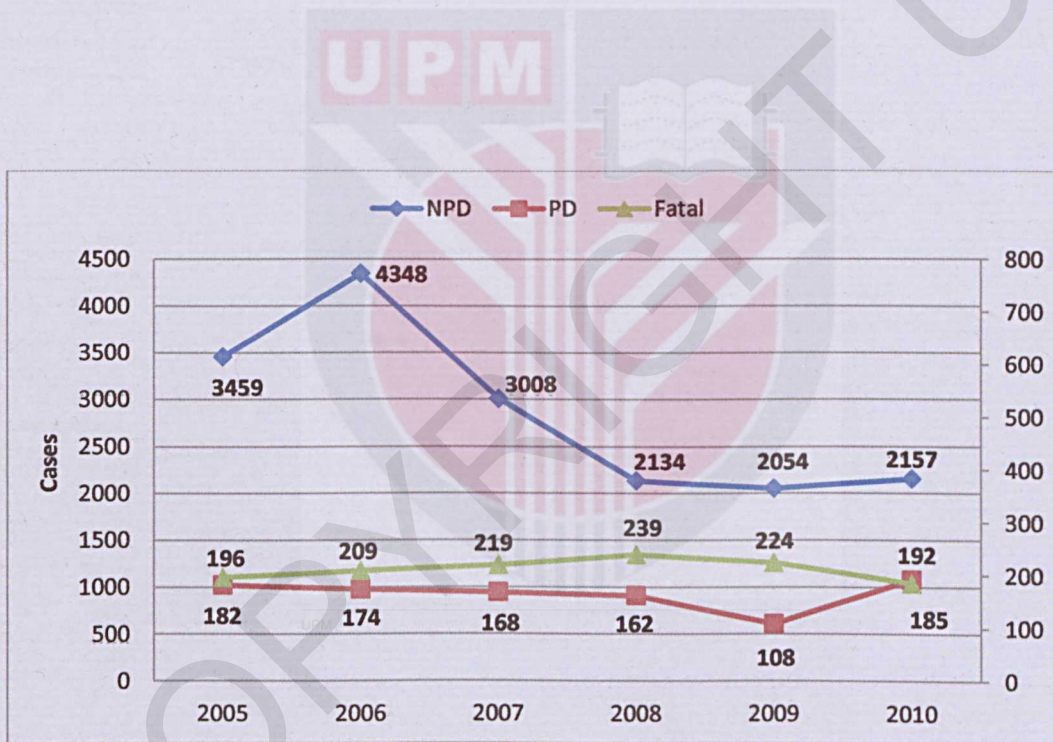
Type of Injury	2005	2006	2007	2008	2009	2010
NPD Accidents*	3,459	4,348	3,008	2,134	2,054	2,157
PD Accidents*	182	174	168	162	108	192
Fatal Accidents	196	209	219	239	224	185

Source: DOSH Annual Report 2006 to 2010

*NPD=Non Permanent Disabilities

PD=Permanent Disabilities

Figure 2.3.1.1 presents trend of accidents based on type of injury between year 2005 and 2010. For NPD cases there is gradual fall on the number of accidents reported to DOSH for the consecutive years. However, until now the NPD cases still ascertain as main contribution to the total number of accident cases. On the other hand, for PD cases, at the early consecutive year there were some decrements until 2009, but in 2010 the cases have been increased for quite a big number. Different from fatal cases where there are some increments at the early consecutive year, except for 2010 where the cases have been reduced.



Source: DOSH Annual Report

Figure 2.3.1.1 Trend of accidents according to type of injury between year 2005 and 2010

2.3.2 Social Security Organization (SOCSO)

Social Security Organization (SOCSO) is an agency under the Ministry of Human Resources that was established to enforce the Employee Social Security Act, 1969. SOCSO has become one of Statutory Body in Malaysia. SOCSO administers social security schemes such as Employment Injury Insurance Scheme for protection of employees against industrial accidents including occupational diseases and accidents while travelling for work related purposes.

The aim of social security schemes is to guarantee the payment of benefits to the employee and their dependents if any unforeseen events occur to them. The services such as medical treatment, physical and vocational rehabilitation as well as measures are also provided to prevent accidents and increase occupational safety. Data from SOCSO is related to claims and compensations done by the workers. Most importantly, SOCSO only covers local employees.

The requirement is for any employer who hires one or more employees as defined under the Employees Social Security Act, 1969. Employees receiving a monthly salary of three thousand ringgit (RM 3000) or less a month are required to contribute to

SOCSSO while employees with a monthly salary of more than RM 3000 who never register and contribute to SOCSSO have the option to register and contribute as long as there is agreement between employer and employee.

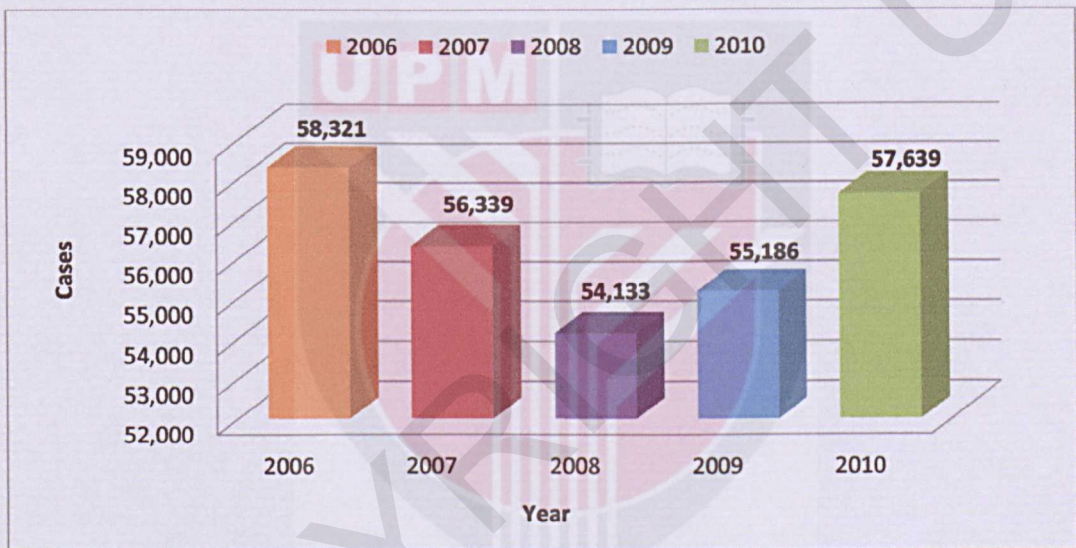
Table 2.3.2.1 shows 4.44% increments in reported accidents in 2010 from a total of 57,639 cases as compared to 55,186 cases in 2009. From the total number of reported accidents, accidents which occurred at the place of work increased 3.57% from 34,376 cases in 2009 to 35,603 cases in 2010. The number of commuting accidents also increased 5.89% from 20,810 cases in the previous year compared to 22,036 cases in 2010. The accident rate increased 0.96% from 1.04% in 2009 while 1.05% in 2010. On the other hand, the reported fatal cases decreased 3% from 1,231 cases in 2009 to 1,194 cases in 2010.

Table 2.3.2.1 Number of Accidents Reported in 2009-2010

Reported Accidents	2009	2010
Reported Industrial Accidents	34,376	35,603
Commuting Accidents	20,810	22,036
Total Number of Accidents Reported	55,186	57,639
Accident Rate	1.04%	1.05%
Fatal Cases (Reported)	1,231	1,194

Source: SOCSSO Annual Report 2010

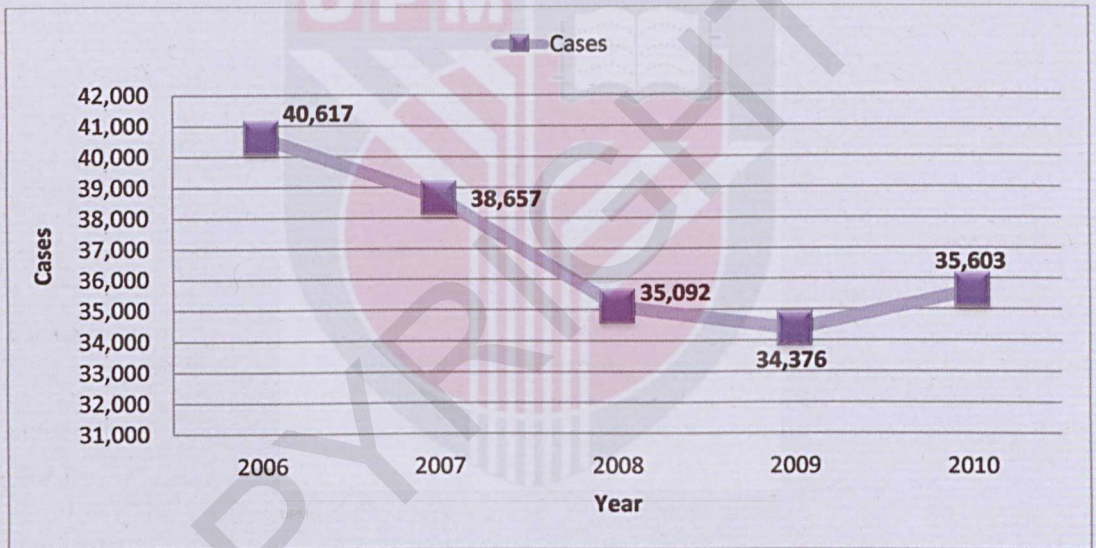
Figure 2.3.2.1 displays the number of accidents cases reported between the year 2006 and 2010. There are gradual reductions of cases for early 3 consecutive years which are in 2006 until 2008. There are 58,321 cases (20.71%) in 2006, 56,339 cases (20.00%) in 2007 and 54,133 cases (19.22%) in 2008. Whereas during 2008 until 2010, there are gradual increments of cases which are in 2009 for 55,186 cases (19.60%) and in 2010 for 57,639 cases (20.47%).



Source: SOCSO Annual Report 2010

Figure 2.3.2.1 Number of Accidents Reported in 2006 to 2010

Figure 2.3.2.2 shows the trend of industrial accidents reported in 2006 until 2010. From the total number of accidents reported, the accidents at the workplace had reduced by 4.83% from 40,617 cases in 2006 to 38,657 cases in 2007. While in 2008 the cases decreased by 9.22% from 38,657 to 35,092. Another declined in 2009 which lessen the cases by 2.04% from 35,092 to 34,376. The cases had increased by 3.57% from 34,376 cases in 2009 to 35,603 cases in 2010. In 2010, a total of 61.77% of accidents happened at the workplace compared to 2009.



Source: SOCSO Annual Report 2010

Figure 2.3.2.2 Trend of Industrial Accidents Reported in 2006 until 2010

Table 2.3.2.2 shows the number of accidents according to cause of accident for male workers in 2010. The most reported accident is caused by stepping on, striking against or struck by object (excluding falling object) which has 17,788 cases. Table 2.3.2.3 depicts the number of accidents according to location of injury for male workers in 2010. The most reported injury is at upper limb which has 19,395 cases.

Table 2.3.2.4 demonstrates number of accidents according to types of injury for male workers in 2010. The reported injury is for other wounds which has 19,945 cases. Apart from that, Table 2.3.2.5 expresses the number of industrial accidents according to agent causes for male workers in 2010. Working environment is one of the main agent causing accidents which has 14,845 cases.

On the other hand, Table 2.3.2.6 indicates number of cases according to age group for male workers in 2010. The data presented for temporary disablement cases is high in the age group of 25-29 as much as 6,504 cases. For data on permanent disability, it is high in the age group of 35-39 which has 1,720 cases. Last but not least, the data exhibits for death cases are greater for age group 20-24 towards 173 cases.

Table 2.3.2.2 Number of accidents according to cause of accident for male workers in 2010

Cause of Accident	Accident reported
Falls	11,215
Struck by falling object	4,799
Stepping on, striking against or struck by object (excluding falling object)	17,788
Caught in between objects	4,432
Overexertion or strenuous movement	2,978
Exposed to/contact with extreme temperature	592
Exposed to/contact with electric current	45
Exposed to/contact with harmful substance	191
Other type of accidents	5,585
Grand total	47,625

Source: SOCSO Annual Report 2010

Table 2.3.2.3 Number of accidents according to location of injury for male workers in 2010

Location of Injury	Accident reported
Head	4,460
Neck	162
Trunk	3,153
Upper limb	19,395
Lower limb	11,551
Multiple location	7,259
General injuries	465
Unspecified location of injury	1,180
Grand total	47,625

Source: SOCSO Annual Report 2010

Table 2.3.2.4 Number of accidents according to types of injury for male workers in 2010

Type of Injury	Accident reported
Fractures	12,078
Dislocations	741
Sprains and strains	3,525
Concussions and other internal injuries	2,637
Amputations and enucleations	381
Other wounds	19,945
Superficial injuries	1,977
Contusions and crushings	1,202
Burns	795
Acute poisonings	34
Effects of weather, exposure and related conditions	246
Asphyxia	51
Effects of electric currents	43
Effects of radiation	22
Multiple injuries of different nature	1,233
Other and unspecified injuries	2,715
Total	47,625

Source: SOCSO Annual Report 2010

Table 2.3.2.5 Number of industrial accidents according to agent causes for male workers in 2010

Agent Causes	Accident reported
Machine	3,540
Means of transport and lifting equipment	3,527
Other equipment	3,651
Materials, substances and radiations	1,905
Working environment	14,845
Other agencies, not elsewhere classified	1,117
Agencies not classified for lack of sufficient data	908
Grand total	29,493

Source: SOCSO Annual Report 2010

Table 2.3.2.6 Number of cases according to age group for male workers in 2010

Age group	Temporary disablement	Permanent disability	Death
Below 20	1,353	434	113
20-24	5,905	1,544	173
25-29	6,504	1,665	118
30-34	5,901	1,673	102
35-39	5,449	1,720	105
40-44	4,898	1,629	106
45-49	4,143	1,411	80
50-54	3,252	1,027	82
55-59	1,703	419	49
60-64	815	184	32
65 and over	490	115	40
Total	40,413	11,821	1,000

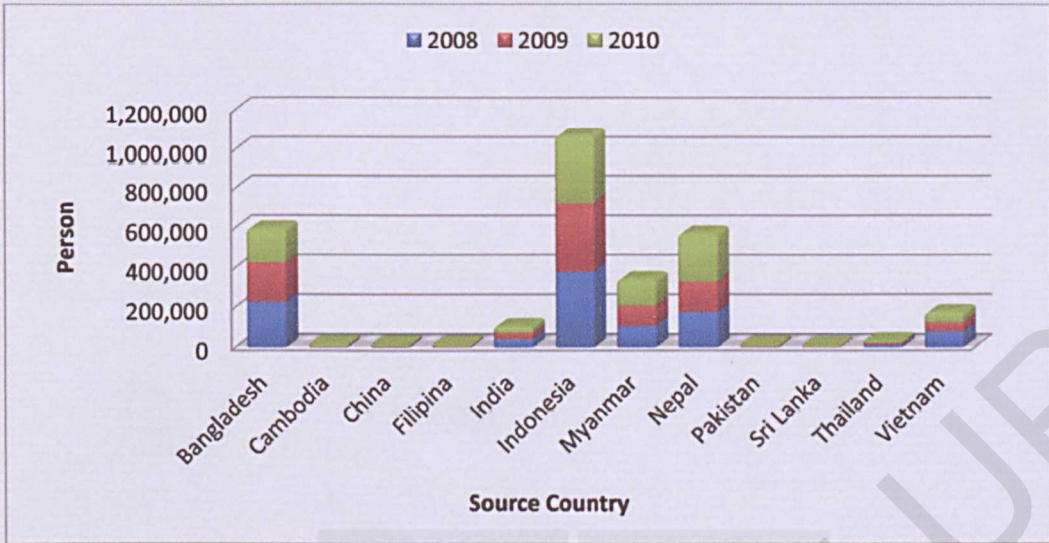
Source: SOCSO Annual Report 2010

2.3.3 Department of Labor Peninsular Malaysia (JTKSM)

Labor Department is one of the 12 government agencies under Ministry of Human Resource. The goals of labor department are to protect and promote the interest and well being of the industrial community; to give priority and uphold employment opportunities to the citizen of this country; to assist industries and improve their competitiveness in facing the changing of globalization; and to create an industrial community that is knowledgeable in matters relating to labor laws in order to create a more conducive environment for industrial development and investment.

According to Subsection 26 (1) of Workmen's Compensation Act 1952, all employers of the foreign workers must ensure that the workers employed are insured with the panel insurance company appointed under the Foreign Worker's Compensation Scheme by the Human Resources Minister. Figure 2.3.3.1 shows the statistics of foreign workers who have been insured under the Foreign Worker's Compensation Scheme between the years of 2008 and 2010 according to source countries.

