ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

CHALLENGES ON OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT IN METAL WORK FACTORIES BASED ON THE ETHIOPIAN LABOR LAW:

THE CASE OF NIFAS SILK LAFTO SUB CITY, ADDIS ABABA

BY

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ACRONYMS

OSH---------- Occupational safety and health

ILO---------- International labor organization

PPE---------- Personal protective equipment

Proc. ---------- Proclamation

FDRE---------- Federal Democratic Republic of Ethiopia

HPR---------- House of people’s representative

ABSTRACT

Occupational safety and health is one of the issues of concern in metal work factories. This study covers eleven metal work factories out of seventeen in the Nifas Silk Lafto Sub-city, Addis Ababa. The management in all the eleven metal work factories was interviewed and the workers in the metal workshops responded to questionnaires with regard to the current situations in safety and health standards and their possible reasons for those occupational hazards. The study and the findings are mainly based on data collected on accident record keeping, fire hazards, ergonomics and workplace design, occupational health. These factors are studied along with the level of compensation and benefit of workers show that there are some organizations that are not working in safe conditions. The factors that were found to contribute for the hazards include poor fire controlling mechanisms and first aid treatment, poorly operating machineries and personal protective equipments, poorly trained machine operators and also dangerous working conditions in the manufacturing warehouse. To overcome these hazards, organizations should take a lot of attention to the issue of occupational safety and health and implement all the necessary safety controlling mechanisms in the workplace so as to create a safer and healthier working environment and also better employee-employer relation in the sector.

CHAPTER ONE: INTRODUCTION

1.1.BACKGROUND OF THE STUDY

Occupational safety and health is one of the most important issues in every organization, and every employee deserves to work under conditions which do not expose him/her to any injury or health problems. To make sure that employees are working with safe working conditions, the management and employees should work together to make that happen and the government is also doing its part by enforcing this issue with a law.

Ethiopia's Labor Proclamation No.377/2003 was enacted in 2003 and it aims at regulating employee-employer relationships, working conditions and various issues. It is classified into twelve parts and one hundred and ninety one articles. The issue of occupational safety and health and the requirements are embodied in Articles 91 to 112 under Part Seven of the Proclamation. Even though the Proclamation clearly states all the requirements that need to be fulfilled by employers, there are various companies that fail to do so thereby brining about different occupational safety and health problems on workers.

> Occupational safety and health (OSH) is a discipline dealing with the prevention of work related injuries and diseases as well as the protection and promotion of the health of workers. It aims at the improvement of working conditions and environment. Occupational health entails the promotion and maintenance of the highest degree of physical and mental health and social well-being of workers in all occupations.
> (OSH-ILO 2011)

Continuous assessment should be done on organizations to monitor the extent to which conditions of occupational safety and health (OSH) management system is in place. For this study, the sector of metal work factories in the Nifas silk Lafto sub city was selected based on the repetitive claims from the employees to the relevant regulatory government offices and due to the dangerous working conditions in the production department of these organizations as indicated in the inspection reports of the labor and social affairs office of the sub city.

The preamble of the Labor Proc. No. 377/2003 states that "it is essential to ensure that worker employer relations are governed by the basic principles of rights and obligations with a view to enabling workers and employers to maintain industrial peace and work in the spirit of harmony

and cooperation towards the all-round development of our country" (Preamble, paragraph 1). The preamble further states the necessity "to strengthen and define by law the powers and duties of the organ charged with the responsibility of inspecting, in accordance with the law, Labor administration, particularly Labor conditions, occupational safety, health and work environment" (FDRE-HPR, 2003)

> In 2005, the International Labor Office (ILO) estimated that globally 2.2 million people die annually from work-related accidents and diseases. And occupationally related deaths appear to be on the rise. Moreover, each year there is an estimated 270 million non-fatal work-related accidents (each resulting in at least three days' absence from work) as well as 160 million new cases of work-related diseases.
> (OSH - ILO, 2008).

This data shows the need to give due attention to the issue of occupational safety and health and the significance of the necessary controlling mechanisms in an organization. In this regard, the employee is also expected to work on his/her behalf besides the management. Article 16.1 of the Occupational Safety and Health Convention, 1981 (No. 155) states that "Employers shall be required to ensure that, so far as reasonably practicable, the workplaces, machinery, equipment and processes under their control are safe and without risk to health" (OSH-ILO, 2009).

While setting and implementing a strategy on the control of occupational safety and health in the work places of the organizations in the sector, the management should take into account that it is not a onetime activity, but a continuous task and employees and employers should take enough attention and practice safe working habit on their day to day activity.

1.2. STATEMENT OF THE PROBLEM

Now a day's industrialization is having a broad impact on the development pursuits of Ethiopia. Investment on different private sectors and the number of the people who are participating in the private sector are steadily increasing. In these organizations, lots of people are getting employed and are given the chance to work towards Ethiopia's development.

In Nifas silk Lafto sub city, Addis Ababa, there are many privately owned factories that produce different metal products. In the course of their operation, there are various issues that a manager should consider and one of the factors is the occupational safety and health of the employees in the organization.

According to the Ethiopian labor law (Proc. No. 377/2003), a company should work with the given conditions which are stated from Articles 92 to 112. These provisions state different requirements that must be fulfilled according to the ergonomic and health conditions as well as insurance and benefits of the employee in cases of accidents.

In the sub-city which is the subject of this study, i.e. Nifas Silk Lafto this sub-city, workers in metal work factories face challenges in occupational safety and health, and are exposed to hazardous working conditions. Workers in these organizations;

- Are suffering from inconvenient working conditions such as suffocated workplace and making their work inefficient and is causing industrial accidents which results different physical incapacity of employees.
- Are facing different health problems due to unhealthy working conditions and lack of enough first aid and medical treatment.
- They are also not fully getting all the compensation and benefit as proposed on the labor proclamation making them pay different economic and social costs.

This research has addressed these challenges that occur on the application of the safe working environment in these factories.

1.3.**RESEARCH QUESTIONS**

This research deals with the possible hazardous working conditions that could cause occupational accidents and health problems in the metal work factories of the Nifas silk Lafto Sub-city by addressing the following questions.

- What are the conditions in the work place that can cause fire hazards and their protection mechanisms in the sector?
- How far is the working environment in conformity with working conditions required in relation to working temperature, convenient passage ways, sound and lighting level, and their respective relation with occupational hazard?
- How are accident and recording keeping and controlling measures taken in these organizations?

- What are the health protection mechanisms in place for their workers and the compensation and benefit programs in the event of harm or injury?

1.4.**OBJECTIVES OF THE STUDY**

1.4.1. General Objective

In general; the objective of the research is to identify the challenges on the application of occupational safety and health management in metal work factories according to Ethiopian labor law; the case of Nifas silk Lafto sub city, Addis Ababa.

1.4.2. Specific Objectives

The specific objective of this study is to identify the challenges in the application of occupational safety and health management. To this end, specific issues are addressed through the following specific objectives. These are;

- Examine the challenges in the application on convenient working conditions including fire protection;
- Investigate the challenges in the application on accident recording and assessment; and,
- Asses the challenges in the application of healthy working environment and also compensation and benefits upon harm and injury.

1.5. **SIGNIFICANCE AND SCOPE OF THE STUDY**

Assessing the challenges in the application of occupational safety and health management in metal work factories in Nifas Silk Lafto sub city, Addis Ababa is significant because any organization must understand and give enough attention for the issue of occupational safety and health to achieve its strategic goals and maximize its ability to attain its strategic objectives. Assessment on this area can enable a company to analyze the gap between the current working conditions and the desired safe and healthier working environment.

This study will be significant for organizations in the area of metal production by creating a better understanding about the possible causes of different occupational accidents and health

problems that could occur in the sector. Finding the pattern of the facts that could result different accidents and any work related diseases is necessary to understand hazardous working conditions.

Analyzing and interpreting these conditions helps different employers, employees and also their social environment by creating a better awareness about the realities in the sector. It also enhances the level of awareness about how the law enforcement contributes for creating a better employee employer relation as well as safer and healthier working conditions. In the fast changing competitive environment, the proper application of occupational safety and health management system has positive roles to keep the company competitive and successful.

This study has the scope of covering and examining the safe working conditions of the metal work factories only in the Nifas silk Lafto sub-city. These metal work factories are all privet limited companies and the most common working conditions that causes different industrial accident and health problems are covered and are examined based on the minimum requirements stated on the Ethiopian labor proclamation.

CHAPTER TWO: REVIEW OF THE LITERATURE

This study tries to address the challenges that occur in the application of good practices in occupational safety and health standards based on the following key issues: i.e.

- Accident causation and investigation
- Accident recording and prevention
- Fire prevention and protection
- Ergonomic work place
- Industrial hygiene
- Workers compensation and rehabilitation
- Ethics in the safety profession

Even though there is no research that clearly identifies and summarizes the accidents that have occurred in and metal work factories in Nifas Silk Lafto sub city, the Social and Labor Affairs Office of the sub city has stated that there are many workers and employers that are suffering from failure to implement OSH management system in their organization. In the year of 2014 five metal work factories and seven factories from other sectors reported to the Social and Labor Affairs Office that, more than one hundred and twenty workers suffered from occupational accident in all sectors and nineteen of them are from metal work factories.

> In economic terms, the ILO has estimated that 4% of the world's annual GDP is lost as a consequence of occupational diseases and accidents. Employers face costly early retirements, loss of skilled staff, absenteeism, and high insurance premiums due to work-related accidents and diseases. Yet many of these tragedies are preventable through the implementation of sound prevention, reporting and inspection practices. ILO standards on occupational safety and health provide essential tools for governments, employers, and workers to establish such practices and to provide for maximum safety at work.
> (OSH-ILO, 2014)

Even though the above data refers to the costs of the problem all over the world, we can see the picture that this affects us all and organizations should take in to account that the problem is not only affecting their organization but also our nation.

2.1. ACCIDENT CAUSATION AND INVESTIGATION

Article 93(7) of the Labor Proclamation states that employers must "take appropriate pre executions to insure that all the processes of work shall not be a source or cause of physical, chemical, biological, ergonomical and psychological hazards to the health and safety of the workers" (FDRE-HPR, 2003).

> Occupational safety and health can be important for moral, legal, and financial reasons. All organizations have a duty of care to ensure that employees and any other person who may be affected by the companies undertaking remain safe at all times. Moral obligations would involve the protection of employee's lives and health. Legal reasons for OSH practices relate to the preventative, punitive and compensatory effects of laws that protect worker's safety and health. OSH can also reduce employee injury and illness related costs, including medical care, sick leave and disability benefit costs. (OSH-ILO, 2014)

The availability of more experience and information enhances the likelihood of anticipating and recognizing safety and health hazards because "accidents are not events happening by chance; they have specific causes. Nor are they random events; they are usually predictable and preventable" (Friend and Kohn, 2007). Keeping all the records of accidents helps the management to identify the causes of accidents so as to find the appropriate solutions.

Figure1. Occupational fatality rate in Ethiopia

Source: (Solomon Yimer and Chris keil, 2004)

In an accident investigation, the management may blame the worker or vice versa. It is important to emphasize that a safety professional is looking not for a place to assign blame, but for hazardous check points and their appropriate control mechanism.

There are various theories that help a safety professional to explain the causes of accidents in the workplace and some of them are, the single factor theory, domino theory, and the multiple factors theory. The safety professional can investigate the causes of accident by using one of these theories or by combining them.

All domino theories are divided into three phases:

- *Pre contact phase*: refers to those events or conditions that lead up to the accident.

- *Contact phase*: refers to the phase during which the individual, machinery, or facility comes into contact with the energy forms or forces beyond their physical capability to manage.

- *Post contact phase*: refers to the results of the accident or energy exposure. Physical injury, illness, production downtime, damage to equipment and/or facility, and loss of reputations are just some of the possible results that can occur during the post contact phase of the domino theory (Friend and Kohn, 2007).

"*Multiple Factors Theory*: The multiple factors theory examines characteristics of each of the four Ms: machinery, man, media and management" (Friend and Kohn, 2007).

1. Machinery: Examination of machinery characteristics includes the design, shape, size, or specific type of energy used to operate the equipment
2. Man: Characteristics of man are psychological state; gender; age; physiological variables (including height, weight, or condition); and cognitive attributes (such as memory, recall, or knowledge level)
3. Media: Snow or water on a roadway, temperature of a building, and outdoor temperature can be characteristics of media.
4. Management: Characteristics of management could include safety rules, organizational structure, or policy and procedures" (Friend and Kohn, 2007).

Managers and safety professionals can use the theories to find the factors that cause accidents, based on the specific situation occurred in their workplace, to make the right preventive measures "The investigation of the origin and underlying causes of work-related injuries, ill

health, diseases and incidents should identify any failures in the OSH management system and should be documented." (OSH-ILO, 2001)

2.2. ACCIDENT RECORDING AND HAZARD ANALYSIS

According to Article 92/4 of the Ethiopian Labor Proclamation, an organization must "register employment accident and occupations diseases and notify the labor inspection of same" (FDRE-HPR, 2003).

> "Accurate injury and illness records are essential in providing information for the safety and health program reveal which operations are most hazardous.
>
> - Determine weaknesses in the safety and health program.
> - Judge the effectiveness of the program by comparing it with past records or records of other similar plans.
> - Aid in accident analysis and investigation.
> - Identify the causes of occupational diseases by relating them to particular exposures, or processes, or both.
> - Satisfy legal and insurance requirements". (Friend and Kohn, 2007)

Any work related injuries and illness that that fall into "death, days away from work, restricted work, transfer to another job medical treatment beyond first aid, loss of consciousness, diagnosis of a significant injury or illness" (Friend and Kohn, 2007), should be recorded so that their cause can be analyzed.

The notion of hazard analysis is one of the most important functions to do for understanding the potential hazards in the work place and their control measures.

> "Hazard analysis is used to identify any dangers that might be present in a proposed operation, the types and degrees of accidents that might result from the hazards, and the measures that can be taken to avoid or minimize accidents or their consequences.
>
> - An understanding of the hazards
> - An understanding of the risks
> - An identification of the hazards and risks within their system
> - An understanding of unwanted releases of energy and unwanted releases of hazardous materials being the causal factors for hazard related incidents, and
> - Knowledge of the principles and techniques used to control hazards and reduce their associated risks to an acceptable level."
>
> (Friend and Kohn, 2007)

2.3. FIRE PREVENTION AND PROTECTION

Four components are necessary to sustain combustion:

1. Fuel
2. Heat
3. Oxygen
4. A chemical reaction between the three

If fuel or any combustible material gets in contact with oxygen in the presence of heat a chemical reaction occurs between the three components resulting combustion. This combustion in the workplace could be a desired process but if this combustion occurs without enough control, it can create an industrial accident.

The lower flammable limit, also known as the lower explosive limit, is “the lowest concentration of gas or vapor that burns or explodes if an ignition source is present.” The upper flammable limit or upper explosive limit is “the highest concentration of a gas or vapor that burns or explodes if an ignition source is present” (Friend and Kohn, 2007).

The types of fire are classified in to four groups, based on the type of combustible material involved. And according to Mark A. Friend and James P. Kohn;

Fires are categorized according to types of materials involved:

- *Class A fires*: involve ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials.
- *Class B fires*: involve flammable or combustible liquids, flammable gases, greases, and some rubber and plastic materials.
- *Class C fires*: involve energized electrical equipment where safety requires the use of electrically nonconductive extinguishing media.
- *Class D fires*: involve combustible metals such as magnesium, titanium, zirconium, sodium, lithium, and potassium.