Indonesia has the highest number of workers employed in Malaysia for the consecutive years. The numbers reached 1,070,454 (36.32%) for Indonesia followed by Bangladesh (20.31%), Nepal (19.45%), Myanmar (11.61%), Vietnam (5.92%), India (3.53%), Thailand (0.91%), Cambodia (0.51%), China (0.35%), Pakistan (0.34%), Filipina (0.32%) and Sri Lanka (0.22%).



Source: *e-compensation* by Department of Labor, Ministry of Human Resources

Figure 2.3.3.1 Statistics of foreign workers between the years of 2008 and 2010 according to source countries

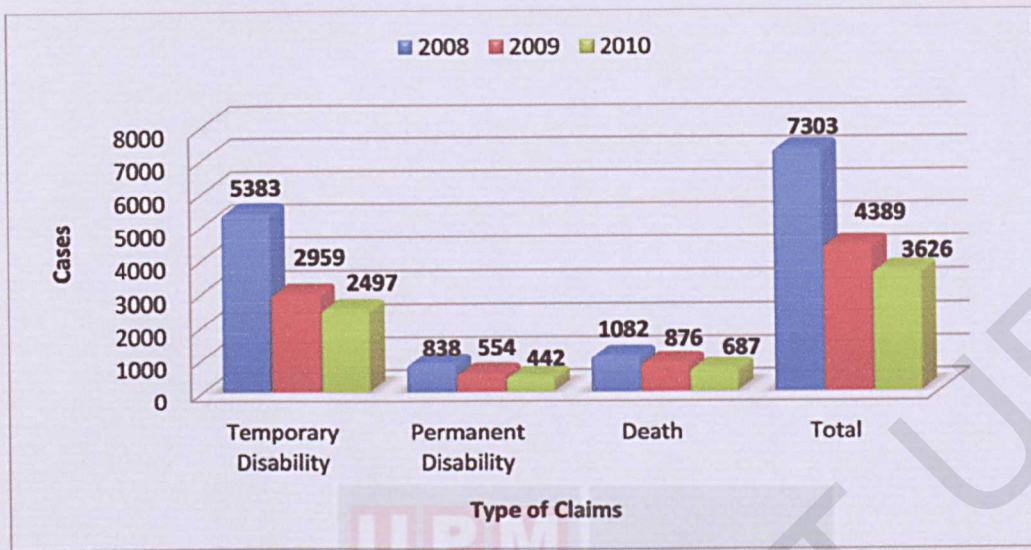
Based on Figure 2.3.3.2, the number of foreign workers employed is incredibly high in Pahang for about 22,961 workers followed by Johor (22,227 workers) and Perak (10,091 workers). The least employed foreign workers were in Perlis and Penang for about 62 and 45 workers respectively.



Source: JTKSM Annual Report 2010

Figure 2.3.3.2 Number of foreign workers according to state (directly employed)

Figure 2.3.3.3 displays statistics for reported claims between the years of 2008 and 2010 based on the type of compensation. Based on data, the claims for temporary disability (5383 to 2497 cases), permanent disability (838 to 442 cases) and even death (1082 to 687 cases) have been decreasing for the following consecutive years.



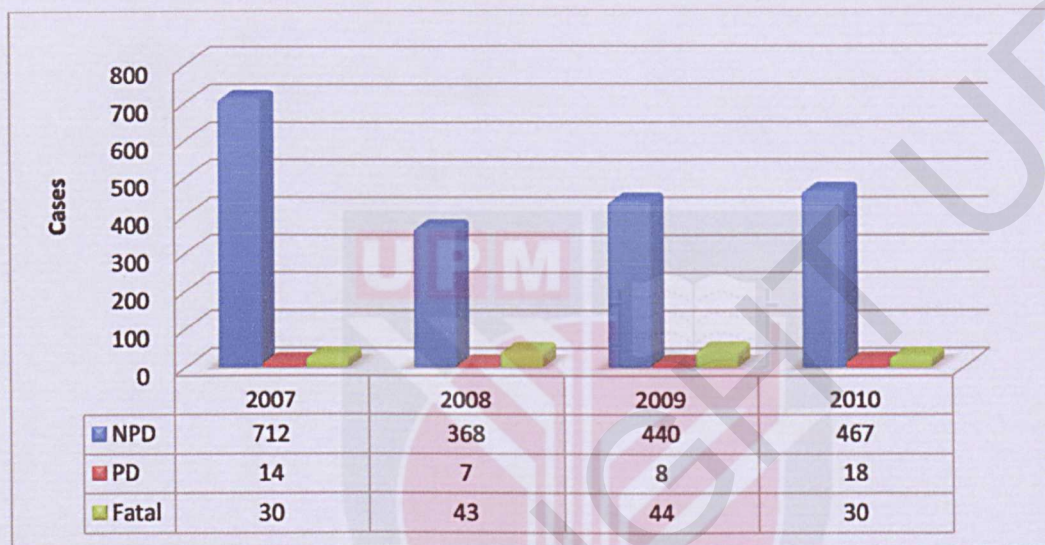
Source: *e-compensation* by Department of Labor, Ministry of Human Resources

Figure 2.3.3.3 Statistics for reported claims between 2008 and 2010 based on type of compensation

2.4 Agricultural sector in Malaysia

The data of occupational accidents in agricultural sectors in Malaysia has been provided by DOSH, SOCSO and JTKSM. Figure 2.4.1 shows the number of accidents according to type of injury between year 2007 and 2010 provided by DOSH. There were increments in 2010 for non permanent disability (NPD) and permanent

disability (PD) cases compared to year 2009. However, there is a reduction in fatal cases in 2010 as opposed to 2009.

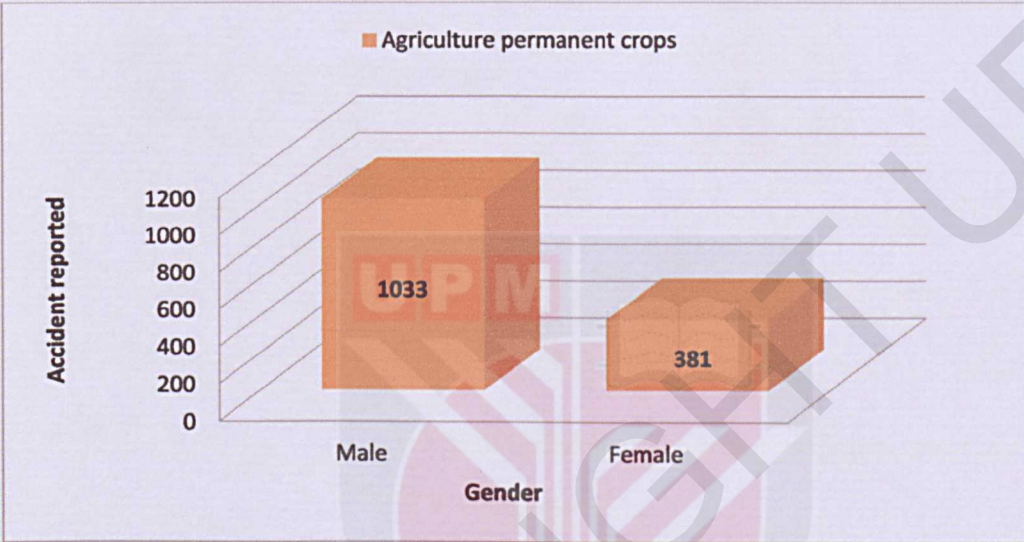


Source: DOSH Annual Report 2008-2010

Figure 2.4.1 Number of accidents according to type of injury between 2007 and 2010

Figure 2.4.2 demonstrates the number of accidents reported in the agriculture industry in Malaysia according to gender for year 2010 provided by SOCSO. Since the study in oil palm is much more related to agriculture permanent crops, then

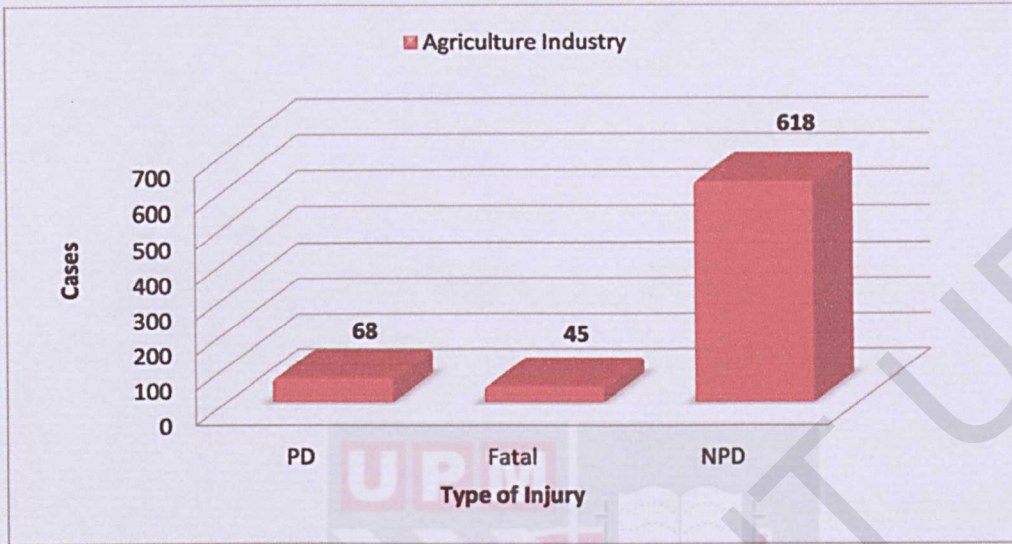
only this data has been taken to be presented. The number of cases is much higher in male than female for about 652 cases.



Source: SOCSO Annual Report 2010

Figure 2.4.2 Number of accidents in agriculture industry according to gender in 2010

Figure 2.4.3 presents number of accidents in agriculture industry according to type of injury in 2011. The cases are higher for non permanent disability (NPD) as much as 618 cases compared to permanent disability (PD) and fatal. The employees affected temporarily from the accidents during the course of employment.



Source: Department of Labor, Ministry of Human Resource

Figure 2.4.3 Number of accidents in agriculture industry according to type of injury in 2011

2.4.1 Oil palm industry

The Malaysian oil palm industry has shown high performance record in key performance indicators such as price of palm oil products, crude palm oil production, imports, exports volume and revenue. The oil palm planted area in 2011 reached 5 million hectares which increase 3% from 4.85 million hectares recorded for previous year. This was mainly due to increase in planted area in Sarawak which

recorded an increase of 11% or 102,169 hectares. Sabah is still the largest oil palm planted state with 1.43 million hectares or 28.6% of total oil palm planted area followed by Sarawak with 1.02 million hectares with 20.4%.

Crude Palm Oil (CPO) production in 2011 has increased by 11.3% which reach a record high of 18.91 million tonnes. Sarawak's CPO production increased by 23.7% to 2.7 million tonnes while Sabah and Peninsular Malaysia increased by 9.9% and 9.2% to 5.84 million tonnes and 10.37 million tonnes respectively. The increase in production was mainly due to the recovery in the fresh fruit bunches (FFB) yield, improved weather conditions and more areas coming into peak production had also contributed to the increased in production (Malaysian Palm Oil Board, 2011).

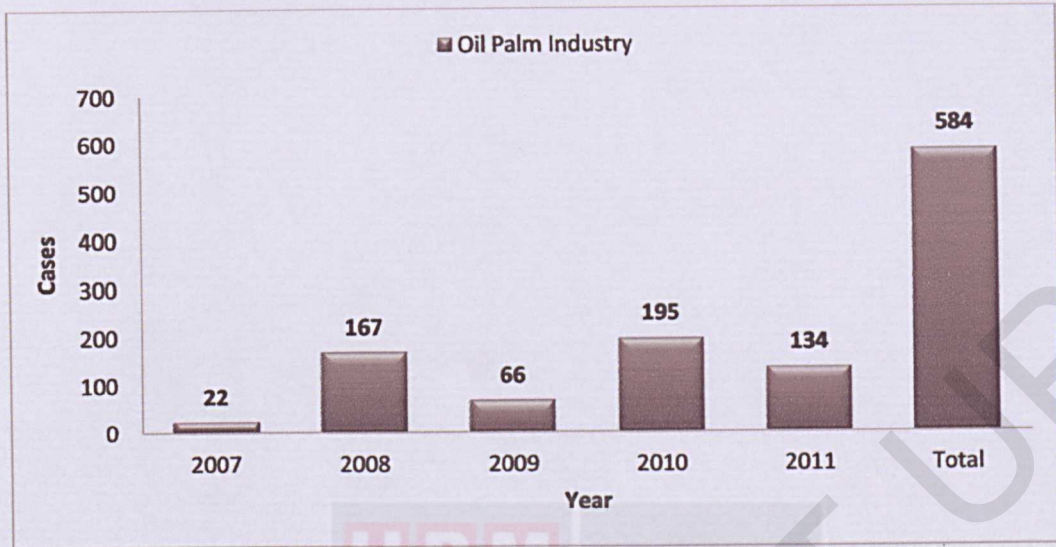
2.4.1.1 MPOB

Malaysian Palm Oil Board (MPOB) is a government agency responsible for research and development of the Malaysian palm oil industry. It was incorporated by an Act of Parliament (Act 582) taking over through the functions of the Palm Oil Research Institute of Malaysia (PORIM) and the Palm Oil Registration and Licensing Authority (PORLA). Economics and Industry Development Division on the other hand

is responsible to collect and disseminate comprehensive and latest information for the reference of the industry, local and international (Malaysian Palm Oil Board, 2010).

2.4.1.2 DOSH

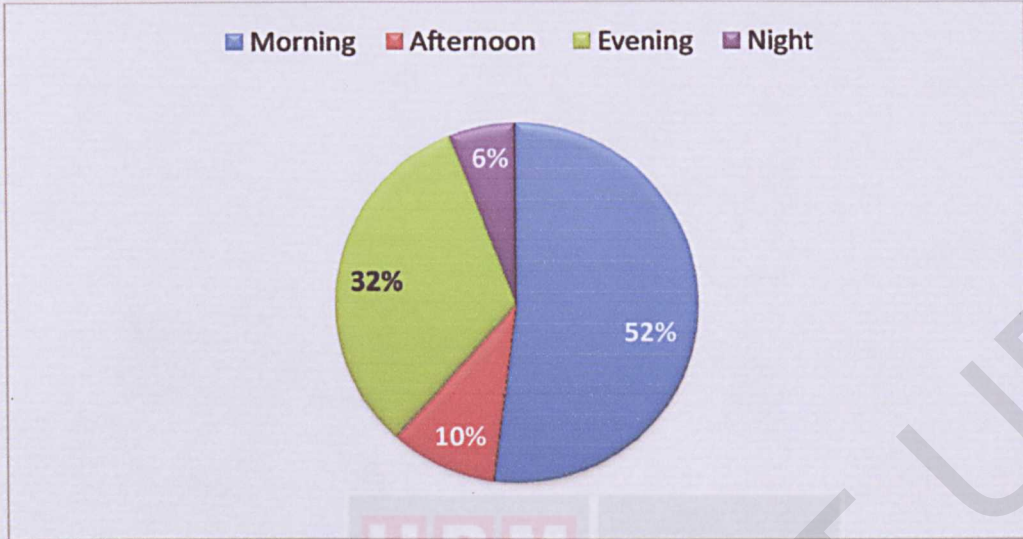
Information obtained from DOSH is related to occupational accidents in oil palm industry based on reported cases by the industry. Still, data obtained from the Department cannot entirely be used to indicate the real situation occurs in the industry as there are some particulars that were not recorded. Even so, the data generated is to present the trend or distribution of accidents. Figure 2.4.3.2.1 shows number of accidents in oil palm industry for year 2007 until 2011. The chart depicts the highest number of cases in year 2010 are decreasing from 195 to 134 in year 2011.



Source: Department of Occupational Safety and Health (DOSH)

Figure 2.4.3.2.1 Number of accidents in oil palm industry between year 2007 and 2011

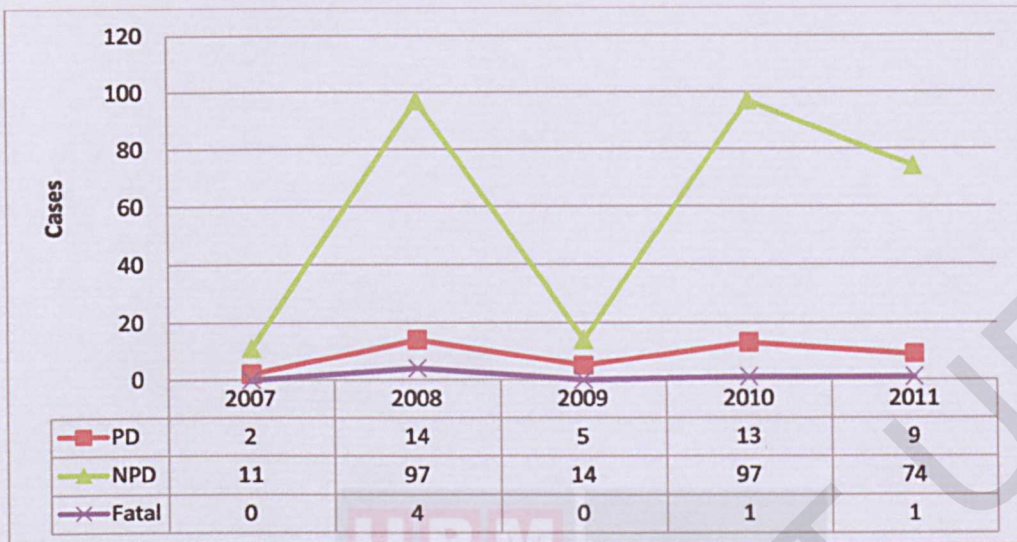
Figure 2.4.3.2.2 displays the distribution of accidents based on time of accident. 52% of the accident cases occur in the morning, 32% in the evening, 10% in the afternoon and 6% at night.