(Friend and Kohn, 2007)

Proper fire protection system in the work place is mandatory and fire extinguishers should be available in every hazardous check points. And awareness of the types of fires will help the management to identify the potential type of fire hazards in the work place and use the proper type of fire extinguisher.

2.4. ERGONOMIC WORK PLACE

While organizations designing or redesigning their workplaces one the concerns is the fit between the workers and the workplace.

> The primary objective of ergonomics is the improvement of human health, safety, and performance through the application of sound people and workplace principles Ergonomists can best serve as part of a team including engineers, managers, medical personnel, or even line workers. The ergonomics team will systematically analyze job requirements from a worker capability and limitation perspectives, analyze workplace layout and design, and recommend improvement of the production process.
> (Friend and Kohn, 2007)

2.4.1. Major characteristics of noise

Noise is one of the stressors that cause work related illness and any "physical and chemical stressors which may be found in the work environment in order to evaluate the magnitude or size of the risk they present; Physical stressors include temperature, humidity and airflow, radiation, noise and also vibration" (Taylor, Easter & Burlington, 2004). These stressors can be identified to optimize their level in the workplace. The table below shows an administrative control system that involves the maximum level of sound that an employee should be exposed to in a day but if the work place is louder than that, personal protective equipments should be worn to minimize the hearing problem that could be caused.

Task	Exposure time (in hours)	Measured decibel level (in dBA)
Task 1	2 hrs	89
Task 2	1 hr	95
Task 3	1hr	93
Task 4	1hr	60
Task 5	2hrs	92
Task 6	1hr	91

Table1. Noise exposure level in a day
Source: Taylor, Easter & Burlington, 2004

2.4.2. Isolation, segregation and engineering controls

If there is noise in the workplace coming from "moving parts inside the machine, the cover panels, which are primarily designed to prevent transmission of noise through the panel, can be

covered inside with porous, lightweight, sound-absorbent material. And a worker should not be exposed to a sound level above the given decibel levels" (Taylor, Easter & Burlington, 2004). The issue of high sound level is a key issue especially in the nail production factories and the management should identify the machineries that exhaust noise and measure the sound level so as to make the necessary engineering controls, isolate the noise and also segregate it with the appropriate material. Measuring the sound level is also important to know for how long a worker should be exposed to it within a day without the result of any injury and hearing problem.

2.4.3. Measuring light levels

Another working condition that should be maintained in the lighting level of the work place; "Although the human eye is very adaptable and can allow a worker to work with an absolute minimum of light, bad lighting leads to low productivity and poor quality as well as eye strain, fatigue and headaches for the worker" (WISE-ILO, 2009)

No.	Type of task or situation Maintenance	Illuminance (lux)
1	Entrance halls	160
2	Corridors, stairs, lifts (elevators)	40
3	Toilets	80
4	Storerooms, packaging and dispatch, wrapping, labeling, filling	160
5	Gem cutting, polishing, setting	1200
6	Gas and arc welding	160
7	Tasks involving keyboarding, reading, filing, etc.	320
8	Study and sustained reading	240

Table2. Light levels in different places in a workplace

Source: (Taylor, Easter & Burlington, 2004)

In the case of metal work workshops, the illuminance level can be optimized in the category of the gas and arc welding lighting level indicated above so as to have a better vision while working.

The lighting system should be designed and installed as to effectively illuminate the task and provide a safe and comfortable visual environment. “A ‘luminaire’ is a light source and its fittings. A good lighting system should include the following considerations:

- Illuminance
- Avoidance of glare
- Color and contrast
- Type of task and work area.

  So, the actual light falling on a surface is called the ‘illuminance’, measured in lux” (Taylor, Easter & Burlington, 2004)

2.4.4. Dusts

Dusts in the workplace can dusts originate from grinding, sewing, mixing, packing, spinning and other manufacturing processes and the size of dust particles and the hazards vary.” (WISE-ILO, 2009) These suspensions can create a big discomfort as well as a breezing problem to the worker and appropriate ventilation system is going to be needed to overcome this problems. Another way to control the health problem from dusts in the workplace in to use personal protective equipment such as filter respirators, but the management should not take this as the best choice rather these equipments should be taken as a second option if the ventilation is not effective enough.

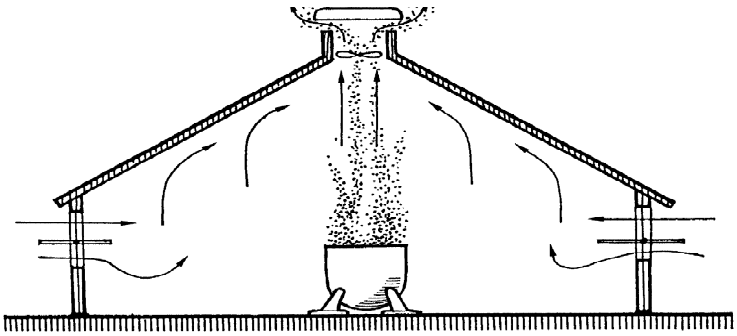

Figure 2: Proper use of air flow for ventilation

Source: (OSH- ILO, 2009)

2.5. WORKPLACE LAYOUT DESIGN

The labor law article no. 92/8 puts the obligation of the employer to “take appropriate pre-executions to insure that all the processes of work shall not be a source or cause of physical,

chemical, biological, ergonomical and psychological hazards to the health and safety of the workers;" (FDRE-HPR, 2003)

Grandjean (1988) recommends seven guidelines for workplace layout and design:

1. Avoid any kind of bent or unnatural posture. (Bending the trunk or the head sideways is more harmful than bending forward.)
2. Avoid keeping an arm outstretched either forward or sideways. (Such postures lead to rapid fatigue and reduce precision
3. Work sitting down as much as possible. (Combination workstations are strongly recommended.)
4. Use arm movements in opposition to each other or symmetrically. (Moving one arm by itself sets up static loads on the trunk muscles. Symmetrical movements facilitate control.)
5. Maintain working fields (the object or table surface) at an optimal height and distance for the eyes of the operator.
6. Arrange handgrips, controls, tools, and materials around the station to facilitate the use of bent elbows close to the body.
7. Raise arms where necessary by using padded supports under the elbows, forearms, or hands" (Friend and Kohn, 2007)

The labor law also states the obligations of the workers for the success of the occupational accidents and disease prevention. And the article no. 93/4 puts duty for the employees to "make proper use of all safeguards, safety devices and other appliance furnished for the protection of his health or safety and for the protection of the health and safety of others." (FDRE-HPR, 2003)

2.6. INDUSTRIAL HYGIENE

Industrial hygiene is in theory "responsible for chemical, biological, physical, and radioactive health hazards within the work environment. In practice, no one individual can be an expert in all of these areas." (Friend and Kohn, 2007), so the manager should provide different trainings and equipments for the workers so as to keep the work environment as healthy as possible.

According to the Article 92(5) of the Labor Proclamation, the employer has the duties to "arrange, according to the nature of the work, at his own expenses for the medical examination of newly employed workers and for those workers engaged in hazardous work, as may be necessary." (FDRE-HPR, 2003)

"The body may be exposed to toxic substances through any one or a combination of four routes:

- Ingestion: taken into the body orally
- Inhalation: taken into the body through the lungs

- Absorption: taken into the body through dermal absorption
- Injection: taken into the body through broken skin"
  (Friend and Kohn, 2007)

In the course of the worker's occupational activities, "inhalation is the most common route of entry by toxic substances" (Friend and Kohn, 2007). Contaminants can take a wide variety of forms and these contaminants include dusts, fumes, aerosols, mists, gases and vapors (Friend and Kohn, 2007). In order to keep workers in the sector safe from these contaminants that could cause danger to their health, the management can take three kinds of control mechanisms which are engineering controls, administrative controls and personal protective equipments.