Source: Department of Occupational Safety and Health (DOSH)

Figure 2.4.3.2.2 Distribution of accidents according to time of accident

Figure 2.4.3.2.3 presents the data for trend of accidents according to type of injury between year 2007 and 2011. The trend for non permanent disability can be seen to be ascending and descending alternately similar with trend for permanent disability whereas the trend for fatal cases at the earlier consecutive years appear to be the same as other type of injury except at the end of year which is in 2010 and 2011 where the case remains constant.



Source: Department of Occupational Safety and Health (DOSH)

Figure 2.4.3.2.3 Trend of accidents according to type of injury between year 2007 and 2011

Table 2.4.3.2.1 shows the number of accidents according to agent causing accidents between year 2007 and 2011. The most significant agents causing accidents for the total consecutive years were the working environment (100 cases) followed by other equipment (81 cases), agents not elsewhere classified (46 cases), machines (45 cases), means of transport and lifting equipment (44 cases), materials, substances and radiations (16 cases) as well as agents not classified for lack of sufficient data (2 cases).

Table 2.4.3.2.1 Number of accidents according to agents between year 2007 and 2011

Agents	2007	2008	2009	2010	2011	Total
Machines	0	21	4	12	8	45
Means of transport and lifting equipment	0	11	3	17	13	44
Other equipment	3	21	6	29	22	81
Materials, substances and radiations	1	4	0	6	5	16
Working environment	6	42	3	32	17	100
Other agents, not elsewhere classified	1	17	1	10	17	46
Agents not classified for lack of sufficient data	0	0	0	1	1	2

Source: Department of Occupational Safety and Health (DOSH)

Table 2.4.3.2.2 present the number of accidents according to location of injury between year 2007 and 2011. The most body parts injured for total consecutive years is at the upper limb (145 cases) followed by lower limb (97 cases), head (44 cases), multiple locations (23 cases), general injuries/poisonings/diseases (8 cases), trunk (7 cases) and neck (none).

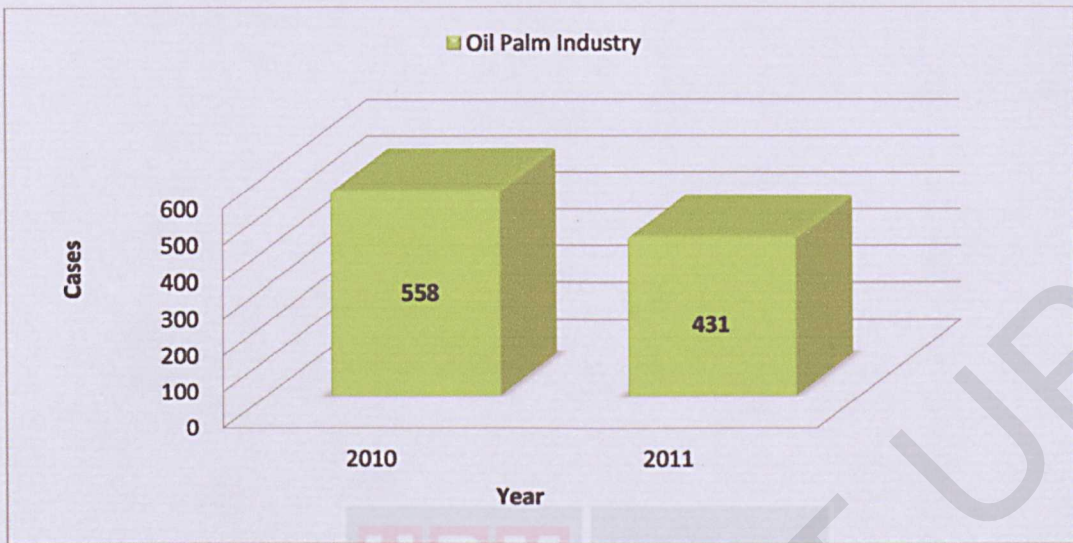
Table 2.4.3.2.2 Number of accidents according to location of injury between year 2007 and 2011

Location of Injury	2007	2008	2009	2010	2011	Total
Head	2	12	4	12	14	44
Neck	0	0	0	0	0	0
Trunk	1	2	0	1	3	7
Upper limb	4	51	9	55	26	145
Lower limb	4	32	3	29	29	97
Multiple locations	0	11	1	7	4	23
General injuries/poisonings/ diseases	0	2	0	2	4	8

Source: Department of Occupational Safety and Health (DOSH)

2.4.1.3 SOCSO

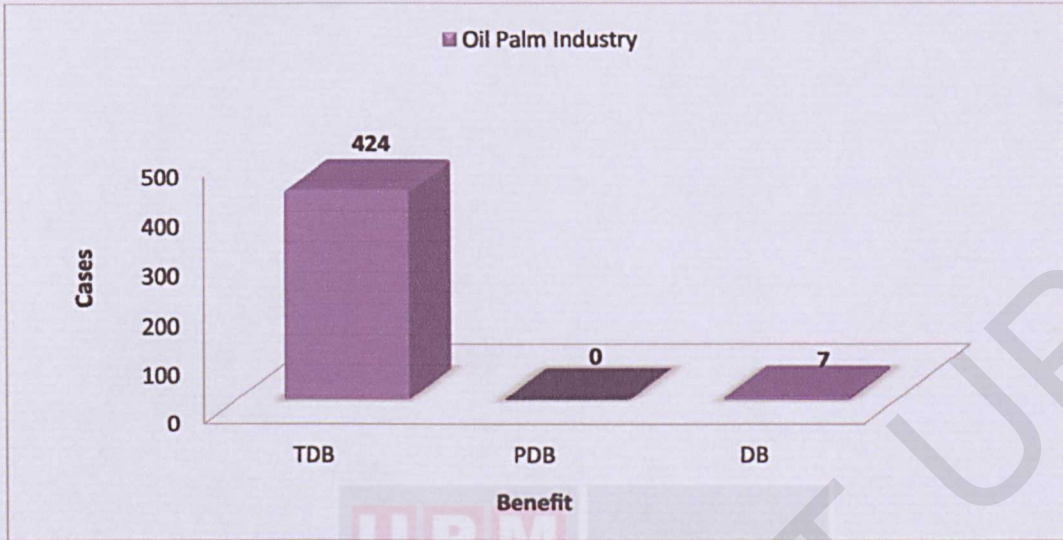
The data from SOCSO is based on reported claims made by salaried workers and/or their dependents. Figure 2.4.3.3.1 shows the number of accidents in oil palm industry in year 2010 and 2011. There is 22.8% reduction of accidents from 558 cases in 2010 to 431 cases in 2011.



Source: Social Security Organization (SOCSO)

Figure 2.4.3.3.1 The number of accidents in oil palm industry in year 2010 and 2011

Employment Injury Insurance Scheme offers protection to employees who suffer from personal injury caused by accidents or occupational disease during work. The benefits engaged under this scheme include Temporary Disablement Benefit (TDB), Permanent Disablement Benefit (PDB), and Dependents' Benefit (DB). Figure 2.4.3.3.2 displays the number of accidents in oil palm industry according to benefits received for year 2011 by the victims and their dependents. Most of the employees were experiencing accidents which cause temporary disability.



Source: Social Security Organization (SOCSO)

Figure 2.4.3.3.2 The number of accidents in oil palm industry according to benefits received for year 2011

Table 2.4.3.3.1 exhibits the number of accidents in oil palm industry according to location of injury in 2011. 162 cases reported to SOCSO involving injury to the upper limb (162 cases) which most of the employees suffered from. Upper limb includes shoulder, upper arm, elbow, forearm, wrist, hand, fingers, finger nails as well as upper limb (multiple locations and unspecified locations).

Table 2.4.3.3.1 Number of accidents in oil palm industry according to location of injury in 2011

Location of Injury/Poisoning/Diseases	Accidents reported
Head	41
Neck	2
Trunk	29
Upper limb	162
Lower limb	105
Multiple locations	81
General injuries/poisonings/diseases	11

Source: Social Security Organization (SOCSO)

Table 2.4.3.3.2 depicts the number of accidents in oil palm industry according to causal agents in 2011. The agents which significantly causing accidents were means of transport and lifting equipment (141 cases) as well as the working environment (140 cases) of which have the highest number of cases.

Table 2.4.3.3.2 Number of accidents in oil palm industry according to causal agents in 2011

Agent causing accident	Accidents reported
Machines	36
Means of transport and lifting equipment	141
Other equipment	31
Materials, substances and radiations	33
Working environment	140
Other agents not elsewhere classified	27
Agents not classified for lack of sufficient data	23

Source: Social Security Organization (SOCSO)

Table 2.4.3.3.3 presents number of accidents in oil palm industry according to types of injury in 2011. The employees mostly affected from other wounds (165 cases) which includes lacerations, open wounds, cuts, contusions with wounds, scalp wounds, loss of nails or ears as well as wounds involving injury to nerves.

Table 2.4.3.3.3 Number of accidents in oil palm industry according to types of injury in 2011

Types of Injury	Accidents reported
Amputations and enucleations	2
Burns	23
Concussions and other internal injuries	6
Contusions and crushings	9
Dislocations	8
Effects of electric currents	2
Effects of radiations	2
Effects of weather, exposure, and related conditions	3
Fractures	81
Multiple injuries of different nature	24
Sprains and strains	35
Superficial injuries	34
Other and unspecified injuries	37
Other wounds	165

Source: Social Security Organization (SOCISO)

2.5 Contributing factors of occupational accidents

Contributing factors are factors or variables that can increase risk of accident. Age and work experience are the most investigated factors (Khazode et al., 2012). Increase in age increases risk of injury (Fotta and Bockosh, 2000; Jeong, 1999). Insufficient work experience (less than 1 year) poses high risk of injury (Keyserling, 1983; Butani, 1988). Young workers (under 25 years) are at higher risk in non fatal injury incidents while older workers are at higher risk in fatal injury incidents (Salminen, 2004).

Age, experience, education (Leigh et al., 1990) and mental ability correlate well with injury as well as with poor work performance (Ferguson et al., 1984). Negative affectivity (experiencing negative emotional states and lack of emotional stability) correlates strongly with injury (Verhaegen et al., 1985; Maiti et al., 2004; Paul and Maiti, 2005). Skill-based errors correlate strongly with injuries (Reason, 1990; Hobbs and Williamson, 2002).

Risk of injury differs in job selection and a number of job-related factors are the predictors of injury (Ferguson et al., 1985). This relationship is stronger than individual-related factors (McLeod et al., 2003). Some of the most significant job-related factors are occupation (Leigh et al., 1990; Maiti and Bhattacharjee, 1999; Maiti et al., 2001), location of work (Leigh et al., 1990; Maiti and Bhattacharjee, 1999; Maiti et al., 2001), hazards in work system (Maiti et al., 2004; Khanzode et al., 2011), activity (Leigh et al., 1990), workshift (Levin et al., 1985; Frank, 2000), and workplace factors (Haslam et al., 2005).

Injury risk is different based on occupation which is affected by location of work where a given task is performed. Manual material handling is one of the most common activities leading to workplace injury (Davies et al., 2003). Job stresses (Paul and Maiti, 2005), job dissatisfaction (Paul and Maiti, 2005), job responsibility (Ferguson et al., 1984, 1985) and work performance (Ferguson et al., 1984, 1985) are some more job-related factors that correlate strongly with injury. Greater stress and dissatisfaction, less responsibility, and poor work performance are associated with more injuries.

Organizational factors have been considered as significant causal factors of accident occurrences (Powell et al., 1971). Some of the important organization-related factors are workgroup size (Guastello and Guastello, 1987), management support (Gillen

et al., 2002; Maiti et al., 2004), co-worker support and supervisory support (Gillen et al., 2002; Maiti et al., 2004), management's commitment towards safety (O'Toole, 2002), and workplace safety status (Lindell, 1997; Gillen et al., 2002).

Workers will perceive as safe workplace upon receiving high management and co-worker support (Gillen et al., 2002). Cheyne et al. (2002) measured employee safety attitudes with components of organizational safety elements, perceptions of physical work environment and perceptions of workplace hazards. Organizational variables influence environmental and job-related variables which influence safe behavior.

Safety behavior at work will lessen the risk of injury. A number of studies find that unsafe behavior correlates with higher injury (Andriessen, 1978; Prussia et al., 2003). Role overload (Mullen, 2004), organization's safety performance (Mullen, 2004), socialization at work (Mullen, 2004), poor safety attitudes (Rundmo and Hale, 2003; Mullen, 2004), perceived hazards (Seo, 2005), and high perceived risks (Rundmo, 1996; Mullen, 2004; Seo, 2005) are some of the unsafe behavior at work.

2.6 Underreported occupational accidents

Definitions related to recordable event vary among countries. Events are said to be recordable if they result in death, major injury, loss of consciousness, or three days away from work. Even so, dangerous occurrence is also needed to be reported. Any unplanned and uncontrolled event which could have resulted in injury, however did not reported are called unreported events. Underreporting occurs when there are disagreements between the numbers of events that meet the definition of a recordable event with the one that are actually reported to the appropriate regulatory authority.

To simplify, underreporting is defined as the number of reportable events reported to the regulatory authority and the number of reportable events that are not logged into the appropriate log of workplace injuries and illnesses. As the difference between the number of reported and unreported events increases, underreporting also increases. Underreporting involves comparison between the number of experienced workplace injuries and illnesses that are reported to the company with the one that are not appropriately reported to the employer.

At the organizational level, there are accurate data regarding the number of events reported to the regulatory authorities. These data can be compared to workers compensation data or medical records data. It is much more difficult to acquire the number of events that employees should have reported to the organization. This is due to the criteria that constitutes a reportable event varies between companies. There are situations such as reporting everything including near misses and unsafe conditions or behaviors whereas others might require only actual injuries to be reported.

More serious even if the event reported using the same criteria as recordable events, there is no specific measurement to evaluate what actually gets reported to the employer. At least half of the reported events do not make it into the official log. Therefore, relying on the logs will critically underestimate the number of events that employees had reported to their organization. At the end, researchers will usually rely on self-report data from workers to estimate the number of reported and unreported events (Burke et al., 2011). Probst and Estrada (2010) had used a method derived from Smecko and Hayes (1999) which asked employees to indicate amount of safety incidents they have experienced and reported as well as the one that they experienced but did not report over the past 12 months.

Nevertheless, reliance on self-report data can be inaccurate due to recall bias. There is a research suggests that the accurate recall of workplace accidents may only extend for four weeks (Landen and Hendricks, 1995). However, because of low base rate at which injuries occur, the researchers ask employees to consider events in the duration of 12 months.

2.6.1 Contributing factors of underreported occupational accidents

Probst (2006) found that job insecurity (fear of job loss) was a significant predictor of underreported accident. Job insecurity did not only contribute to workers taking risks at work and getting injured, but it also multiplied the likelihood that employees would not choose to report the accidents. Probst and Estrada (2010) demonstrate the extent of underreporting by looking at individual perceptions regarding organizational safety condition and the degree to which supervisors enforce safety policies.

When workers perceived the safety condition to be positive, they will engage in less underreporting or situation when employees reported having supervisors who enforced safety policies, they will only experienced fewer accidents as well as they also cooperated by fully reported all those accidents.

Probst and Graso (2010) examined the extent of strong organizational pressure related to employee attitudes and behaviors regarding accident reporting. As expected, employees who received higher levels of production pressure were less likely to have positive attitudes towards reporting the accidents.

Probst and Estrada (2010) found that 64% of all respondents indicated that they had experienced at least one negative consequence as a result from reporting an accident. The consequences are poor interpersonal treatment (being blamed for the incident or gossiped about) to unfavorable job performance outcomes (loss of scorecard points, disciplinary action or poor performance review) as well as reassigned to less favorable jobs. In addition, respondents who felt they had been “burned” by the system previously were reluctant to report experienced events.

According to a study by Jacinto et al. (2004), there are significant differences in the reporting of occupational accidents between the EU official systems which difficult the researchers to compare occupational statistics between the EU countries. One of the major problems is the coverage of the labor force since not all countries' systems cover all sectors of economic activity. Apart from that, there are different classification schemes being used for certain variables.



CHAPTER 3

METHODOLOGY

3.1 Study design

A cross sectional study was conducted to estimate the prevalence of occupational accident associated with the contributing factors among oil palm harvesters population. This study was carried out to provide a “snapshot” of the characteristics of occupational accident and its contributing factors among oil palm harvesters population at a particular point in time or over a short period. It was conducted using questionnaires generated and administered to the workers and also management.

3.2 Study location

This study was done at oil palm plantations in Johor. The reason why Johor has been chosen is because it is one of the largest oil palm growing states in Malaysia.

3.3 Study population

The population used in the study was male, Indonesian workers that work at oil palm plantation in Johor as harvesters.

3.4 Sample size calculation

The sample size was calculated using formula Daniel (1999).

$$n = \frac{Z^2 P (1 - P)}{d^2}$$

Where,

n = Sample size

Z = Z statistic for a level of confidence

P = Expected prevalence or proportion (in proportion of one; if 20%, $P = 0.2$)

d = Precision (in proportion of one; if 5%, $d = 0.05$)

According to Hämäläinen et al. (2006), the reported accidents were 3.9% (0.039). Therefore, by computing the accident rates (0.039), a 95% confidence interval (1.96) and the margin of error (0.05), the sample size was calculated as below:

$$n = \frac{(1.96)^2 (0.039)(1 - 0.039)}{0.05^2}$$

$$= 57.59$$

$$\approx 58$$

By adding 20% of the sample size for the purpose of accounting any missing data during data collection, then it became:

$$\begin{aligned} & \frac{20}{100} \times 58 \\ & = 11.6 \\ & \approx 12 \end{aligned}$$

Therefore, total sample sizes were:

$$58 + 12 = 70$$

3.5 Sampling frame

A complete list of name of all the oil palm harvesters was obtained from the management which a sample was selected.

3.6 Sampling method

The sampling method used in the study was purposive sampling where subjects were selected based on the inclusive criteria. Subject who did not fulfill the criteria was excluded from the study.

The inclusive criteria for this study were as follow:

- i. Male
- ii. Indonesian workers
- iii. Workers aged 15-64 years
- iv. Harvester

3.7 Sampling unit

The sampling unit was a harvester who fulfilled the inclusive criteria and works at oil palm plantation in Johor. Harvester who worked other than oil palm plantation in Johor was excluded.

3.8 Study instrumentation and data collection

3.8.1 Questionnaire

Two set of questionnaires were developed. One based on adapted information obtained in NADOOPOD Regulations 2004 which was for the workers while the other one was for employer. The questionnaire for employees includes socio demographic, employment status, and accidents information. The questionnaire was in Indonesian version since the workers selected were all Indonesian workers and was administered by interviewing them at their quarters after working hours. Meanwhile, the questionnaire for employer includes accidents information. The full version of questionnaires was attached therefore.

3.8.2 Secondary data

Secondary data was obtained from the Department of Occupational Safety and Health (DOSH), Department of Labor (JTKSM), and Social Security Organization (SOCISO). The information gained from DOSH was from their annual

reports between year 2006 and 2010 as well as records based on complaints from the industry. In addition, data from SOCSO was also collected from their annual report in 2010, and foreign labor statistics from JTKSM were primarily based on reported claims recorded by the organization. Figures from all these sources were used to determine the distribution and trend of occupational accidents.

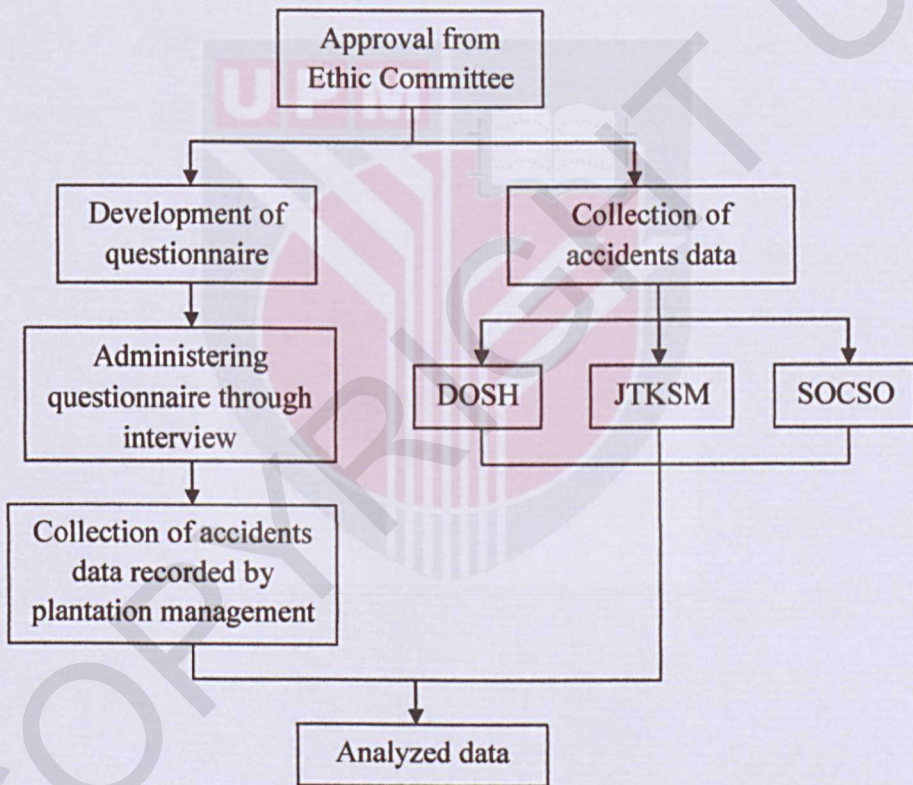


Figure 3.8 Summary of data collection

3.9 Quality control

3.9.1 Pre test

Pre test of questionnaire was done to 10% of the actual sample size respondents which was not part of the study population, but those who have similar characteristics and was carried out prior to data collection. The purpose was to ensure understanding of the target population to the questionnaire developed and to estimate time required to answer a set of questionnaire. The pre test was performed to harvesters at the same oil palm plantation in Johor of which those who participated in pre test were exempted from the real study. The result shows a good internal consistency from the reliability test ($\alpha=0.857$).

3.10 Data analysis

All the data was analyzed using Statistical Package for Social Science (SPSS for Windows version 17.0) software and also Microsoft Excel 2007. Descriptive

statistic was used to analyze socio demographic of respondents, working information and accidents data in frequency, percentage, and means along with standard deviations. This analysis was used for the first, second and third objectives.

Bivariate tests involve the analysis of two variables for the purpose of determining the relationships between them. Besides, it was useful in testing simple hypothesis of association and causality in order to predict the outcome. For this study, the test used was Chi square 2x2 tables to determine the fourth hypothesis which was the association between occupational accidents and the contributing factors between workers. The significance was set at $p < 0.05$.

3.11 Study limitation

In the study, the absolute figure of occupational accidents was difficult to estimate because of underreporting among the oil palm plantation workers. In a real working situation, the workers are subjected to potential occurrence of accidents almost everyday. This is due to the nature of their job as well as individual factors, organizational factors and other related factors which makes them susceptible to those threats.

It is difficult to separate those working in the plantation from being disclosed to the hazards from their work. Therefore, future studies should be conducted at this sector as the evidence from previous studies show that this industry well contributes to the number of accidents reported. In addition, the demography factors should also be considered.

In order to verify and determine the magnitude of occupational accidents, the information must be reported and recorded according to the regulations. This study is important as it verifies the trend of occupational accidents and the contributing factors resulting from exposure to the risk factors in the work environment.

In addition, the reported and non reported cases by the workers were determined by using questionnaire. Recall bias might happen because the workers have to remember previous accidents that they had experienced at their workplace.

3.12 Study ethics

Before data collection was started, permission to carry out the study was requested from the Board of Committee of Ethical, Faculty of Medicine and Health Sciences of University Putra Malaysia. The purposes of the study were explained to the respondent and a participation consent form was signed by the respondent before socio-demographic and working information were collected from the respondent. The identities of the respondents including their personal information were remained confidential and individual statement or description was not going to be stated in any parts of the study or publication.

CHAPTER 4

RESULTS

4.1 Socio demographic, working information and prevalence of occupational accidents

The first objective of this study is to determine the socio demographic factors and working information among oil palm harvesters. The total sample size is 148. The result from Table 4.1 shows that the respondent's age range was between 19 to 55 years old. 93.9% of the workers were aged equal to and less than 40 years old. The mean age of respondents was 27.74 which indicate that most of the respondents aged approximately 28 years old. The respondents were all Indonesian. A total of 61.5% of the respondents were married while 38.5% were single.

68.9% of the respondents have the dependents of equal to and more than 3 persons. The mean dependents was 3.72 which suggest that the respondents have to support their family members of mainly about 4 persons. It was also reported 89.2% respondents were attending school and 10.8% were not. 55.0% of the harvesters have total income of equal to and less than RM1000. The mean total income of the respondents was 1038.07 indicating that most of them have salaries of RM1000. However, 10 harvesters did not have total income as they were newly employed.

Table 4.1 Socio demographic characteristics of respondents

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Age (years):				
< 20	5 (3.4)	27.74 (6.766)	26.00 (7)	36
20-30	107 (72.3)			
31-40	27 (18.2)			
> 40	9 (6.1)			
Marital status:				
Single	57 (38.5)			
Married	91 (61.5)			
Dependents:				
< 3	46 (31.1)	3.72 (2.373)	3.00 (3)	17
3-5	77 (52.0)			
6-8	20 (13.5)			
> 8	5 (3.4)			
Education level:				
Not attending school	16 (10.8)			
Primary school	43 (29.1)			
Lower secondary school	49 (33.1)			
Upper secondary school	40 (27.0)			

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Total income[#]:				
< RM500	2 (1.4)	1038.07	936.12	2236.78
RM500-RM1000	74 (53.6)	(374.22)	(513.80)	
RM1001-RM2000	59 (42.8)			
> RM2000	3 (2.2)			

N=148

[#]N=138

Table 4.2 shows the previous working information of respondents. 61.5% of respondents have engaged in other work before. Among the workers, 45.1% have experienced accident at their workplace. The accident involved several body parts such as head (17.1%), neck (4.9%), shoulder (2.4%), upper/lower arm (36.6%), fingers (26.8%), elbow (7.3%), upper back (4.9%), lower back (4.9%), thigh (7.3%), knees (14.6%), and feet (36.6%). From those respondents who have gone through accident, 43.9% of them have undergone treatment.

Table 4.2 Previous working information of respondents

Variable	Freq (%)
Having previous employment:	
Yes	91 (61.5)
Having previous accident:	
Yes	41 (45.1)
Having body parts involved:	
Head	
Yes	7 (17.1)
Neck	
Yes	2 (4.9)
Shoulder	
Yes	1 (2.4)
Upper or lower arm	
Yes	15 (36.6)
Fingers	
Yes	11 (26.8)
Elbow	
Yes	3 (7.3)
Upper back	
Yes	2 (4.9)
Lower back	
Yes	2 (4.9)
Thigh	
Yes	3 (7.3)
Knees	
Yes	6 (14.6)
Feet	
Yes	15 (36.6)
Having previous treatment:	
Yes	18 (43.9)
N=148	

Table 4.3 shows that 36.5% of the workers have been working for less than a year while 63.5% of them exceeded a year. It is also reported that 93.9% of the respondents are working overtime. From those respondents that working overtime, 43.9% of them are working overtime for four times in a month, 22.3% for three times in a month, 27.3% for twice in a month, and 6.5% for once in a month. 89.9% of the harvesters are working less than 480 minutes (or 8 hours). The mean working hours (in minutes) of the respondents is 392.60 which indicate that most of the respondents work about 6 hours per day.

Table 4.3 Current working information of respondents

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Working duration (years):				
< 1	54 (36.5)			
≥ 1	94 (63.5)			
Having overtime:				
Yes	139 (93.9)			
Frequency of overtime:				
Once in a month	9 (6.5)			
Twice in a month	38 (27.3)			
Three times in a month	31 (22.3)			
Four times in a month	61 (43.9)			
Working hours (minutes):				
< 480	133 (89.9)	392.60	420.00	360
≥ 480	15 (10.1)	(73.497)	(90)	
N=148				

The second objective of this study is to determine the prevalence of reported occupational accident among oil palm harvesters. The result from Table 4.4 shows that the respondents which have experiencing accident and reported it were 23.0%. Among those who have experiencing the accident, 58.8% were experiencing it less than 2 times within a year. The mean frequency of accident among the respondents is 2.00 which point out that most of the respondents have involved in the accident for about 2 times in a year.

From those who have going through the accident, 94.1% of them knew when the accident happened. Among workers who recognized the time of accident, 50.0% identified in the morning, 37.5% in the afternoon and 25.0% in the evening. It is reported that 50.0% of the respondents have involved in the accident causing lost work time. Among them, 88.2% were taking leave less than and equal to 4 days. The mean duration of leave (in days) is 4.41 which indicate that the most leave taken by the respondents is as much as 4 days.

Meanwhile, all respondents that have encountered the accident were having disability but not permanent. The types of accident which the respondents were involved include falling (20.6%), overexertion or strenuous movements (26.5%), stepping on, striking against or struck by objects (29.4%), struck by falling objects

(8.8%), and others (73.5%). For category of others, it consists of several types of accident such as poked by palm's thorns and/or fronds (47.1%), stung by bees (11.8%), handling chisel (5.9%), struck by crook (2.9%), and multiple accidents (5.9%).

Location of injury engaged with parts of the body such as head (8.8%), neck (5.9%), trunk (5.9%), upper limb (61.8%) and lower limb (61.8%). The types of injury affecting the respondents were concussions and other internal injuries (2.9%), contusions and crushings (29.4%), dislocations (23.5%), fractures (5.9%), sprains and strains (20.6%), and wounds (82.4%).

Table 4.4 Prevalence of reported accident

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Experiencing accident:				
Yes	34 (23.0)			
Frequency accident in a year:				
< 2	20 (58.8)	2.00	1.00 (1)	11
≥ 2	14 (41.2)	(2.216)		
Retrieving time of accident occurred:				
Yes	32 (94.1)			
Morning				
Yes	16 (50.0)			
Afternoon				
Yes	12 (37.5)			
Evening				
Yes	8 (25.0)			

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Having accident causing lost work time:				
Yes	17 (50.0)			
Duration leave (days):				
≤ 4	15 (88.2)	4.41	2.00 (3)	29
> 4	2 (11.8)	(7.4)		
Implication from accident:				
Non Permanent Disability (NPD)	34 (100.0)			
Types of accident experienced:				
Falling				
Yes	7 (20.6)			
Overexertion or strenuous movements				
Yes	9 (26.5)			
Stepping on, striking against or struck by objects				
Yes	10 (29.4)			
Struck by falling objects				
Yes	3 (8.8)			
Others [#]				
Yes	25 (73.5)			
Location where injury is perceived:				
Head				
Yes	3 (8.8)			
Neck				
Yes	2 (5.9)			
Trunk				
Yes	2 (5.9)			
Upper limb				
Yes	21 (61.8)			

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Lower limb				
Yes	21 (61.8)			
Types of injury suffered:				
Amputations and enucleations				
No	34 (100.0)			
Concussions and other internal injuries				
Yes	1 (2.9)			
Contusions and crushings				
Yes	10 (29.4)			
Dislocations				
Yes	8 (23.5)			
Fractures				
Yes	2 (5.9)			
Sprains & strains				
Yes	7 (20.6)			
Wounds				
Yes	28 (82.4)			
N=148				

#Categorized into poked by palm's thorns and/or fronds, stung by bees, handling chisel, struck by crook, and multiple accidents.

Table 4.5 shows that 14.2% of the workers have involved in dangerous occurrence and reported it. Among those who have experienced dangerous occurrence, 81.0% of them are experiencing it 2 times and more within a year. The mean frequency

of dangerous occurrence of respondents in a year is 3.24 which suggest that the workers must have run into it for about 3 times. From all respondents that have encountered dangerous occurrence, all of them knew when the time takes place.

52.4% discovered at morning, 57.1% in the afternoon while none of them come across at evening. The types of dangerous occurrence which the workers have undergone were chased by wild boar (9.5%), almost poked by palm's thorns and/or fronds (14.3%), almost hit, or tripped over a branch (9.5%), almost fall (33.3%), almost struck by crook (23.8%), and discover snake (9.5%).

Table 4.5 Prevalence of reported dangerous occurrence

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Experiencing dangerous occurrence:				
Yes	21 (14.2)			
Frequency dangerous occurrence in a year:				
< 2	4 (19.0)	3.24	2.00 (3)	7
≥ 2	17 (81.0)	(2.047)		
Retrieving time of dangerous occurrence occurred:				
Yes	21 (100.0)			
Morning				
Yes	11 (52.4)			
Afternoon				
Yes	12 (57.1)			

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Evening				
No	21 (100.0)			
Types of dangerous occurrence experienced:				
Overturning of tractor and other farm vehicles				
No	21 (100.0)			
Accident involving any vehicle used for the transportation of farm products or personnels				
No	21 (100.0)			
Others [#]				
Yes	21 (100.0)			
N=148				

[#]Categorized into chased by wild boar, almost poked by palm's thorns and/or fronds, almost hit, or tripped over a branch, almost fall, almost struck by crook, and discover snake.