Engineering controls: this controlling mechanism involves "eliminating or isolating health hazards at the point of origin, the occupational health and safety professional eliminates the release of the contaminant into the workplace environment, ultimately preventing (or greatly reducing) employee exposure." (Friend and Kohn, 2007)

Administrative controls: if hazards are not eliminated or minimized to an acceptable level by engineering controls administrative controls can be involved and these "are the control methods that the management of a facility has influence over through manufacturing method or employee work assignment activities" (Friend and Kohn, 2007). The management can control occupational hazards by preparing different OSH management policies, acquiring safety professionals and also by building a better understanding about safety in the organization.

The third method of controlling occupational hazard is *personal protective equipment (PPE),* and "it is often the response chosen to deal with problems with hazardous substances; even though PPE is very expensive, uncomfortable and workers often refuse to wear it." (WISE-ILO, 2009)

The control of risks will enable an organization to operate efficiently and safely. On this understanding, risks according to Taylor, Easter & Burlington, can be managed through five basic principles these are risk evaluation, risk avoidance, risk reduction, risk retention, risk transfer.

When there are occupational risks in an organization, safety professionals need to identify and evaluate it so as to avoid it if possible. If the risk is too complicated or too hard to avoid completely, the other options, i.e.: risk transfer, reduction or risk retention should be taken in to consideration.

> While there are 'invisible' components to any management system, the visible components of an OHS management system according to Mark A. Friend and James P. Kohn may include:
>
> - "A written OHS policy (which should flow from the vision, mission statement or business plan)
> - Guidelines which expand on particular areas of the policy (e.g. manual handling, noise)
> - A safety management plan
> - Procedures which describe how the key parts of the system are to operate
> - A hazard register
> - At the operating level, safe work procedures, operational procedures or work instructions
> - Training packages
> - Checklists and auditing documents." (Friend and Kohn, 2007)

The management in the sector of metal work factories can use the system that are indicated above to create a safer working environment because these documents can create a better knowledge about what the workers should do and things that are not to be done. Workers should also play their part by understanding and working as per the document to minimize the accidents that would occur.

> "An engineering workshop specializing in the fabrication and welding of components has to follow the Personal Protective Equipment (PPE) at work regulations 1992. It is an employer's duty to provide 'all equipment (including clothing affording protection against the weather) which is intended to be worn or held by a person at work which him against one or more risks to his health and safety'. In a fabrication and welding workshop an employer would be required to provide face and eye protection, safety footwear, overalls and other necessary PPE" (OSH-ILO, 2014)

2.7. BEHAVIOR BASED SAFETY

Behavior based safety management process has advantages to a given organization because "it encourages everyone to recognize the daily importance of safety and it also views safety performance as a long-term process, i.e. a process that can be continuously improved." (Friend and Kohn, 2007)

The attitude of the employee as well as the employer towards safety is crucial and building and maintaining a preventative safety and health culture in the work place requires “making use of all available means to increase general awareness, knowledge and understanding of hazards and risks and how they may be prevented or controlled, as well as enabling an exchange of experience and good practice on OSH”. (OSH-ILO, 2010)

A coherent policy implemented through concrete programs and actions “can convert commitment by management and workers into practice. This influences, in a positive way, safety and health culture as a whole. (OSH-ILO, 2010) if a logical and acceptable OSH policy is implemented in an organization, it would be easier for everybody to adapt it and also keep the trend in the day to day activity.

2.8. WORKERS’ COMPENSATION AND REHABLITATION

2.8.1. *Total, partial and permanent incapacity*

The Ethiopian labor law article 101 defines Permanent, Partial and Total Disablement as follows:

1. “Permanent partial disablement’ means incurable employment injury decreasing the injured worker’s capacity”
2. “Permanent total disablement” means incurable employment injury, which prevents the injured worker from engaging in any kind of remunerated work.”
3. “Injuries which, although not resulting in incapacity for work, cause serious mutilation or disfigurement of the injured person shall be considered permanent partial disablement, for the purpose of compensation and other benefits.” (FDRE-HPR, 2003)

Generally incapacity means “physical incapacity for actually doing work in the labor market in which the employee works or may reasonably be expected to work’. Both the carrying out of work or seeking and obtaining work may be prevented by incapacity.” (Taylor, Easter & Burlington, 2004)

According to Article 105 of the Ethiopian Labor Proclamation, “when a worker sustains employment injury, the employer shall cover the following expenses:

1. General and specialized medical and surgical care
2. Hospital and pharmaceutical care
3. Any necessary prosthetic or orthopedic appliances” (FDRE-HPR, 2003)

2.8.2. Rehabilitation

A worker may be subjected to an occupational accident for different reasons and a proper rehabilitation program in the organization is important to overcome the challenges that could occur from different temporary and permanent incapability of the worker. So a rehabilitation program established for an incapacitated employee may provide: Selected duties, modified duties, a graduated return to work, job retraining with another organization: management commitment and supportive policies." (Taylor, Easter & Burlington, 2004)

Workers' compensation data are "useful source of surveillance information concerning cases of occupational disorders and the cost of work-related injuries and diseases. (OSH No.72-ILO, 1998)

2.9.ETHICS IN SAFETY PROFESSION

"Depending on the organization, the safety professional may be tasked with additional responsibilities in security, workers' compensation, training, wellness, human resources, insurance, environmental concerns, and a myriad of other job responsibility combinations." (Taylor, Easter & Burlington, 2004)

The ethical behavior is an important thing because one of the reasons that accidents happen is because of the characteristics of workers on the job.

> "Ethical beliefs are shaped by their personal experiences, peer pressure, family and cultural and religious standards. Is it possible to take a wide variety of diverse individuals with varying backgrounds, religious beliefs, family beliefs, and a myriad of different experiences and provide a level of training and learning to achieve a minimal level of acceptable ethical behavior? Safety professionals often face tough issues in the performance of their jobs which often fall within gray areas with regard to legality, ethics, and morality" (Taylor, Easter & Burlington, 2004)

The law and different documents prepared by the government and management by themselves will not prevent accidents from happening without the "right" behavior of the worker on the job. And the management can enhance the behavior of the workers by conducting different trainings and on the job coaching.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

This study is a descriptive type of research and tries to explain the basic research question which is; what are the causes for occupational hazards in the metal work factories in the Nifas silk Lafto sub city and describe their current situation on the controlling measures. For collecting and analyzing information, a research design sets a road map by specifying the methods and procedures undertaken.

To describe the conditions in the sector and find out the causes for the occupational accidents, data were collected both from the management and also the production workers of the metal work factories selected for the study. In the data collection technique for this research two instruments were used which are the interviews for the managers and questionnaire for the production workers.

There are seventeen metal work factories in the sub-city (according to trade and industry office) and eleven of these factories were randomly selected, and studied. The sample size is thus 65%. Interview was held with top level managers of all the eleven organizations and questionnaires were given to five workers from each organization.

Systematic random sampling was used for the sampling of the workers by first selecting the workers who are working in the manufacturing department of the eleven factories which were three hundred and twenty eight, and forty six of them responded to the questionnaire out of fifty five which makes 14% sample size.

The time horizon of the study is a cross sectional type of study. By combining the responses of both the management and the workers a more reliable and sound information was gathered so as to clearly describe the situation in the sector.

Step-1: The first step undertaken in this research was clearly defining the problem which occurred in the sector based on the current situation and stating the questions which needs to be answered by the study.

Step-2: After the problem is stated, the general and specific objectives were stated to answer the research questions.

Step-3: The third step was defining the research method, which includes identifying the research type, the data collection method, the time horizon of the study, and also the type of analysis to be done to interpret and to conclude the results and findings.

Step-4: In this step the data collection instruments were prepared, which was the interview questions for the top level managers and questionnaire for the workers who are in the manufacturing department.

Step-5: The sampling in this study included one top level manager from every organization to respond to the interview, and five respondents from each organization were picked to respond to the questionnaire.

Sample size of the interview

N = total number of metal factories

n = sample size

% sample = (n/N)100%

Where N=17, n= 11

% sample = (n/N)100%

= (11/17)100%

= 65%

For the questionnaire

W = total number of workers in the production departments

w = number of questionnaire given

% sample = (w/W)100%

Where W=328, w =55

% sample = (w/W)100%

$$= (55/328)100\%$$

$$= 17\%$$

Response rate

$$R = \text{total number of workers selected for the questionnaire}$$

$$r = \text{number of workers responded}$$

$$\%\ \text{response rate} = (r/R)100\%$$

$$\text{Where } W=55,\ w = 46$$

$$\%\ \text{response rate} = (r/R)100\%$$

$$= (46/55)100\%$$

$$= 84\%$$

The randomly selected eleven metal work companies are listed below.

Metal work factories

1. Betel engineering PLC
2. Osaka metal works PLC
3. Sani steel pipe manufacturing
4. Mela international PLC
5. Alnur import export industrial group PLC
6. Amdan PLC
7. Pascua Jusepe Aluminum and Metal works
8. Kidane Brihe General Body Works
9. Haile Hagos general auto mechanics
10. Birhan Engineering PLC
11. Jhonny Automotive Industry

Step-6: The next step was the field work, which includes conducting the interview with the managers and getting the workers to respond to the questionnaire prepared.

Step-7: The results and findings were pre-processed, which includes, organizing and classifying the results and narrating the quantitative data of the questionnaire.

Step-8: In this step, the data collected from the managers were qualitative and are analyzed qualitatively and the quantitative results from the questionnaire were changed to qualitative data to be analyzed qualitatively and discussion and conclusion is drawn from both.

Step-9: After analyzing the data the discussion step followed by comparing the results found with the research questions.

Step-10: From the finding and the analyzed data points of conclusions were bulleted which describe the current situation in the sector.

Step-11: Finally, recommendations are given for every conclusive points made.

CHAPTER FOUR: RESULTS & DISCUSSION

4.1. RESULTS AND FINDINGS

This covers the result of eleven organizations. Interview was held with one top level manager from every organization. Questionnaire was given to fifty five workers but forty six of them responded and I have summarized the results below.

1. Eight of the organizations described the level of the awareness about the Ethiopian labor law in their organization as low and the other three claimed that there is medium level awareness.
2. All the eleven organization claimed that the workers have on job training about how to operate their machineries and basic safety measures. And two of the organizations provide the necessary and appropriate service and maintenance whenever necessary but nine of the other organizations are working with the culture that work will not stop unless the machine has stopped working.
3. Only three organizations were able to keep records of all the accidents that happened in their organization and their causes. And the most common type of accident that happens in was found to be skin burn from hot metal and cutting on different types of the body.
4. Three of the organizations claimed that most of the accidents occur on the day time but in the other eight most of it happen in the late night shift.
5. None of the organizations claimed that they have a safety professional in their organization.
6. In eight of the organizations fire extinguishers were fully in place and were found to be renewed every time before the expiry date. But in the other three organizations, fire extinguishers were there but they were all expired and needs to be renewed.
7. From the eleven organizations, four of them are working with a high sound level that needs an ear protection and two of them provided the appropriate protective device, but the other two don’t.
8. With regard to ventilation, the work environment of all the organizations is high in temperature, only four of them installed the necessary ventilation system and the other seven do not have one even though they claimed that they have a plan to install that in short time.
9. In relation to the lighting of the work places, all of the organizations were found to be working with an acceptable level of lighting conditions.

10. Six organizations were found to have a fairly safe electrical installation but the other five had big problems with their electricity and this could cause fire hazard and electrical damages.

11. In nine of the organizations the layout of the machineries were well organized and safe but in the other two organizations there are machineries that doesn't work here and there which created uncomfortable condition on the working areas and passage ways.

12. With regard to Industrial health;
    - Only three organizations were fully equipped with the appropriate first aid kit out of eleven even though there is no health professional in the organization.
    - All the materials in the work places were fully labeled in all organizations.
    - Nine of the eleven organizations had insurance for their workers

13. All the organizations were found to be paying all the necessary compensation which is designated by the law with the approval of a medical board.

Most of the suggestions of the managers include;

- The workers should use all the personal protective equipments at all times
- Any problems or deficiency in machineries should be reported to the management on time, so that they can be fixed on time.
- Workers should avoid using alcohol or any drug before they start working.
- The workers should always work on their machineries only to minimize the accidents that happen from the activities done on machineries which they do not have full knowledge about.
- The government should support the organization by creating enough awareness on occupational safety and health and different safety measures.

No.	Questions for the respondents	Never	Once in a while	Sometimes	Usually	Often
1	Is maintenance and service is fully provided to your machine?	-	10	8	28	-
2	Have you taken whole health test when you entered the organization and periodic check up?	40	-	6	-	-
3	Have you been diagnosed with any kind of illness that is related with your work environment?	36	-	10	-	-
4	Have you ever encountered and kind of injury in your work environment since you started working in the company?	12	-	26	-	8
5	Whenever the disease or injury is beyond first aid treatment, does your organization take you to the appropriate hospital or clinic?	-	-	18	-	28
6	Does your company cover all the expenses of the health treatment?	12	-	-	-	32
7	Does your company provide you the compensation and benefits you should get according to the Ethiopian labor law?	8	-	-	22	16
8	Do you get first aid treatment in your company?	12	-	20	-	14

Table 3. Questionnaire results 1

No.	Questions for the respondents	Very low	Low	Medium	High	Very high
1	How do you describe the level of your awareness of the Ethiopian labor law?	-	30	16	-	-
2	How is your awareness on the issue of occupational safety and health?	-	28	18	-	-
3	Are the machineries you are working with has their appropriate safety guards?	-	16	18	12	-
4	Have you taken enough training on how to operate the machine /equipment you work with?	-	-	8	38	-
5	Do you have enough information about the effects and possible side effects about the raw materials you are using?	-	-	12	34	-

Table 4. Questionnaire results 2.

4.2. ANALYSIS AND DISCUSSION

This analysis will try to explain and discuss the possible causes of occupational hazards and their effects based on the results of the interview. One of the issues on this is operational and legislative training given to the workers, and the result shows that there is a minimum level of awareness about the legal duties and responsibilities of the workers which would cause misunderstanding on the job and cost unnecessary time and effectiveness on the job. The result from the questionnaire that 65% of the respondents claimed that they have low level of awareness about the Ethiopian labor law and 60% of them described their knowledge on the issue of occupational safety and health as low which implies that most workers do not have a clear picture about the law enforcement about employee/employer relation as well as different

safety measures and this limits the workers from working safely and also from getting the right compensation and benefit from their organization.

Table 5. Performance of organizations on safety measures

No.	Safety measure	Performance
1	Accident record keeping	27%
2	Good ventilation system	36%
3	Availability of fire extinguishers	73%
4	Safe electrical installation	60%
5	Employee insurance	80%
6	First aid treatment	27%

The table above shows that, in most of the organizations there is a poor maintenance system for the machineries and workers were forced to work with those machineries and are possible causes of accidents. Another result from the interview shows that there are only 27%of the organizations were keeping all the records of accidents but article 92/4 puts the employee on the obligation of registering employment accident and occupations diseases and notify the labor inspection of same but from the organizations studied, this trend limits the management from knowing all the possible hazardous check points in the workplace so as to implement the appropriate controlling mechanism.

Regarding convenient working environment, Article 92/7 states the obligations of the employer to “take appropriate pre-executions to insure that all the processes of work shall not be a source or cause of physical, chemical, biological, ergonomical and psychological hazards to the health and safety of the workers”; The results of the data collected shows that 64%of the factories have a poor ventilation system and 27% of the organizations do not have the proper fire extinguishers in the work place, this implies that fire hazards are likely to happen because of the hot air in the

work place and these organizations are unable to overcome the fire hazards quickly because of the lack of fire extinguishers in the work place. Hence different fire extinguishers; i.e. foam, co_2, powder and also sand should be available in the workplace even though there is no clear article that states fire extinguishers should be available. And 40% of the organizations had a poor electrical installation and machine layout system in their organization and in the result of questionnaire 34%of the respondents claimed that they were working with machineries that do not have their safety guards and these factories are more likely to cause industrial accidents.