The third objective of this study is to determine the prevalence of underreported occupational accident among oil palm harvesters. The result from Table 4.6 shows that the respondents which have experiencing accident, but did not report were 75.0%. The types of accident which the respondents were involved include falling (52.3%), overexertion or strenuous movements (24.3%), stepping on, striking against or struck by objects (26.1%), struck by falling objects (19.8%), and others (76.6%).

For category of others, it comprises of several types such as poked by palm's thorns and/or fronds (62.2%), handling chisel (1.8%), and multiple accidents (12.6%). Location of injury was engaged with parts of body such as head (18.0%), neck (3.6%), trunk (3.6%), upper limb (71.2%) and lower limb (73.9%). The types of injury affecting the respondents were contusions and crushings (17.1%), dislocations (11.7%), fractures (2.7%), sprains and strains (41.4%), and wounds (91.9%).

Table 4.6 Prevalence of underreported accident

Underreported accident	Freq (%)
Experiencing accident:	
Yes	111 (75.0)
Types of accident experienced:	
Falling	
Yes	58 (52.3)
Overexertion or strenuous movements	
Yes	27 (24.3)
Stepping on, striking against or struck by objects	
Yes	29 (26.1)
Struck by falling objects	
Yes	22 (19.8)
Others [#]	
Yes	85 (76.6)
Location where injury is perceived:	
Head	
Yes	20 (18.0)
Neck	
Yes	4 (3.6)

Underreported accident	Freq (%)
Trunk	
Yes	4 (3.6)
Upper limb	
Yes	79 (71.2)
Lower limb	
Yes	82 (73.9)
Types of injury suffered:	
Amputations and enucleations	
No	111 (100.0)
Concussions and other internal injuries	
No	111 (100.0)
Contusions and crushings	
Yes	19 (17.1)
Dislocations	
Yes	13 (11.7)
Fractures	
Yes	3 (2.7)
Sprains and strains	
Yes	46 (41.4)
Wounds	
Yes	102 (91.9)
N=148	

#Categorized into poked by palm's thorns and/or fronds, handling chisel, and multiple accidents.

Table 4.7 shows that 45.3% of workers have involved in dangerous occurrence, but did not report. The types of dangerous occurrence which the workers have undergone were overturning of tractor and other farm vehicles (3.0%), as well as others (98.5%). In the others' category are chased by wild boar (3.0%), almost poked by palm's thorns and/or fronds (4.5%), almost struck by chisel or sickle or crook, or palm's frond (19.4%), discover or nearly bitten by snake (20.9%), almost hit or tripped over a branch (7.5%), almost fall (26.9%), almost get into or stuck in a hole (3.0%), almost gets hit by palm fruits (3.0%), and multiple dangerous occurrence (10.4%).

Table 4.7 Prevalence of underreported dangerous occurrence

Underreported dangerous occurrence	Freq (%)
Experiencing dangerous occurrence:	
Yes	67 (45.3)
Types of dangerous occurrence experienced:	
Overturning of tractor and other farm vehicles	
Yes	2 (3.0)
Accident involving any vehicle used for the transportation of farm products or personnels	
No	67 (100.0)
Others [#]	
Yes	66 (98.5)
N=148	

[#]Categorized into chased by wild boar, almost poked by palm's thorns and/or fronds, almost struck by chisel or sickle or crook, or palm's frond, discover or nearly bitten by

snake, almost hit or tripped over a branch, almost fall, almost get into or stuck in a hole, almost gets hit by palm fruits, and multiple dangerous occurrence.

Table 4.8 displays the results for contributing factors of occupational accidents among respondents. Factors which contribute to occupational accidents are divided into 4 categories such as: a) nature of the job, b) organizational factors, c) human factors, d) alcohol and/or drugs abuse, e) injury and/or illness, and f) exposure to venomous animal. Factors that play role in nature of the job are excessive use of physical force, intensive work on the planting season, falls from height and/or same degree, irregular working hours, and work postures.

Factors which are classified under organizational factors are lack of training procedures, no clear job description, no schedule for operations, as well as inadequate or inappropriate protective equipment. Apart from that, factors that fall under the categories of human factors are misused of tools or equipment, unsafe work, handling or transport of goods or equipment, negligence, working under pressure, slow reaction, lack of knowledge, lack of adequate training, awareness of occupational dangers, dangerous risk-taking behavior, lack of skills, failure to use proper Personal Protective Equipment (PPE), inappropriate lifting, inappropriate position for task, fatigue, and insufficient rest.

Other factors are alcohol and/or drugs abuse, injury and/or illness, and exposure to venomous animal (such as snakes, bees, etc.). Factors of accident include nature of job (54.1%), organizational factors (43.2%), human factors (94.6%), alcohol and/or drugs abuse (9.5%), injury and/or illness (12.2%), and exposure to venomous animal (36.5%). In contrast, factors of dangerous occurrence incorporated are the same as factors of accident however differ in figures as nature of job (41.9%), organizational factors (40.5%), human factors (96.6%), alcohol and/or drugs abuse (8.1%), injury and/or illness (12.8%), and exposure to venomous animal (33.1%).

Table 4.8 Contributing factors of occupational accidents

Factors of occupational accident	Freq (%)
Having as factors of accident:	
Nature of job	
Yes	80 (54.1)
Organizational factors	
Yes	64 (43.2)
Human factors	
Yes	140 (94.6)
Alcohol and/or drugs abuse	
Yes	14 (9.5)
Injury and/or illness	
Yes	18 (12.2)
Exposure to venomous animal	
Yes	54 (36.5)

Factors of occupational accident	Freq (%)
Having as factors of dangerous occurrence:	
Nature of job	
Yes	62 (41.9)
Organizational factors	
Yes	60 (40.5)
Human factors	
Yes	143 (96.6)
Alcohol and/or drugs abuse	
Yes	12 (8.1)
Injury and/or illness	
Yes	19 (12.8)
Exposure to venomous animal	
Yes	49 (33.1)
N=148	

4.2 Association between socio demographic factors, working information, and contributing factors with occupational accidents

The fifth objective of this study is to determine the association between occupational accidents and the contributing factors between oil palm harvesters. The results from Table 4.9 until 4.16 display the association between the variables. There was none of these factors which significantly associated with occupational accidents ($p < 0.05$).

Table 4.9 The association between factors with reported accident

	Reported accident		χ^2	P value
	Yes	No		
	Freq (%)			
Age (years):				
≤ 40	33 (22.3)	106 (71.6)	0.762	0.383
> 40	1 (0.7)	8 (5.4)		
Education level:				
Attending school	29 (19.6)	103 (69.6)	0.695	0.405
Not attending school	5 (3.4)	11 (7.4)		
Total income:				
≤ RM1000	20 (13.5)	66 (44.6)	0.009	0.923
> RM1000	14 (9.5)	48 (32.4)		
Working duration (years):				
< 1	13 (8.8)	41 (27.7)	0.058	0.809
≥ 1	21 (14.2)	73 (49.3)		
Overtime:				
Yes	33 (22.3)	106 (71.6)	0.762	0.383
No	1 (0.7)	8 (5.4)		
Working hours (minutes):				
< 480	32 (21.6)	101 (68.2)	0.877	0.349
≥ 480	2 (1.4)	13 (8.8)		
Factors accident:				
Nature of job				
Yes	21 (14.2)	59 (39.9)	1.057	0.304
No	13 (8.8)	55 (37.2)		
Organizational factors				
Yes	14 (9.5)	50 (33.8)	0.077	0.782
No	20 (13.5)	64 (43.2)		
Human factors				
Yes	34 (23.0)	106 (71.6)	2.522	0.112
No	0 (0)	8 (5.4)		
Alcohol and/or drugs abuse				
Yes	4 (2.7)	10 (6.8)	0.274	0.601
No	30 (20.3)	104 (70.3)		
Injury and/or illness				
Yes	4 (2.7)	14 (9.5)	0.007	0.936
No	30 (20.3)	100 (67.6)		

	Reported accident		χ^2	P value
	Yes	No		
	Freq (%)			
Exposure to venomous animal				
Yes	14 (9.5)	40 (27.0)	0.419	0.517
No	20 (13.5)	74 (50.0)		
N=148				

*Significant at $p < 0.05$

Table 4.10 shows the information on occupational accidents obtained from employer. The prevalence was determined for 4 different plantations in Johor. 75.0% of them had Safety and Health Officer (SHO). It is also accounted that 75.0% of the accident cases were reported in a year in the frequency of one time and lesser. The mean frequency of reported accident cases in a year is 0.75 which estimates that the accident cases approximately being reported for one time in a year.

On the other hand, 75.0% of the fatal accident cases were reported in a year predominantly for less than one time. The mean frequency of reported fatal accident cases in a year is 0.25 which indicates that none of the fatal accident cases being reported in a year. It is shown that the causes of reported accident cases given by the employer are none (50.0%) and negligence (50.0%).

It is reported that 100.0% or none of the employers were having underreported accident cases at the workplace. Therefore, the frequency of underreported accident cases in a year and also the reasons of occurrence of underreported accident cases need not be answered. Similarly, 100.0% or none of the employers were having underreported fatal accident cases in a year. Accordingly, the frequency of underreported fatal accident cases in a year as well as reasons for the incidents was considered vacant.

The size of industry consists of 3 types which are Big (Annual Sales Turnover > RM25 mil; workers > 151), Medium (Annual Sales Turnover = RM10-25 mil; workers 51-150) and Small (Annual Sales Turnover < RM10 mil; workers < 50). The percentage of size of industry for the companies includes Big (25.0%), Medium (50.0%) and Small (25.0%).

The factors of accident are inadequate leadership and supervision (50.0%), lack of safety and health policy or occupational safety and health management system (50.0%), inadequate work standard (25.0%), lack effective training (50.0%), irregular working hours (25.0%) and excessive use of physical force (25.0%).

While, factors of dangerous occurrence are inadequate leadership and supervision (25.0%), lack of safety and health policy or occupational safety and health management system (25.0%), unsafe work (50.0%), inadequate or inappropriate protective equipment (25.0%), inadequate work standard (25.0%), lack effective training (50.0%), irregular working hours (25.0%) and excessive use of physical force (25.0%).

Table 4.10 Information on occupational accidents from employer

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Having Safety and Health Officer (SHO):				
Yes	3 (75.0)			
Frequency of reported accident cases in a year:				
≤1	3 (75.0)	0.75	0.50 (2)	2
>1	1 (25.0)	(0.957)		
Frequency of reported fatal accident cases in a year:				
<1	3 (75.0)	0.25	0.00 (1)	1
≥1	1 (25.0)	(0.500)		
Causes of reported accident cases:				
None	2 (50.0)			
Unsafe work	0 (0)			
Lack effective training	0 (0)			
Negligence	2 (50.0)			
Poked by palm's thorns and/or fronds	0 (0)			
Others	0 (0)			
Having underreported accident cases:				
No	4 (100.0)			
Frequency of underreported accident cases in a year:	-	-	-	-

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Reasons for underreported accident cases:				
None	4 (100.0)			
Limited coverage by reporting and compensation schemes	0 (0)			
Non harmonized accident recording and notification systems	0 (0)			
The belief that accidents “go with the job” and that reporting them would not be helpful	0 (0)			
Fear of discipline or of being labeled a complainer	0 (0)			
Incentive programs that rewarded low levels of reported injuries	0 (0)			
Others	0 (0)			
Having underreported fatal accident cases in a year:				
No	4 (100.0)			
Frequency of underreported fatal accident cases in a year:				
	-	-	-	-
Reasons for underreported fatal accident cases:				
None	4 (100.0)			
Limited coverage by reporting and compensation schemes	0 (0)			
Non harmonized accident recording and notification systems	0 (0)			
The belief that accidents “go with the job” and that reporting them would not be helpful	0 (0)			

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Fear of discipline or of being labeled a complainer	0 (0)			
Incentive programs that rewarded low levels of reported injuries	0 (0)			
Others	0 (0)			
Size of industry:				
Big	1 (25.0)			
Medium	2 (50.0)			
Small	1 (25.0)			
Having factors of accident:				
Inadequate leadership and supervision				
Yes	2 (50.0)			
Lack of safety and health policy or occupational safety and health management system				
Yes	2 (50.0)			
Lack proper recording and notification system				
No	4 (100.0)			
No clear job description				
No	4 (100.0)			
Unsafe work				
No	4 (100.0)			
Inadequate or inappropriate protective equipment				
No	4 (100.0)			
Inadequate work standard				
Yes	1 (25.0)			
Intensive work on the planting season				
No	4 (100.0)			

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Lack effective training				
Yes	2 (50.0)			
Irregular working hours				
Yes	1 (25.0)			
Excessive use of physical force				
Yes	1 (25.0)			
Having factors of dangerous occurrence:				
Inadequate leadership and supervision				
Yes	1 (25.0)			
Lack of safety and health policy or occupational safety and health management system				
Yes	1 (25.0)			
Lack proper recording and notification system				
No	4 (100.0)			
No clear job description				
No	4 (100.0)			
Unsafe work				
Yes	2 (50.0)			
Inadequate or inappropriate protective equipment				
Yes	1 (25.0)			
Inadequate work standard				
Yes	1 (25.0)			
Intensive work on the planting season				
No	4 (100.0)			
Lack effective training				
Yes	2 (50.0)			

Variable	Freq (%)	Mean (SD)	Median (IQR)	Range
Irregular working hours				
Yes	1 (25.0)			
Excessive use of physical force				
Yes	1 (25.0)			
N=4				



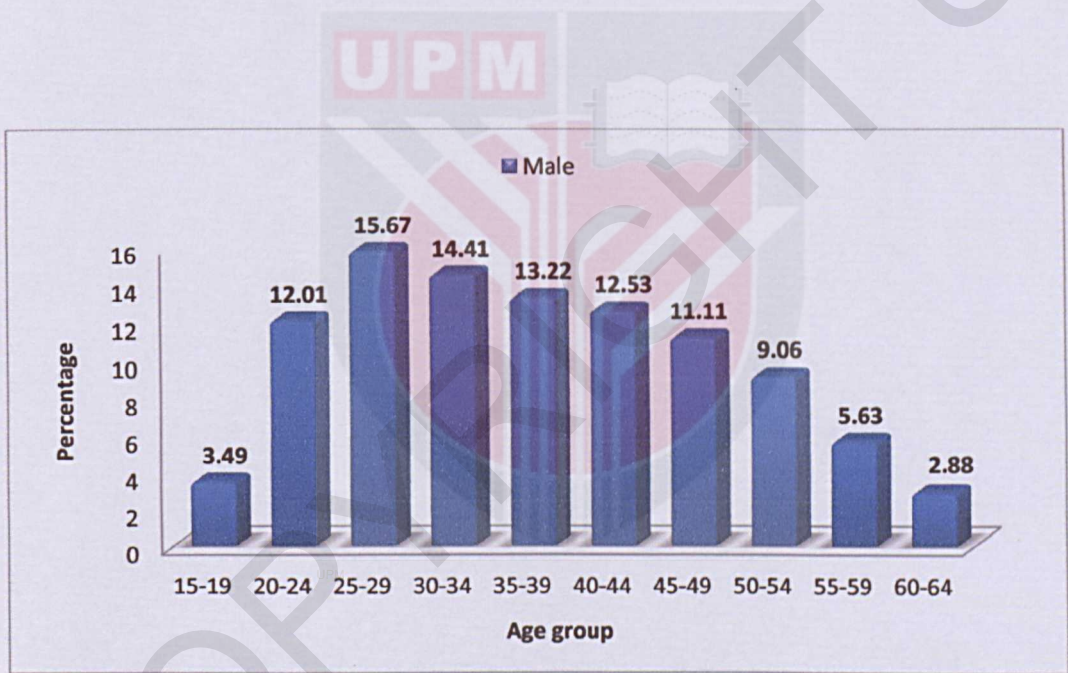
CHAPTER 5

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Socio demographic data and working information

A total of 148 respondents were recruited from oil palm plantations in Johor. Socio demographic information of respondents was compared to the data from Department of Statistics, Malaysia. The comparison of data was made for age during employment, marital status, number of dependents, and education level of respondents. The data obtained from the questionnaire shows that most of the respondents work at the age of 20 to 30 years.