Article 92/2 of the proclamation states that, "An employer shall take the necessary measure to safeguard adequately the health and safety of the workers; he/she shall in particular take appropriate steps to ensure that workers are properly instructed and notified concerning the hazards of their respective occupations and the precautions necessary to avoid accident and injury to health; ensure that directives are given and also assign safety officer but none of the organizations have a safety professional in their human resource that would help the company to asses different hazardous check points and come up with the appropriate safety measures. The other result shows that 34% of the respondents claimed that they are working with machineries with no safety guards and 17% respondents said that they do not have had enough training on how to operate their machineries. And these 17% respondents were found to have been not provided with the necessary maintenance for the machineries which causes different accident on the workers because of the malfunctions of their equipment. 26% of the respondents claimed that they do not have enough information about the materials they are using which causes different accidents because of misusing a material.

87% of the respondents claimed that they have never taken a full health checkup by their organization but 78% of them have never been diagnosed with any kind of sickness on their job which implies that organizations do not make their workers to get a health check up unless they are sick and it is hard to know if they are exposed to a situation that could cause a long term health problems from their work environment. And 73% of the respondents claimed that they have suffered different occupational injury but 41%of them said that they have gotten the necessary first aid treatment in their work environment.

Occupational safety and health is not fully addressed in the factories according to compensation and benefit. One of the results shows that the compensation and benefit system of all companies were pointed out to be as per the standards stated on the labor law from article 39-41. But 35% of the workers claimed that their companies does not provide the proper compensation and benefit article 105 states that Where a worker sustains employment injury, the employer shall cover general and specialized medical and surgical care, hospital and pharmaceutical care and any necessary prosthetic or orthopedic appliances. The results of the questionnaire shows that, 69% of the respondents claimed that their organization covers all the clinical costs of occupational sickness and injury but the other said they don't get this privilege. And 65% of the respondents said that their company provides them the necessary compensation and benefits so as to cope up with their occupational and economical necessities and more than 80% of the organizations have health insurance for their worker which is a good health cover. And only 27% of them were fully equipped with the appropriate first aid equipment which limits the workers to have a quick treatment in case of injury. According to benefit and compensation all of the organizations were applying the necessary compensation and benefit program which protects the workers from suffering different economical and social costs. Hence companies are expected to do more to ensure the health and safety of workers than they do to fill the gap.

Age and sex distribution		Age			
		18-30	30-40	40-50	50 and above
Sex	M	24	17	9	-
	F	2	-	-	-

Table 6. Age and sex distribution of respondents

There were some constructive suggestions by the managers on what the workers and government should do. One of the suggestions was workers should not be using any kind of alcohol or drug in the work place because it will obviously make them lose concentration and cause accident. The other suggestion that most managers focused on is that workers should obey the rules and regulations of the company because those rules were made to minimize industrial accident and maximize productivity. And the government is suggested to give solid awareness about safety as

well as duties and responsibilities for the workers and owners to create a better and safer working environment in the industry.

Most of the suggestions of the workers focuses on what the management and the government should do, the most common suggestion was management should give enough attention on the possible accident causing situations and make the necessary safety measures and provide the workers with the necessary personal protective equipments so as to minimize industrial accident and the management should work with the workers while planning any safety management system because the workers experience different hazardous condition and can contribute for the system. Most workers suggested that the government should push the owners and managers of the organizations to apply the necessary safety management system.

4.3. LIMITATIONS OF THE STUDY

While studying the challenges on occupational safety and health management of the metal work sectors some limitations had occurred and these are bulleted below.

- One of the limitations of the study was; all the questionnaires that was given to the workers were not all responded to the researcher and this minimizes the number of data for the analysis.
- Another limitation includes the managers, and most of the managers were too busy to be available for the interview which forces the data collection to take more time than expected.
- And some of the results from the managers, like the availability of safety materials in the workplace and the level of compensation and benefit, did not correspond with the results from the workers which led to additional assessment on the issues and took additional time to get a clear data.
- Even though fire hazard is a very dangerous issue in the occupational safety and health management, the Ethiopian labor proclamation does not state a clear article on the obligations of the worker and employer and employee on fire prevention in the workplace.

Even though there were the limitations listed above, additional time and effort was given so as to overcome the limitations and accomplish the study.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1. CONCLUSION

Managers and workers in the sector face different challenges in the workplace while designing and implementing a safer and healthier working environment. This study tried to address the causes of industrial accidents and illness, and from the results and findings of the data collected, different points can be drawn; these are:

- The results of the study shows that there are workers who are working with equipments and machineries that are not working properly and are without their safety guards, and accidents can occur from the malfunctions of those equipments.
- Inconvenient working environment is not fully addressed in all organizations as per article no. 92/8 and conditions like poor lighting condition limits the workers to operate safely and also poor ventilation system makes the room temperature higher and can depress the workers and make them loose focus while they are operating heavy machinery and it can also accelerate fire hazards. Another point is high level sound in the workshop which causes misunderstanding between workers while they are working and in the long term causing hearing problem.
- Keeping records of all the accidents as per article 92/4 and investigating their causes as stated on article 93/7 of the labor proclamation helps to get a better safety controlling mechanism but none of the organizations keep all the records as well as have a safety professional in their organization who could contribute a lot to create a safer and healthier working environment.
- Fire extinguishers and first aid treatment are not fully provided in all organizations and this limits them to overcome different occupational accidents in the workplace until they get clinical treatment.
- Poor compensation and benefit program can make the workers to pay social as well as economic costs because if a worker is injured or become ill in the workplace, he/she is going to have to stop working and get medical treatment and the management should be able to give the worker his/her sick leave and cover the medical costs. And when the treatment is done, the worker should be provided with the appropriate working

conditions as per article 105 if the worker faced a permanent or temporary physical or biological disability.

5.2. RECOMMENDATIONS

- Organizations should keep the machineries they use safe by providing the necessary maintenance and check and install all the safety guards of the machineries. The management should give enough training on how to operate the machines and also on the necessary safety measures.
- Organizations on the sector should keep the room temperature not too high by applying the necessary ventilation system and if the high temperature is important for production, like in the melting department of aluminum production factories, the workers should be provided with the appropriate personal protective equipments. Also the passage ways in the workplace should be clear and convenient for movement and the sound level especially in the nail production factory, is very high and ear muff should be given by the management and workers should use the protective equipments every time they are in their work place.
- The management should give more focus on the occupational safety and health issue and have a safety professional in their organization or someone who is capable of keeping all the accidents and their causes so as to make the appropriate safety measures in the workplace and manage the safety and health of the employees while they are working.
- Since fire hazard is always dangerous and can make lots of damage to the workers as well as the workplace and the Ethiopian labor law states that there should be fire extinguishers available in every 15m distance and 1.5m above the ground and this can able the organizations to minimize the damage from fire hazards.
- Managers should make every employee to take a health checkup or get a medical report when they hire one. And they should also provide a periodic checkup for their employees to know what possible health problems can occur from the workplace so as to implement the necessary prevention mechanisms and compensation & benefit for the victims of the health problem. First aid treatment should also be available in the workplace to minimize the level of damage done until they get the proper health treatment.

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APPENDIX

Appendix A:

Questionnaires

Biographical Information Questionnaire

1. Name (optional) : _____
2. Age: _____
3. Sex: _____
4. Years of service: _____
5. Educational qualification: _____
6. Job position: _____

Occupational safety and health questionnaire

1. How do you describe the level of your awareness of the Ethiopian labor law?

Very low	Low	Medium	High	Very high

2. How is your awareness on the issue of occupational safety and health?

Very low	Low	Medium	High	Very high

3. Are the machineries you are working with has their appropriate safety guards?

Not at all	Low quality	Satisfactory	Good	Very good

4. Have you taken enough training on how to operate the machine /equipment you work with?

Not at all	Low training	Medium training	Enough training	More than enough

5. Is maintenance and service is fully provided to your machine?

Not at all	Ones in a while	Sometimes	Usually	Always

6. Do you have enough information about the effects and possible side effects about the raw materials you are using?

Very low	low	Medium	High	Very high

7. Have you taken whole health test when you entered the organization and periodic check up?

Not at all	Ones in a while	Sometimes	Usually	When ever needed

8. Have you been diagnosed with any kind of illness that is related with your work environment?

Not at all	Ones in a while	Sometimes	Often	Very often

9. Have you ever encountered and kind of injury in your work environment since you started working in the company?

Not at all	Ones in a while	Sometimes	Often	Very often

10. Do you get first aid treatment in your company?

Never	Ones in a while	Sometimes	Usually	Always

11. Whenever the disease or injury is beyond first aid treatment, does your organization take you to the appropriate hospital or clinic?

Never	Ones in a while	Sometimes	Usually	Always

12. Does your company cover all the expenses of the health treatment?

Never	Ones in a while	Sometimes	Usually	Always

13. Does your company provide you the compensation and benefits you should get according to the Ethiopian labor law?

Never	Ones in a while	Sometimes	Usually	Always

14. What do you suggest to be done to minimize industrial accident and create a healthier work environment in your organization?

_____

_____

_____

_____

_____

_____.

Appendix B:

Interview Questions for Managers

General Information Questions

1. Name of the organization :_____
2. Time of establishment: _____
3. Number of workers: _____
4. Field of production : _____

Occupational safety and health questions

1. How do you describe the awareness of the Ethiopian labor law in your organization?
2. How is the level of training given to your workers on how to operate their machinery/equipment and safety measures? Are the machineries provided with the appropriate service and maintenance periodically?
3. According to record keeping, do you keep records of accidents and injuries that happened in your company? And what kind of accidents does usually happen in your organization?
4. On which shift of work hour does most of the accidents occur in your organization:
   Day time (8:00am – 4:00 pm), night time (4:00pm – 12:00am), or late night (12:00am – 8:00am)
5. Do you have a safety professional in your organization? If so, what are the major duties and responsibilities of the safety professional?
6. According to fire hazards, what kind of fire controlling system do you have in your company? And are the appropriate fire extinguishers available in the work place?
7. How is the work environment according to;
   - Lighting of the work place
   - Sound level, and
   - Ventilation
8. Is the electrical system in the work place well installed and safe?
9. How do you describe the layout of your machineries according to safety?

10. According to industrial health, how do you see the work environment based on the following points?
    - First aid kit and employee who has taken first aid treatment training?
    - Are the raw materials and different chemicals labeled, so that the workers will not miss use the item?
    - Do you have insurance for your workers?
11. How does the compensation and benefit program look like in your organization for the workers who are victims of occupational accident?
12. As a manager what do you suggest on, what workers and investors should focus on so as to minimize the accidents and improve occupational health in plastic/metal work factories?

Appendix C:

PROCLAMATION NO. 377/2003 ARTICLE 92 TO ARTICLE 112

Occupational Safety, Health and Working Environment

CHAPTER ONE

Preventive Measures

92. Obligations of an Employer

An employer shall take the necessary measure to safeguard adequately the health and safety of the workers; he shall in particular:

1) Comply with the occupational health and safety requirements provided for in this Proclamation;

2) take appropriate steps to ensure that workers are properly instructed and notified concerning the hazards of their respective occupations and the precautions necessary to avoid accident and injury to health; ensure that directives are given and also assign safety officer; establish an occupational safety and health committee of which the committee's of which the committee's establishment, shall be determined by a directive issued by the Minister;

3) provide workers with protective equipment, clothing and other materials and instruct them of its use;
4) register employment accident and occupations diseases and notify the labour inspection of same;
5) Arrange, according to the nature of the work, at his own expenses for the medical examination of newly employed workers and for the medical examination of newly employed workers and for those workers engaged in hazardous work, as may be necessary.
6) Ensure that the work place and premises do not cause danger to the health and safety of the workers;
7) Take appropriate pre-executions to insure that all the processes of work shall not be a source or cause of physical, chemical, biological, ergonomical and psychological hazards to the health and safety of the workers;
8) Implements the directives issued by the appropriate authority in accordance with this Proclamation.

93. Obligations of worker

A worker shall:
1) co-operate in the formulation of work rules to safeguard the workers health and safety, and implement same.
2) inform forthwith to the employer any defect related to the appliances used and injury to health and safety of the workers that he discovers in the undertaking.
3) report to the employer any situation which he may have reason to believe could present a hazard and which her cannot avoid on his own any accident or injury to health which arises in the course of or in connection with work.
4) Make proper use of all safeguards, safety devices and other appliance furnished for the protection of his health or safety and for the protection of the health and safety of others.
5) Obey all health and safety instructions issued by the employer or by the competent authority.

94. Prohibition

No worker shall:

1) interfere with, remove, displace, damage or destroy any safety devices or other appliances furnished for his protection or the protection of other; or
2) obstruct any method or process adopted with a view to minimizing occupational hazard.

CHAPTE TWO

Occupational Injuries

SECTION ONE

Liability

95. General

1) Subject to the provisions of the relevant pension law, the provisions of this Chapter shall apply to workers where an employment injury is sustained by a worker during or in connection with the performance of his work.
2) For the purpose of this Proclamation, "occupational injury' means an employment accident or occupational disease.

96. Liability Irrespective of Fault

1) The employer shall be liable, irrespective of fault, for employment injuries sustained by his worker and such liability shall be determined in a accordance with the provisions of this Chapter.
2) The employer shall not be liable for any injury intentionally caused by the injured worker himself; any injury resulting from the following acts in particular shall be deemed to be intentionally caused by the worker;

a. Non-obedience of express safety instructions or non-observance of the provisions of accident prevention rule specifically issued by the employer; or
b. Reporting to work in a state of intoxication that prevents him from properly regulating his body or understanding.

3) The provisions of sub-article (1) of this Article shall not affect the right the right of a worker to claim damages in accordance with the relevant law where an occupational injury is a result of fault on the part of the employer.

97. Occupational Accident

For the purpose of this Proclamation "Occupational accident" means any organic injury or functional disorder sustained by a worker as a result of any cause extraneous to the injured

worker or any effort he makes during or in connection with the performance of his work and includes;

a) any injury sustained by worker while carrying out the employer's order, even away from the work place or outside his normal hours of work;
b) any injury sustained by a worker before or after his work or during any interruption of work if he is present in the work place or the premises of the undertaking by reason of his duties in connection with his work;
c) any injury sustained by a worker while he is preceding to or from place of work in a transport service vehicle provided by the undertaking which is available for the common use of its workers or in a vehicle hired and expressly destined by the undertaking for the same purpose;
d) any injury sustained by a worker as a result of an action of the employer or a third party during the performance of his work.

98. Occupational Disease

1) For the purpose of this Proclamation an "occupational disease" means any pathological condition whether caused by physical, chemical or biological agents which arise as consequence of:

a. the type of work performed by the worker; or
b. the surroundings in which the worker is obliged to work during a certain period prior to the date in which the disease become evident.

2) Occupational disease shall not include endemic or epidemic disease which is prevalent contracted in the area where the work done, except in the case of workers exclusively engaged in combating such disease by reason of their occupation.

3) The minister shall in consultation with the concerned authority issue, directives which contain schedules listing diseases to be of occupational origin. The said schedule shall be revised at least every five years.

4) The occurrence of any of the disease listed in the relevant schedule on any worker having been engaged in anyone of the corresponding types of work specified therein, shall by itself, constitute sufficient proof of the occupational origin of the disease.