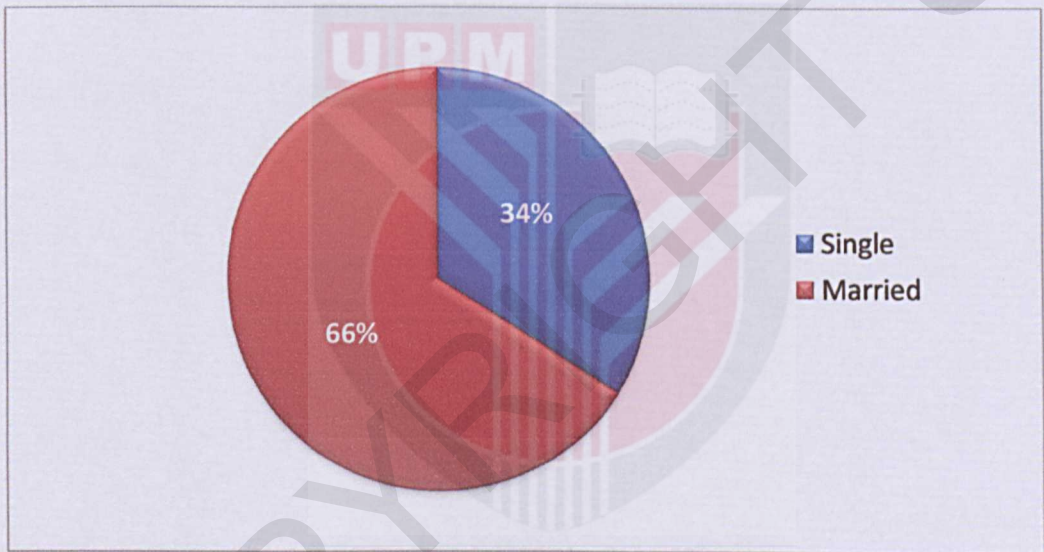
This data was supported by the statistics from Malaysian Department of Statistics (MDS) in 2010 regarding the working age population. Based on Figure 5.1.1, the working age population is at the age of 15 to 64 years. The most widely employed age group is from 25 to 29 years old which the age ranges were included in the age range of study population.



Source: Department of Statistic (MDS), 2010

Figure 5.1.1: Percentage of employed persons by age group in Malaysia, 2010

On the other hand, the marital status of respondents being studied and the result presented that most of the respondents were married. Figure 5.1.2 shows that many of the employed persons were married while other proportions were for those who were singles by all means (e.g. never married, widowed, and divorced/permanently separated).



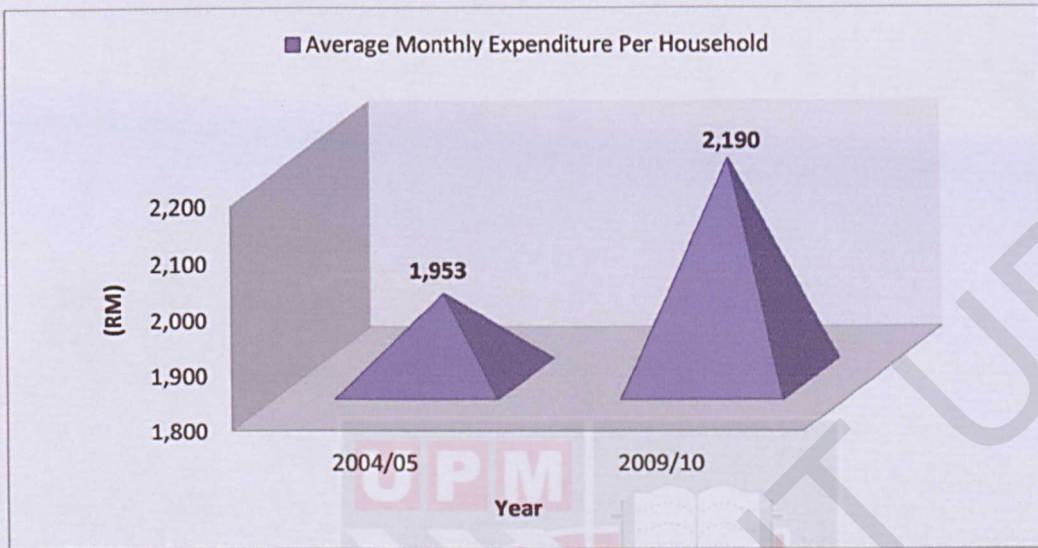
Source: Department of Statistic Malaysia, 2010

Figure 5.1.2: Distribution of employed persons by marital status in Malaysia, 2010

Other than above, there was still information such as number of dependents and total income. In other words, total income of respondents was closely related to numbers of dependent in a way which if the number increases, then the earnings were decreased. This was due to the expenditures for each dependent were different, that if the dependents were many, so the expenditure will increase.

This was strengthened by referring to The Statistics Handbook of Malaysia 2011 regarding the statistic for average monthly expenditure per household in 2004/05 and 2009/10. This handbook provides information on the demographic, economic and social trends in Malaysia. Corresponding to the simplified data on Figure 5.1.3, the cost for each household is RM 2,190 per month during 2009/10.

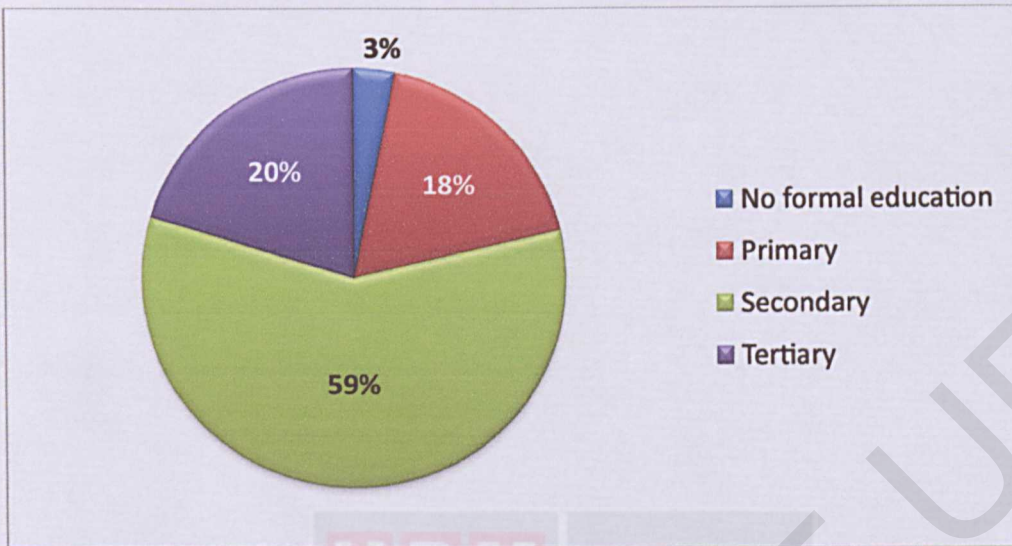
The cost is calculated based on the expenditure group classified by United Nations' "*Classification of Individual Consumption According to Purpose*" (COICOP). Considering the information obtained with the data of respondents, most of them have the number of dependents of 3 to 5 persons and yield averagely RM500 to RM1000 per month. Therefore, the estimation of the expenses was beyond from what they can afford.



Source: Statistics Handbook Malaysia by Department of Statistic Malaysia, 2011

Figure 5.1.3: Average Monthly Expenditure per Household by 2004/05 and 2009/10

Another data from the questionnaire was related to educational background of respondents. Most of them further their education up to lowers secondary school. Overall, almost all of the respondents attended school which suggested that they were considered as educated. Figure 5.1.4 demonstrates number of employed persons in Malaysia for 2010 was higher for workers which have attained education until secondary level.



Source: Department of Statistic Malaysia, 2010

Figure 5.1.4: Percentage of employed persons by educational attainment in Malaysia, 2010

Data for working information of respondents were divided into previous and current employment. Results for previous working information display the workers who have history of previous employment in which almost all of them have experienced doing other job before. This information was obtained by interviewing them regarding their previous employment as they mentioned before coming to Malaysia they have done other types of work at their place and after they came to Malaysia also they have to work to earn some money for living (Personal communication, January, 2012).

Among those who have been working, there were quite a number that involved in the accident from their previous occupation. The first years of employment has been reported in a study by Salminen (1994) as having higher risk of serious occupational accidents. This is due to the adaptation of new working environment as well as the tasks performed. The risks of getting the accident from the job were higher as they were lacking in knowledge, skills and experiences (Chau et al., 2002).

Those who were involved in the accident suffered mostly on their upper/lower arm and feet. Based on SOCSO Annual Report in 2010, they reported the number of accidents according to location of injury was primarily higher at the upper (19,395 cases) and lower (11,551 cases) limb compared to other locations. The higher occurrence might be due to the nature of work that requires the workers to perform it manually.

Similarly, the respondents who were having accident were asked whether they get their treatment or not. From the interview, it turned out that less than half of them were being treated as they perceived that the injury was not too serious until they have to get treatment (Personal communication, January, 2012). In addition, they might not want to get treatment due to the expensive treatment expenses.

For current working information of respondents, they were asked the details of their current job as harvesters. Typically, the respondents have been employed for more than a year only some of them were newly employed as they were recently came to Malaysia. Almost all of them were working overtime to make more income. According to the management, their salary was very much based on how many tonnes of fresh fruit bunch (FFB) from palm trees they can harvest.

The workers usually worked less than 8 hours a day. This was due to the skill of harvesting the FFB very rapidly that they have gained throughout their employment. Besides, there were also other factors such as the amount of FFB from the palm trees, areas covered, and familiarity of the workers to their job, for example, if the numbers of FFB were lower, or the areas covered were small, or the workers already memorized the harvest season, then they can possibly finished their job earlier.

5.2 Reported occupational accidents

The prevalence of reported occupational accidents in oil palm industry obtained from the questionnaires was compared descriptively to the secondary data gained from Department of Occupational Safety and Health (DOSH) and Social Security Organization (SOCSO). The most recent accidents data acquired were up to year 2011. The data from DOSH was on number of accidents, distribution of accidents according to time of accident, trend of accidents according to type of injury, number of accidents according to agents and location of injury.

Meanwhile, the data from SOCSO was on number of accidents, number of accidents according to benefits received, location of injury, causal agents as well as types of injury. Results from the questionnaire presented less than half of the respondents have experienced accidents and reported it to the management. The data from DOSH in 2011 for oil palm industry exhibits 134 cases being reported to them whereas SOCSO presents 431 cases.

Among those who were involved, the accidents occurred less than 2 times in a year. The frequency was determined by requiring the respondents to memorize their previous accidents at the workplace. Although this method was biased, however the respondents must have remembered some particulars regarding the accidents that they have experienced especially if the accidents have certain impacts in their life.

In addition, the main reason for determining the frequency within a year due to the requirement under NADOOPOD Regulations 2004 of which the employer must report any accidents occurred at their workplace annually to DOSH. Most of the respondents were remembered when the accidents happened. The time when the accidents took place was identified and classified into morning, afternoon and evening by looking into their daily working time.

Between those times, mostly accident happened in the morning. This was proved by comparing with the data recorded by DOSH which displays the distribution of accidents of the employees worked in the oil palm industry in 2011 was higher in the morning (52%). A study by Lauridsen et al. (1990) performed to workers in the offshore oil and gas industry shows that an increase number of injuries at day time were due to higher activity level at day time.

Half of the respondents experienced accidents causing lost of work time were considered in deciding the intensity of the occurrence. However, in this study the records of accidents causing leave from work were not available. When an accident causing serious body injury happened at the workplace, the employer rushed the injured worker to the nearby clinics. After being treated, if the worker was given the medical leave, they need to hand over to the employer for their records. Even so, the medical leave only stated the duration of leave not the reason why it being issued.

According to the definition of lost time injury under NADOOPOD Regulations 2004, the workers who have taken leave following accident for more than 4 days calendar days were considered serious or major. In this study, the duration of leave by the respondents was high for less than and equal to 4 days. Up to now, the implication from the accident to the workers was only involving non permanent disability (NPD). Similarly, the data from DOSH and SOCSO in oil palm industry in 2011 also presented high number of accidents regarding non permanent disability.

Besides referring to NADOOPOD Regulations 2004 for classification of accidents, there was option for other types of accident in the questionnaire which were not mentioned in the regulation. The purpose was to identify the specific types of accident taking place in the oil palm industry as the hazards constituted by this industry

were not the same as other industry. This study provides new discovery related to accident that primarily affected oil palm harvesters which was poked by palm's thorns and/or fronds.

Locations of injury are significantly high at upper and lower limb. It was due to the nature of their job which required the tasks to be performed manually. In addition, their task which was to collect the fresh fruit bunch (FFB) from the palm trees was completed using those body parts. By comparing the data compiled by DOSH and SOCSO for oil palm industry in 2011, the findings were the same as current study for number of accidents according to location of injury which demonstrated higher percentage of cases for upper limb (up to 40%) followed by lower limb (up to 30%).

The types of injury suffered by the workers were from wounds. The wounds were caused by the thorn from the palm fruit or the dried fronds during work which resulted in cuts. The data from SOCSO for the number of accidents according to types of injury in the oil palm industry in year 2011 shows that 38.3% of the employees were having wounds at the workplace.

There were not many respondents experienced dangerous occurrence at the workplace and they reported it to the management. This was due to dangerous occurrence that they went through did not involve any serious body injury, thus they often see that it was not significant to report. However, from those who were having it and report, most of them were experiencing it for more than 2 times in a year. Although this situation might not be considered as critical, it can act as an indicator that the activities performed at that time period can actually lead to more severe accidents in the future.

Among those who experienced dangerous occurrence, all of them remembered when the dangerous occurrence occurred. There were almost equal proportions of respondents who retrieved time when dangerous occurrence happened which were in the morning and afternoon. This was due to the time of work of which usually at daytime the workers used up their energy to cover certain length of area. So, it increased fatigue among them which in turn reduce their attention towards the tasks performed as well as the work environment.

The most frequent types of dangerous occurrence acquired by the workers were almost fall. Almost fall in this study referred to almost fall because of tripped over a branch. It was because of the surrounding area where they work. The environment permitted the incident to happen as there were unclear bushes and dried fronds not being disposed properly.

5.3 Underreported occupational accidents

Almost three-quarters of the respondents experienced accident but they do not report it to the management. This is supported in the study by Probst et al. (2008) which presented that approximately 78% of all accidents experienced were left unreported. This situation might have happened because of the employees thought that the injuries were insignificant, therefore they chose to not report the incident. Corresponding to this attitude, the workers might misunderstand that if they came across any similar occurrence they would not have to report it.

The employees responded that the most common types of accident encountered were poked by palm's thorns and/or fronds. This can be predicted by looking at their nature of work which needed them to deal with palm fruit everyday.

Therefore, it increased the risk of getting the accident. In addition, the injury from being poked was not too severe, that is why they tend to endure it.

Location of injury mostly affected lower limb as according to the workers, during harvest, they need to cut off the palm fruit by using chisel. Usually the palm fruit would have fell on the ground, but due to unable to respond immediately to the situation, the palm fruit struck on the feet. Apart from that, they sometimes accidentally stepped on the dried palm's frond when they walked from trees to trees.

Typically, workers that involved in the accident were affected by the wounds from cuts. The wounds were developed from the activities carried out by the workers which were cutting off the fresh fruit bunch (FFB) from the palm trees. The hazards were come from the thorn of the palm fruit, dried fronds, as well as the tools or equipments used such as chisel to cut and crook to lift up the fruit.

There is a study done in agriculture industry presented most of the injuries caused by hand tools (such as cuts on the hands and feet) were classified as minor (Tiwari et al., 2002), therefore they frequently got unnoticed, but their outcomes were much painful and disabling due to delayed treatment (NAG et al., 2004).

Similarly, the incident of dangerous occurrence also was not reported by the workers. They experienced occurrence such as almost fall during the work. Normally, workers mentioned the dried palm's frond was not properly removed from the work area. So, when they cut off the palm fruit, the frond would also fell on the ground. The frond was left there until it became dried out. The dried palm's frond can be a hazard to the employees as they appear to be very sharp and piercing.

5.4 Contributing factors of occupational accidents

Factors of occupational accidents were divided into factors of accident and factors of dangerous occurrence. The types of factor included in this study were nature of job, organizational factors, human factors, alcohol and/or drug abuse, injury and/or illness as well as exposure to venomous animal. The types of factor for accident and dangerous occurrence were the same. Coincidentally, the factor for both accident and dangerous occurrence was higher for human factors.

These findings were obtained from the employees based on their perception on why the accident happened. Almost all of them agreed that the accident took place because of their fault. To emphasized, this study was not intended to find fault, but for finding the fact. The fact that why the accident occurred among the study population. In addition, this study also provides some insights regarding the real situation that occur in the industry.

There were current studies presented factors which were significantly associated with risk of injury at place of work such as organizational commitment, work environment, general health and safe behavior (Oliver et al., 2002), extrinsic aspects related to individual (Mikkelsen et al., 2004), psychosocial stressors (Glasscock et al., 2006), or inadequate training (Fabiano et al., 2008).

A study by NAG et al. (2004) reviewed the accidents and injuries in Indian agriculture. They suggested that the accidents and injuries in the farm environment happened as a combination of multiple factors such as man, machine, crop or environmental factors. In the study, they examined the main events of farm incidents (including fatal and non-fatal) were cut with hand tools, fall from tractors, hit by falling objects, and snakebites.

The study is supported by Verma et al. (1978) which reviewed power thresher incidents in Punjab state and reported 73% of the incidents were due to human factors, 13% were machine factors, and 14% due to crop and other factors. Similarly, a study of workers in small and medium-scale industries demonstrated a greater risk of work-related injuries due to some human factors such as educational background, lack of knowledge or experience, as well as inadequate training (Faris, 1998; Mizoue, 1999; Park, 2001).

There were many studies that associated work-related injuries from multiple risk factors such as exposure to physical and mechanical hazards, and the unsafe practices by the workers were the leading causes whereas psychosocial factors, work arrangements, socio-demographic characteristic of workers, environmental and social conditions were part of potential risk factors (Chau et al., 2002; Bhattacharjee, 2003; Narkasen, 2004; Dembe et al., 2004; Liv et al., 2004; Wilkins, 2004).

5.5 Association between variables

There were no factors that show significant to reported accidents. A study by Gerald et al., (2000) was compared with the present study. The results from present study show no significant might be due to small sample size which was 148 respondents while the previous study conducted to bigger population from a total of 1,246 subjects. Furthermore, current study design was cross sectional study which it was done within specified time frame while former study was a cohort study that gave much time to the researcher to follow up subjects.

Besides, the latest study was done to oil palm harvesters of which the respondents were recruited from particular job tasks to represent that population while the preceding study was done to agriculture-related farm workers in which have a wide scope of job tasks of the population under studied. The current study was done in Johor while past study was done at Alabama and Mississippi which both location were different indicated that the level of risk also would be different.

Although there was no factor that shows significant to the accidents, a study conducted by Li et al., (1999) shows positive association between age and earned wage with risk of non-fatal injuries. According to them, elevated risk among older workers could result from not capable of meeting the job demands or may be a consequence of physical decline. Apart from that, people who have potentially higher risks of developing work-related injuries may tend to be higher paid. However, due to limited information on the wage-related factors, they can only make limited interpretations.

Study among Canadian farm operators in agriculture industry shows that those aged of less than 35 years were more prone to have farm injuries and incidence of injuries (Maltais, 2007). This is supported by Tadesse et al., (2007) that found higher risk in respondents aged below 30 years. The findings pointed that the reasons for high work related injuries among young people regarding lack of information, lack of training, lack of supervision, lack of job experience, as well as lack of knowledge and skill.

One of the possible indicators of work-related injury is the working hours. In a study by Wilkins (2004), the researcher discovered that workers who worked 48 hours and below per week were less likely to have work related injuries. This is interpreted as fatigue related with long work hours. Therefore, it is concluded that long working time will disturbs rest and sleep.

Overtime workers having 61% higher risks of injury compared to workers in jobs without overtime. No specific definition of overtime and so the term have been represented as too long work hours, work that exceeds the respondent's conventional work schedule, unusual or unexpected hours of work, or work that qualifies the worker for overtime pay (Dembe et al., 2005).

In addition, a different study by Lind (2008) emphasized both unsafe acts and latent conditions such as local workplace factors and organizational factors as the sources of accidents. Accidents can also reflect deficiency in safety management such as lack of supervision (organizational factors), although the decision to use unsafe working methods or not to use personal protective equipment is up to the workers (unsafe acts).

5.6 Comparison of accident reporting between individual and organization

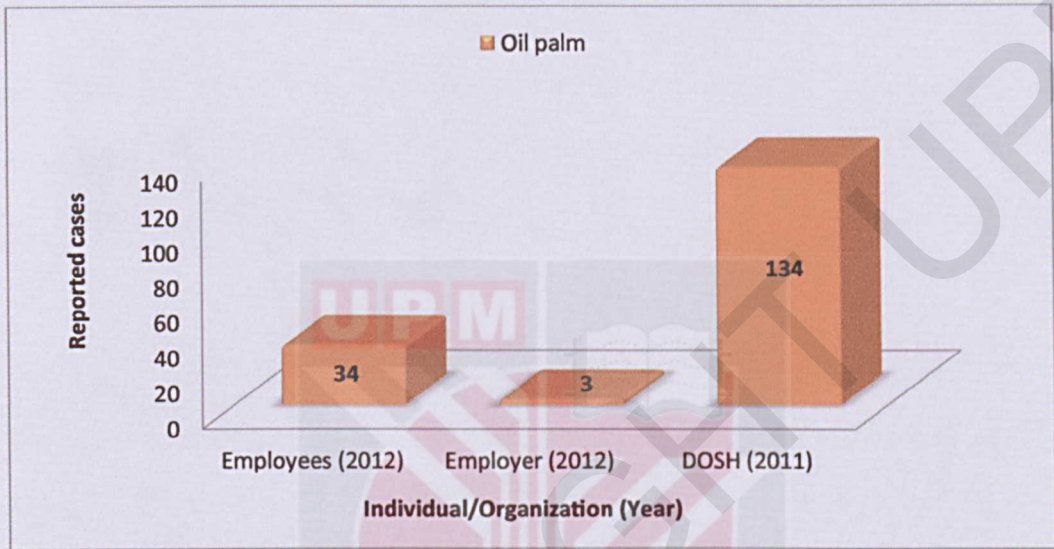


Figure 5.6.1 Number of reported accidents in oil palm industry according to types of individual/organization

The data obtained from the employees, employer and organization was compared between each other. The data from employees exhibited a total of 34 cases being reported whereas the employer presented only 3 cases. The chart proves that there were large discrepancies in accident reporting by the employees and employer. This indicates that underreporting was existed where the employer chose to not record the cases although the workers have been complaint regarding this matter.

One of the reasons was related to employer's perception with respect to accidents. This means that the employer did not really understand the scope of accidents. To them, an occurrence can only be indicated as accident when the impacts to a person is serious otherwise the person involved must have major injuries. Another reason was to reduce the increment of cases reported by the employees by being selective. This means that the employer simply recorded cases which they thought as severe.

Comparison of data between individual and organization was referring to the cases reported by employees and also from DOSH. The chart presented accidents data from DOSH in 2011. This was due to data collected on early January 2012, at that time DOSH did not come out with any accidents record for that year. The employees reported as much as 34 cases in early January 2012, on the other hand DOSH reported as much as 134 cases throughout the year 2011. By considering the data, it can be predicted that the number of reported cases by the employees for the whole year 2012 were supposed to be higher and that the cases were said to be underrated.

The reason for this occurrence to happen was due to underreporting by the employer. The requirement for employer to notify any accidents occurred at the workplace was specified in Occupational Safety and Health Act (OSHA) 1994 under Section 32 (1). Therefore, if the employer did not report, then they can be accused for not complying with the law and can be penalized.

5.7 Conclusion

The results of prevalence of occupational accidents among harvesters presented most of them were involved in accident and dangerous occurrence arising from their occupation, however they did not report to the employer. The respondents were having accidents by getting cuts at their feet due to being poked by palm's thorns and/or fronds while working. They also were almost fall due to poor working environment. The descriptive analysis of contributing factors of occupational accidents demonstrated higher towards human factors.

The bivariate analysis indicates that the hypothesis was not accepted. The hypothesis was accepted because there is significant association between contributing factors and occupational accidents for time of accident. In the conclusion, this study found out that although there is not much factors that give significant to the association with the reported accident, but comparing to the descriptive data, we can see that the percentage of human factors is extremely high for both accidents and dangerous occurrence.

5.8 Recommendation

In order to improve accident reporting by the employees and employer, first of all, the employer or management must be made clear of what they need to record. In other words, the top management needs to identify what is defined by accident. The presence of underreported cases actually was recognized due to lack of organization support of which the top management has to encourage their employees to report any accident that experienced by them at the workplace.

Another suggestion is to reduce the incidence of accidents at the workplace by giving safety training to all the employees. As training was a method of communication, the employer must emphasize on the importance of reporting any occurrence encountered at the workplace. The purpose is to ease the employer in determining the trend of accidents among the workers and allow them to take necessary actions to reduce the number of cases.

Normally, during the earlier stage after conducting the training, the reported cases will increase as the workers are aware the need to report accidents. Therefore, the employer upon seeing the cases have been increased they will take some actions to cater the issue. The safety behavior that the employer tries to nurture within the employees will increase gradually until they will naturally adopt the safe behavior to become their culture.

After conducting the training and introducing safety behavior to the workers, then the employer can consider to establish Occupational Safety and Health Management System (OSHMS) at the workplace to ensure that all changes done will be well-maintained through the process of auditing.

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APPENDIX

PENERANGAN KEPADA RESPONDEN

Sila baca maklumat berikut. Jika ada sebarang soalan, sila rujuk penyelidik.

TAJUK KAJIAN

Kelaziman kemalangan pekerjaan di ladang kelapa sawit di Johor.

PENDAHULUAN

Kemalangan pekerjaan adalah ditakrifkan sebagai suatu peristiwa yang berlaku akibat daripada atau semasa kerja yang akan membawa kepada maut atau cedera yang bersifat kekal mahupun sementara. Insiden kemalangan berlaku dalam pelbagai sektor seperti pembuatan, pertanian, utiliti, pembinaan, dan lain-lain. Kesan kemalangan yang telah digariskan oleh Jabatan Keselamatan dan Kesihatan Pekerjaan (JKKP) Malaysia dalam Pemberitahuan Kemalangan, Kejadian Berbahaya, Keracunan Pekerjaan dan Penyakit Pekerjaan (NADOOPOD) 2004 sebagai kecederaan maut yang membawa kepada kematian serta merta atau kematian dalam tempoh setahun kemalangan; dan kecederaan bukan maut yang melibatkan hilang masa kerja yang membawa kepada ketidakupayaan kekal atau sementara, serta tidak hilang masa kerja yang mana tidak memerlukan rawatan perubatan. Biasanya, kes-kes yang dilaporkan boleh diperolehi melalui aduan yang dibuat oleh syarikat yang direkodkan oleh JKKP dan juga tuntutan yang direkodkan oleh Pertubuhan Keselamatan Sosial (PERKESO) dan Jabatan Tenaga Kerja Semenanjung Malaysia (JTKSM).

APAKAH YANG ANDA AKAN LAKUKAN?

Anda akan di temubual dan perlu menjawab soalan yang telah diubah suai. Anda perlu menandatangani borang persetujuan responden, dimana ia menunjukkan anda secara sukarela bersetuju menyertai kajian ini. Selain itu, anda perlu memulangkan borang persetujuan tersebut kepada penyelidik apabila menjawab soalan tersebut.

SIAPAKAH YANG TIDAK PERLU MENYERTAI KAJIAN INI?

Sesiapa yang tidak memenuhi ciri-ciri kemasukan di dalam kajian ini adalah tidak perlu menyertai kajian ini. Ciri-ciri kemasukan tersebut ialah lelaki dewasa yang berasal dari Indonesia, berumur dalam lingkungan 15-64 tahun dan bekerja sebagai penuai buah kelapa sawit. Pekerja selain ciri-ciri yang disebutkan akan dikecualikan daripada kajian ini.

APAKAH KEMBAIKAN KAJIAN INI:

(a) KEPADA RESPONDEN

Kajian ini memberikan maklumat tentang kekerapan kes kemalangan pekerjaan yang berlaku di kawasan tempat kerja anda. Ini termasuklah jenis kemalangan dan kecederaan yang selalu dialami oleh responden. Di samping itu, melalui peratusan kemalangan pekerjaan yang diperolehi, responden akan dapat menganggarkan jumlah sebenar kes yang berlaku di tempat kerja mereka.

b) KEPADA PENYELIDIK

Kajian ini akan membantu penyelidik bagi menentukan perkaitan antara kemalangan pekerjaan dan faktor penyumbang kemalangan di kalangan penuai kelapa sawit. Penemuan dalam kajian ini akan dijadikan maklumat garis dasar dan membantu penyelidik dalam mendapatkan ijazah dalam B.S. Kesihatan Persekitaran dan Pekerjaan.

ADAKAH TERDAPAT APA-APA RISIKO?

Tidak, kajian ini tidak memberi apa-apa risiko kepada responden.

APAKAH KEMUNGKINAN MENARIK DIRI?

Kajian ini adalah berdasarkan penyertaan secara sukarela. Jika responden berasa tidak selesa untuk meneruskan kajian ini, responden boleh menarik diri daripada kajian ini pada bila-bila masa.

ADAKAH MAKLUMAT PERIBADI DAN IDENTITI SAYA KEKAL RAHSIA?

Ya, semua maklumat berkaitan anda akan dirahsiakan dan hanya diketahui oleh penyelidik sahaja.

SIAPAKAH YANG PATUT SAYA HUBUNGI JIKA SAYA ADA MAKLUMAT TAMBAHAN SOALAN?

IZYAN NADHIRAH BINTI NOR AZMAN (017-3233624)- Penyelidik

PROF. MADYA DR. SHAMSUL BAHRI HJ. MOHD TAMRIN (017-3134792)- Penyalia

BORANG PERSETUJUAN RESPONDEN

TAJUK KAJIAN : KELAZIMAN KEMALANGAN PEKERJAAN DI LADANG KELAPA SAWIT DI JOHOR

PENYELIDIK : IZYAN NADHIRAH BINTI NOR AZMAN

Saya.....No.K/P.....
alamat.....

.....dengan ini secara sukarela bersetuju menyertai penyelidikan klinikal *(kajian klinikal, kajian soal selidik/ percubaan ubat) yang dinyatakan di atas.

Saya telah dimaklumkan tentang sifat penyelidikan klinikal dari segi metodologi, risiko dan kemungkinan komplikasi (rujuk kepada Lembaran Maklumat). Saya faham bahawa saya mempunyai hak untuk menarik diri daripada penyelidikan klinikal ini pada bila-bila masa tanpa memberi apa sahaja alasan. Saya juga faham bahawa kajian ini adalah sulit dan semua maklumat yang diberikan mengenai identiti saya akan kekal sulit dan rahsia.

Saya berharap untuk *tahu/ tidak berharap untuk mengetahui keputusan sampel saya.

* padam mana yang berkenaan

Tandatangan Tandatangan
(Responden) (Saksi)

Tarikh : Nama :
No. K/P :

Saya mengesahkan bahawa saya telah menjelaskan kepada responden sifat dan tujuan penyelidikan klinikal yang tersebut di atas.

Tarikh Tandatangan
(Penyelidik)

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BAGIAN B: DATA PEKERJAAN

2.1 Data pekerjaan terdahulu

2.1.1 Pernahkah anda bekerja di tempat lain sebelum ini?

1 Ya

0 Tidak

B1

2.1.2 Pernahkah anda mengalami kecelakaan di tempat kerja sebelum ini?

1 Ya

0 Tidak

B2

Jika ya, nyatakan bahagian badan yang terluka:

		Ya	Tidak	
2.1.2.1	Kepala	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B3 <input type="checkbox"/>
2.1.2.2	Tenguk/leher	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B4 <input type="checkbox"/>
2.1.2.3	Bahu	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B5 <input type="checkbox"/>
2.1.2.4	Tangan/lengan	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B6 <input type="checkbox"/>
2.1.2.5	Jari	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B7 <input type="checkbox"/>
2.1.2.6	Siku	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B8 <input type="checkbox"/>
2.1.2.7	Punggung atas	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B9 <input type="checkbox"/>
2.1.2.8	Punggung bawah	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B10 <input type="checkbox"/>
2.1.2.9	Paha	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B11 <input type="checkbox"/>
2.1.2.10	Lutut	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B12 <input type="checkbox"/>
2.1.2.11	Kaki	1 <input type="checkbox"/>	0 <input type="checkbox"/>	B13 <input type="checkbox"/>

2.1.3 Pernahkah anda menerima perawatan bagi kecelakaan tersebut?

1 Ya

0 Tidak

B14

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2.2 Data pekerjaan sekarang

2.2.1 Berapa lamakah anda telah bekerja sebagai penuai?

_____ tahun

B15

2.2.2 Adakah anda bekerja pada hari libur?

1 Ya 0 Tidak

B16

Jika ya, berapa lama anda bekerja pada hari libur?

1 Sekali sebulan 2 Dua kali sebulan
3 Tiga kali sebulan 4 Empat kali sebulan

B17

2.2.3 Secara keseluruhan, berapa jam anda bekerja dalam sehari?

_____ jam

B18

2.2.4 Berapa lamakah anda beristirihat dalam masa sehari anda bekerja?

_____ jam

B19

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BAGIAN C: KECELAKAAN PEKERJAAN YANG DILAPORKAN

(PEKERJA)

3.0 Kelaziman kecelakaan pekerjaan

3.1 Dalam saat anda bekerja sekarang, pernahkah anda mengalami kecelakaan?

1 Ya 0 Tidak

Jika Ya, silakan jawab soalan 3.2 hingga 5.4, jika Tidak silakan terus ke soalan 6.0.