5) Notwithstanding sub-article (4) of this Article, proof shall be permitted to establish the occupational origin of a disease not listed in the relevant schedule and of diseases listed in the relevant schedule and of diseases listed when they manifest themselves under conditions different from those establishing a presumption of their occupational origin.

6) In the absence or proof to the contrary, any disease which occurs frequently only to persons employed in certain occupations shall be presumed to be of an occupational origin where the worker suffering from such a disease was engaged in such an occupation and the existence of the disease is ascertained by medical doctor.

7) The date on which an occupational disease became evident, i.e. the first date on which the worker became incapacitated or the date of the first medical diagnosis of the disease or the date or the injured worker's death, shall be considered as the date on which an employment injury occurred.

8) Where a worker after being cured from an occupational disease listed in the relevant schedule, contracts the disease again as a result of his being engaged in anyone of the corresponding work specified in the said list, it shall be presumed that he has contracted a fresh occupational disease.

SECTION TWO

Degree of Disablement

99. General

1) "disablement" means any employment injury as a consequence of which there is a decrease or loss of capacity to work.

2) Disablement shall have the following effects:

a. temporary disablement
b. permanent partial disablement
c. permanent total disablement and
d. death.

100. Temporary Disablement

Temporary disablement results from the reduction for a limited period of time of the worker's capacity for work partially or totally.

101. Permanent Partial or Total Disablement

1) “ Permanent partial disablement” means incurable employment injury decreasing the injured worker’s capacity.

2) “Permanent total disablement” means incurable employment injury, which prevents the injured worker from engaging in any kind of remunerated work.

3) Injuries which, although not resulting in incapacity for work, cause serious mutilation or disfigurement of the injured person shall be considered permanent partial disablement, for the purpose of compensation and other benefits.

102. Assessment of Disablement

1) The degree of permanent total or partial disablement shall be fixed in accordance with the assessment table of disablement prescribed by directives issued by the Minister.

2) The degree of disablement shall be assessed in accordance with the assessment table provided for in sub-article (a) of this Article, by a competent medical board. The board shall determine the extent of the degree of disablement as far as possible within twelve months form the date of injury.

3) Disablement which has been assessed may be reviewed in accordance with sub-articles (1) and (2) of this Article where the worker’s condition deteriorates or improves or is wrongly diagnosed:

a. on the imitation of the appropriate authority, or
b. at the request of the worker or employer concerned.

4) Where the result of the review warrants it, the rights of the worker to a disablement benefit shall be recognized or withdrawn or that the rate payable increase or reduced, as the case may be.

5) Where a worker who suffered an employment injury sustains a further employment injury, his disablement shall be reassessed in light of his new circumstances.

CHAPTER THREE

Benefits in the Case of Employment Injuries

SECTION ONE

GENERAL

103. Payment of Benefits

Injury benefits shall be paid in accordance with the provisions of this Chapter.

104. Special Obligation

1) An employer shall have to execute the following obligations:

a. to provide the injured works with first aid in time;
b. to carry the injured worker by an appropriate means of transport to the nearest medical center;
c. to notify the occurrence to the appropriate organ in accordance with the directives issued by the minister.

2) The employer shall have the obligation to pay the funeral expenses specified under Article 10 (1) (b).

SECTION TWO

Medical Benefits

105. Types of Benefits

Where a worker sustains employment injury, the employer shall cover the following expenses:

1) general and specialized medical and surgical care;

2) hospital and pharmaceutical care;

3) any necessary prosthetic or orthopedic appliances.

106. Duration of Benefit

Medical benefits shall be withdrawn in accordance with the decisions of the Medical Board.

SECTION THREE

Various Kinds of Cash Benefits

107. General

1) A work who has sustained employment injury shall be entitled to:

a. periodical payment while he is temporarily disabled;
b. disablement pension or gratuity or compensation where he sustains permanent disablement;
c. survivors; pension gratify or compensation to his dependant where he dies.

2) Periodical payment may be suspended where a worker who has claimed or is receiving same:

a. refuses or neglects to submit himself to medical examination or in any way intentionally obstructs or unnecessarily delays such examination;

b. behaves in a manner calculated to retard his recovery; or
c. violates the directives issued by the competent authority for the conduct of injured workers.

3) As soon as the circumstances that occasioned the suspension ceases, the periodical payment shall recommence, provided, however that there shall be no entitlement to back-pay for the period of suspension.

108. Periodical payment

1) The employer shall pay for one year the periodical payment mentioned in Article 107 (1) (a)

2) The periodical payments referred to in sub-Article (1) of this Article shall be at the rate of full wage of the worker previous average yearly wages during the first three months following the date of injury, not less than 75% (seventy five percent) of the worker previous average yearly wages during the next three months following the date of injury and not less than 50% (fifty percent) of his previous average yearly wages for the remaining six months.

3) Periodical payments shall cease whichever of the following takes place first:

a. When the worker is medically certified to be no longer disabled;
b. On the day the worker becomes entitled to disablement pension or gratuity;
c. Twelve months from the date the worker stopped work.

109. Disablement Payments

1) Unless otherwise provided for in a collective agreement disablement benefits payable to workers of state enterprises covered under this Proclamation shall be in accordance with the insurance scheme arranged by the undertaking or pension law.

2) An employer shall pay a lump sum of disablement compensation to workers who are not covered by the pension law.

3) The amount of the disablement compensation to be paid by the employer shall be:

a. where the injury sustained by the worker is permanent total disablement, a sum equal to five times his annual wages;
b. where the injury sustained by the worker is below permanent total disablement a sum proportionate to the degree of disablement calculated on the basis of the compensation provided for in Sub-Article (3) (a) of this Article.

4) Where a worker who has sustained permanent disablement was at the date of the injury on apprentice, his disablement compensation payable in accordance with Sub-Article (2) of this Article, shall be calculated by reference to the wages which he would probably have been receiving as a qualified workman after the end of his studies.

110. Dependants' Benefits

1) Where a worker or an apprentice dies as a result of an employment injury, the following benefits shall be payable:

a. dependant's compensation in accordance with the provisions of Sub-Articles (2) and (3) of this Article; and
b. subject to the provisions of a collective agreement or work rules, payment for funeral expenses which shall be not less than two month wages of the worker.

2) The following shall be considered dependants

a) the worker's widow or widower;
b) children of the deceased worker who are under eighteen years of age;
c) any parent who was being supported by the deceased worker.

3) The amount of the dependants compensation for workers not covered by the Public servants pension law, shall be a Sum equal to five times the annual salary of the deceased and for those stipulated under Sub-Article 2 of this Article by the employer at once;

(a) 50% (fifty percent) for the deceased worker's lawful husband or wife;

(b) 10% (ten percent) each for the deceased worker's children who are below the age of fifteen years old;

(c) 10% (ten percent) each for the deceased worker's parents who were being supported by him;

4) If the total of dependents' compensation calculated in accordance with Sub-Article 3 of this Article is in excess of one hundred percent (100%) of the total amount to be divided, the amount of compensation of each dependent shall be proportionately reduced by the amount required to reduce the total amount payable to one hundred percent (100%) of the said total amount. If the total of dependents compensation is less than one hundred percent (100%) of the total amounts to be divided, the amounts of compensation of each dependent shall be proportionately increase by the amount payable to one hundred percent (100%).

111. Benefits not Taxable

The benefits referred to in Article 110 shall not be payable where the worker dies after twelve months from the date of the injury, unless it is proved that the injury was the principal contributory cause of his death.

112. Benefits not Taxable

1) The benefits paid in accordance with the provisions of this Section shall be free from any kind of tax.

2) The benefits payable under the provisions of this Section shall not be assigned, attached or deducted by say of setoff.

DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Elias Nour (PhD). All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning a degree.

Yonas Ephrem Shiferaw _____

Name Signature & Date

ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate studies for examination with my approval as a university advisor.

Elias Nour (PhD) _____

Advisor Signature & Date