C1

3.2 Berapa seringkah anda mengalami kecelakaan tersebut dalam setahun?
_____ kali

C2

3.3 Apakah anda tahu waktu kejadian itu berlaku?

1 Ya 0 Tidak

C3

3.4 Jika Ya, bilakah waktu kejadian tersebut?

	Waktu kejadian	Ya	Tidak
3.4.1	Pagi	<input type="checkbox"/>	<input type="checkbox"/>
3.4.2	Tengahari	<input type="checkbox"/>	<input type="checkbox"/>
3.4.3	Petang	<input type="checkbox"/>	<input type="checkbox"/>

C4

C5

C6

4.0 Kasus kecelakaan pekerjaan

4.1 Dalam jangka waktu setahun ini, apakah anda pernah mengalami kecelakaan yang **menyebabkan anda mengambil istirahat sakit?**

1 Ya 0 Tidak

C7

4.2 Berapa lamakah istirahat sakit yang diberikan disebabkan kecelakaan tersebut?

_____ hari _____ bulan

C8

5.0 Kecelakaan

5.1 Apakah dampak kecelakaan tersebut?

1 Kehilangan yang bersifat selamanya
(cth: hilang penglihatan, hilang anggota tangan dan/atau kaki, dll)

C9

2 Kehilangan yang bersifat sementara
(cth: lumpuh sementara, kecederaan tulang belakang, dll)

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5.2 Apakah jenis kecelakaan yang berlaku?

	Jenis-jenis kecelakaan	Ya	Tidak	Kod
5.2.1	Terjatuh			100
5.2.2	Pergerakan yang menggunakan tenaga secara berlebihan			500
5.2.3	Terpijak di atas/terkena/terhempap oleh objek (tidak termasuk objek yang jatuh)			300
5.2.4	Terhempap oleh objek yang jatuh			200
5.2.5	Jenis kecelakaan yang lain (nyatakan): _____			900

C10

C11

C12

C13

C14

5.3 Dimanakah lokasi badan yang kecederaan?

	Lokasi kecederaan	Ya	Tidak	Kod
5.3.1	Kepala			100
5.3.2	Leher			200
5.3.3	Tubuh (bagian belakang)			300
5.3.4	Bagian atas tubuh			400
5.3.5	Bagian bawah tubuh			500
5.3.6	Lokasi berlipat (lebih dari satu anggota di atas)			600
5.3.7	Lain-lain tempat (silakan nyatakan): _____			

C15

C16

C17

C18

C19

C20

C21

5.4 Apakah jenis kecederaan yang dialami?

	Jenis-jenis kecederaan	Ya	Tidak	Kod
5.4.1	Amputasi dan enukleasi (melibatkan pembedahan mana-mana anggota badan)			40
5.4.2	Konkusi (gegaran) dan cedera dalaman yang lain			30
5.4.3	Lebam			55
5.4.4	Selisih otot			20
5.4.5	Keretakan dan kepatahan			10
5.4.6	Cedera berlipat (kombinasi satu atau lebih mana-mana cedera di atas)			90
5.4.7	Keselo			25
5.4.8	Luka-luka lain			41

C22

C23

C24

C25

C26

C27

C28

C29

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PENYELIDIK

6.0 Kejadian berbahaya

6.1 Dalam jangka waktu anda bekerja di tempat kerja sekarang, pernahkah anda mengalami kejadian berbahaya?

1 Ya 0 Tidak

Jika Ya, silakan jawab soalan 6.2 hingga 6.5.

C30

6.2 Berapa seringkah anda mengalami kejadian berbahaya tersebut dalam setahun?
_____ kali

C31

6.3 Apakah anda tahu waktu kejadian itu berlaku?

1 Ya 0 Tidak

C32

6.4 Jika Ya, bilakah waktu kejadian tersebut?

	Waktu kejadian	Ya	Tidak
6.4.1	Pagi	<input type="checkbox"/>	<input type="checkbox"/>
6.4.2	Tengahari	<input type="checkbox"/>	<input type="checkbox"/>
6.4.3	Petang	<input type="checkbox"/>	<input type="checkbox"/>

C33

C34

C35

6.5 Apakah jenis kejadian berbahaya yang berlaku?

	Kejadian berbahaya	Ya	Tidak	Kod
6.5.1	Pembalikan traktor dan lain-lain kenderaan ladang	<input type="checkbox"/>	<input type="checkbox"/>	970
6.5.2	Kecelakaan yang mengakibatkan kenderaan yang digunakan untuk mengangkut produk keluaran ladang atau kakitangan	<input type="checkbox"/>	<input type="checkbox"/>	980
6.5.3	Kejadian lain (silakan nyatakan): _____	<input type="checkbox"/>	<input type="checkbox"/>	

C36

C37

C38

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BAGIAN D: KECELAKAAN PEKERJAAN YANG TIDAK DILAPORKAN

7.0 Kecelakaan

7.1 Apakah dalam jangka waktu anda bekerja terdapat kasus kecelakaan yang tidak dilaporkan oleh atasan anda?

1 Ya 0 Tidak

Jika anda menjawab Ya, silakan jawab soalan 7.2 hingga 7.4, jika Tidak silakan jawab soalan 8.0.

7.2 Apakah jenis kecelakaan yang tidak dilaporkan berlaku?

	Jenis-jenis kecelakaan	Ya	Tidak	Kod
7.2.1	Terjatuh			100
7.2.2	Pergerakan yang menggunakan tenaga secara berlebihan			500
7.2.3	Terpijak di atas/terkena/terhempap oleh objek (tidak termasuk objek yang jatuh)			300
7.2.4	Terhempap oleh objek yang jatuh			200
7.2.5	Jenis kecelakaan yang lain (nyatakan) : _____			900

7.3 Apakah lokasi badan yang kecederaan yang tidak dilaporkan?

	Lokasi kecederaan	Ya	Tidak	Kod
7.3.1	Kepala			100
7.3.2	Leher			200
7.3.3	Tubuh (bagian belakang)			300
7.3.4	Bagian atas tubuh			400
7.3.5	Bagian bawah tubuh			500
7.3.6	Lokasi berlipat (lebih dari satu anggota di atas)			600
7.3.7	Lain-lain tempat (silakan nyatakan): _____			

D1

D2

D3

D4

D5

D6

D7

D8

D9

D10

D11

D12

D13

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7.4 Jika anda mengalami kecederaan akibat kecelakaan yang tidak dilaporkan, apakah jenis kecederaan yang dialami?

	Jenis-jenis kecederaan	Ya	Tidak	Kod
7.4.1	Amputasi dan enukleasi (melibatkan pembedahan mana-mana anggota badan)			40
7.4.2	Konkusi (gegaran) dan cedera dalaman yang lain			30
7.4.3	Lebam			55
7.4.4	Selalih otot			20
7.4.5	Keretakan dan kepatahan			10
7.4.6	Cedera berlipat (kombinasi satu atau lebih mana-mana cedera di atas)			90
7.4.7	Keselo			25
7.4.8	Luka-luka lain			41

- D14
- D15
- D16
- D17
- D18
- D19
- D20
- D21

8.0 Kejadian berbahaya

8.1 Dalam jangka waktu anda bekerja di tempat kerja sekarang, pernahkah anda mengalami sebarang kejadian berbahaya yang tidak dilaporkan?

1 Ya 0 Tidak

Jika Ya, sila jawab soalan 8.2.

D22

8.2 Apakah jenis kejadian berbahaya yang tidak dilaporkan berlaku?

	Kejadian berbahaya	Ya	Tidak	Kod
8.2.1	Pembalikan traktor dan lain-lain kenderaan ladang			970
8.2.2	Kemalangan membabitkan sebarang kenderaan yang digunakan untuk produk keluaran ladang atau kakitangan			980
8.2.3	Kejadian lain (sila nyatakan):			

- D23
- D24
- D25

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PENYELIDIK

BAGIAN E: FAKTOR PENYEBAB TERJADINYA KECELAKAAN

9.1 Menurut pendapat anda, apakah faktor-faktor yang menyebabkan terjadinya kecelakaan di tempat kerja?

	Faktor penyebab kecelakaan	Ya	Tidak	Kod
9.1.1	Penyalahgunaan alatan			J800
9.1.2	Kekurangan prosedur latihan			
9.1.3	Tidak ada pemberitahuan kerja yang jelas			
9.1.4	Tidak ada jadwal yang sesuai untuk operasi			
9.1.5	Cara kerja yang tidak selamat			
9.1.6	Peralatan perlindungan yang tidak mencukupi atau tidak sesuai			B02
9.1.7	Menggunakan tenaga fizikal secara berlebihan			
9.1.8	Pengendalian/pengangkutan barang atau peralatan			
9.1.9	Kecuaian			
9.1.10	Bekerja dalam keadaan tertekan			
9.1.11	Bekerja pada masa intensif musim penanaman			
9.1.12	Lambat bertindak			
9.1.13	Kekurangan pengetahuan			P500
9.1.14	Kurang latihan yang memadai			
9.1.15	Kesedaran mengenai bahaya pekerjaan			
9.1.16	Resiko pengambilan tingkah laku berbahaya			
9.1.17	Kekurangan kemahiran			P600
9.1.18	Gagal menggunakan peralatan perlindungan diri dengan betul			A09
9.1.19	Cara mengangkat yang tidak sesuai			A12
9.1.20	Kedudukan yang tidak sesuai bagi sesuatu tugas			A13
9.1.21	Di bawah pengaruh alkohol dan/atau obat-obatan			A16
9.1.22	Jatuh dari ketinggian/pada tahap yang sama			
9.1.23	Keletihan			
9.1.24	Kecederaan atau penyakit			P301
9.1.25	Waktu kerja yang tidak tetap			
9.1.26	Istirahat yang tidak mencukupi			
9.1.27	Postur kerja			
9.1.28	Gigitan hewan (ular, serangga, lebah, dan sebagainya)			

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**OCCUPATIONAL SAFETY AND HEALTH
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9.2 Menurut pendapat anda, apakah faktor-faktor yang menyebabkan berlakunya kejadian berbahaya di tempat kerja?

	Faktor penyebab kejadian berbahaya	Ya	Tidak	Kod
9.2.1	Penyalahgunaan alatan			J800
9.2.2	Kekurangan prosedur latihan			
9.2.3	Tidak ada pemberitahuan kerja yang jelas			
9.2.4	Tidak ada jadual yang sesuai untuk operasi			
9.2.5	Cara kerja yang tidak selamat			
9.2.6	Peralatan perlindungan yang tidak mencukupi atau tidak sesuai			B02
9.2.7	Menggunakan tenaga fizikal secara berlebihan			
9.2.8	Pengendalian/pengangkutan barang atau peralatan			
9.2.9	Kecuaian			
9.2.10	Bekerja dalam keadaan tertekan			
9.2.11	Bekerja pada masa intensif musim penanaman			
9.2.12	Lambat bertindak			
9.2.13	Kekurangan pengetahuan			P500
9.2.14	Kurang latihan yang memadai			
9.2.15	Kesedaran mengenai bahaya pekerjaan			
9.2.16	Resiko pengambilan tingkah laku berbahaya			
9.2.17	Kekurangan kemahiran			P600
9.2.18	Gagal menggunakan peralatan perlindungan diri dengan betul			A09
9.2.19	Cara mengangkat yang tidak sesuai			A12
9.2.20	Kedudukan yang tidak sesuai bagi sesuatu tugas			A13
9.2.21	Di bawah pengaruh alkohol dan/atau obat-obatan			A16
9.2.22	Jatuh dari ketinggian/pada tahap yang sama			
9.2.23	Keletihan			
9.2.24	Kecederaan atau penyakit			P301
9.2.25	Waktu kerja yang tidak tetap			
9.2.26	Istirahat yang tidak mencukupi			
9.2.27	Postur kerja			
9.2.28	Gigitan hewan (ular, serangga, lebah, dan sebagainya)			

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BAHAGIAN F: KEMALANGAN PEKERJAAN

(MAJIKAN)

10.1 Adakah syarikat anda mempunyai Pegawai Keselamatan dan Kesihatan Pekerjaan (SHO)?

1 Ya 0 Tidak

F1

10.2 Berapakah jumlah/anggaran kes kemalangan yang dilaporkan berlaku di syarikat anda dalam setahun? Sila nyatakan:

_____ kes

F2

10.3 Berapakah jumlah kes kemalangan maut yang dilaporkan berlaku di syarikat anda dalam setahun? Sila nyatakan:

_____ kes

F3

10.4 Kebiasaannya, apakah punca berlakunya kes kemalangan tersebut?

- 1 Cara kerja yang tidak selamat
- 2 Kurang latihan yang berkesan
- 3 Kecuaian
- 4 Gigitan haiwan
- 5 Tercucuk duri
- 6 Lain-lain (sila nyatakan): _____

F4

10.5 Adakah terdapat kes kemalangan yang tidak dilaporkan?

1 Ya 0 Tidak

F5

10.6 Jika Ya, berapakah jumlah kes kemalangan yang tidak dilaporkan berlaku dalam setahun? Sila nyatakan:

_____ kes

F6

10.7 Apakah alasan kes kemalangan tidak dilaporkan?

- 1 Liputan terhad oleh laporan dan skim pampasan
- 2 Sistem rekod dan pemberitahuan kemalangan yang tidak konsisten
- 3 Kepercayaan bahawa kemalangan merupakan pakej bekerja dan melaporkan kemalangan tidak akan membantu
- 4 Takut tindakan disiplin dikenakan atau dilabel sebagai pengadu
- 5 Insentif daripada syarikat yang memberi ganjaran bagi tahap kecederaan yang dilaporkan rendah
- 6 Lain-lain (sila nyatakan): _____

F7

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10.8 Adakah terdapat kes kemalangan maut yang tidak dilaporkan dalam setahun?

1 Ya

0 Tidak

F8

10.9 Jika Ya, berapakah jumlah kes kemalangan maut yang tidak dilaporkan berlaku dalam setahun? Sila nyatakan:

_____ kes

F9

10.10 Apakah alasan kes kemalangan maut yang tidak dilaporkan?

1 Liputan terhad oleh laporan dan skim pampasan

2 Sistem rekod dan pemberitahuan kemalangan yang tidak konsisten

3 Kepercayaan bahawa kemalangan merupakan pakej bekerja dan melaporkan kemalangan tidak akan membantu

4 Takut tindakan disiplin dikenakan atau dilabel sebagai pengadu

5 Insentif daripada syarikat yang memberi ganjaran bagi tahap kecederaan yang dilaporkan rendah

6 Lain-lain (sila nyatakan): _____

F10

10.11 Berapakah perolehan jualan tahunan bagi syarikat anda (Di bawah pengurusan anda)?

Saiz industri	Ya	Tidak	Kod
Perolehan jualan tahunan > RM 25 juta (Pekerja > 151)			Besar
Perolehan jualan tahunan = RM 10-25 juta (Pekerja 51-150)			Sederhana
Perolehan jualan tahunan < RM 10 juta (Pekerja < 50)			Kecil

F11

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BAHAGIAN G: FAKTOR PENYEBAB BERLAKU KEMALANGAN

11.1 Pada pendapat anda, apakah faktor-faktor yang menyebabkan berlaku kemalangan di tempat kerja?

	Faktor penyebab kemalangan	Ya	Tidak	Kod
11.1.1	Kurang pimpinan dan penyeliaan			J100
11.1.2	Kekurangan dasar atau sistem pengurusan keselamatan dan kesihatan pekerjaan			
11.1.3	Kekurangan sistem rekod dan pemberitahuan yang baik			
11.1.4	Tiada penghuraian kerja yang jelas			
11.1.5	Cara kerja yang tidak selamat			
11.1.6	Peralatan perlindungan yang tidak mencukupi atau tidak sesuai			B02
11.1.7	Kekurangan piawaian kerja			J600
11.1.8	Bekerja pada masa intensif musim penanaman			
11.1.9	Kurang latihan yang berkesan			
11.1.10	Waktu kerja yang tidak tetap			
11.1.11	Beban fizikal yang melampau			
11.1.12	Gigitan haiwan (ular, serangga, lebah, dan sebagainya)			

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11.2 Pada pendapat anda, apakah faktor-faktor yang menyebabkan berlakunya kejadian berbahaya di tempat kerja?

	Faktor penyebab kejadian berbahaya	Ya	Tidak	Kod
11.2.1	Kurang pimpinan dan penyeliaan			J100
11.2.2	Kekurangan dasar atau sistem pengurusan keselamatan dan kesihatan pekerjaan			
11.2.3	Kekurangan sistem rekod dan pemberitahuan yang baik			
11.2.4	Tiada penghuraian kerja yang jelas			
11.2.5	Cara kerja yang tidak selamat			
11.2.6	Peralatan perlindungan yang tidak mencukupi atau tidak sesuai			B02
11.2.7	Kekurangan piawaian kerja			J600
11.2.8	Bekerja pada masa intensif musim penanaman			
11.2.9	Kurang latihan yang berkesan			
11.2.10	Waktu kerja yang tidak tetap			
11.2.11	Beban fizikal yang melampau			
11.2.12	Gigitan haiwan (ular, serangga, lebah, dan sebagainya)			

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TERIMA KASIH ATAS KERJASAMA ANDA BERIKAN

Gambarajah struktur tubuh manusia

