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Towards Sustainable Development

Workers' Compensation for Occupational Diseases and Injuries in the Tanzanian Socio-economic Development

Alexander M. Tungu, Israel P. Nyarubeli and Bente E. Moen (Eds.)

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Contents

Contributors

Appendix

Foreword

Globally, the magnitude of work-related deaths, diseases and accidents is unacceptably high. The International Labour Organization (ILO) estimates that approximately 6,400 people die from occupational accidents or diseases and that 860,000 people suffer from work related injuries every day. The large burden of work related deaths, diseases and injuries increases both direct and indirect costs, insurance premiums as well as decreases workers' productivity and performance. The devastating consequences of work-related deaths, diseases and injuries on the workers and their families cannot be fully estimated. Nevertheless, the ILO estimated that the economic burden of not investing in Occupational Health and Safety (OHS) for prevention of work related deaths, diseases and injuries is approximately four per cent (approx. 2.8 trillion US dollars) of the world's Gross Domestic Product (GDP) per year. By implication, investing in OHS reduces social security and health care costs.

In developing countries such as Tanzania; work related diseases, injuries and deaths and their associated costs are likely to increase at an alarming rate due to rapid economic developments coupled with inadequate OHS services. Tanzania became a middle-income country in July 2020 and it is currently striving towards industrialization ("*Tanzania ya viwanda")*.

We clearly see the need for competence in occupational health and compensations related to occupational injuries and diseases. The aim of this book is to provide information about economic development, occupational diseases and injuries as well as the related socio-economic impacts. The book will contribute to the improvement of knowledge in matters pertaining to OHS and workers compensation services and give competence for use in decision making, policy formulation and implementation. The book will provide knowledge that will contribute to the reduction of occupational diseases and injuries and the associated costs.

The book is written for bachelor and master students in occupational health, medical students, health personnel and people working in compensation funds. However, we hope the book also will be useful for anyone with interest in occupational compensation issues.

The main aim of the book is to inform about occupational diseases and injuries and the possibility of compensation for people who develop such conditions. In addition, we give some basic information about preventive issues and risk assessment at the workplace, and we also focus on how to increase the competence of OHS in Tanzania and other African countries.

We hope the book will be useful!

Dar es Salaam and Bergen, August 2022

Alexander M. Tungu, Israel P. Nyarubeli and Bente E. Moen

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1 Health and Socio-Economic Development

Alexander M. Tungu, Israel P. Nyarubeli and Honest P. Ngowi

This chapter introduces the concept of health and socio-economic development. It introduces readers to the general knowledge of health and factors affecting health. Also, it introduces the readers to the expression of development and the role of various actors in socio-economic development. Finally, the chapter provides a snapshot of the link between health, socio-economic development and the Sustainable Development Goals.

1.0 Introduction to Health

1.0.1 Background

Health is an important aspect of life and human existence. The concept of "health" can be described in different ways depending on the context in which it is used. The interpretation of the concept varies between individuals, between groups, between cultures, and between societies. For example, social experiences related to age, personal knowledge, and illness play part in interpreting what is considered as health. The concepts of health and well-being are closely related and occupy a high order of meaning in people's lives. It is therefore important to note that health has high value in people's lives compared to material things. This may be because health cannot be bought or sold like other commodities, even though health services themselves can be sold and bought.

In their book titled *Understanding Health*, Keleher and MacDougall (2016) summarised the different approaches used in describing the concept of health as *biological, biomedical, behavioural, and public health approaches*. The biological approach describes health in terms of the roles played by different microorganisms as well as the interaction between genetic make-up and disease risk factors in relation to disease causation. The biomedical approach describes the concept of health in terms of medically defined pathologies or diseases. According to the biomedical approach, all illnesses and diseases are attributable to a physiological dysfunction. The behavioural approach focuses on changing behaviour and lifestyles so as to attain good health. Finally, the public health approach involves all the deliberate measures taken to protect health within populations, including those involved in the prevention of diseases, promotion of health, and prolongation of life. There is also a determinant approach, which relates health and social problems in terms of the social, structural, and cultural aspects of any given society and recommends different approaches for the improvement of health. Such determinants can influence the health status of an individual, population or community in various ways.

In the workplace, the concept of the health of the workers (herein referred to as occupational health) is described in connection with workplace conditions and specific tasks performed in relation to the well-being of the workers. Such workplace factors, in addition to biological characteristics of the workers and other health determinants, interact in a complex fashion and affect the health status of the

workers. Regardless of the approach or setting, health remains an important aspect of all our daily lives. Thus understanding the concept of health and all aspects of how it can be protected is of paramount importance for individuals, communities, societies, and nations.

1.0.2 Fundamental Concepts in Health

The Meaning of Health

In 1946, the World Health Organisation (WHO) defined health as "*a state of complete physical, mental and social well-being not merely the absence of disease or infirmity."*

This definition is ambitious since the achievement of complete well-being is a challenge. The WHO, however, reformulated its goal in 1977 to a more practical definition as "*health permits a socially and economically productive life.*"

In the working population, the state of well-being in relation to the working conditions is referred to as "occupational health." In 1950, the joint International Labour Organization (ILO)/WHO Committee defined occupational health as "*the promotion and maintenance of the highest degree complete physical, mental and social well-being of workers in all occupations."* In other words, occupational health concerns with prevention of work related diseases and injuries.

Factors Affecting Health

Several factors affect health in the general population. These factors are also referred to as health determinants. The determinants are known to influence each other and ultimately influence health status. Lindstrand and colleagues (2006) defined the determinants of health as being *socio-economic, food, water, sanitation, behaviour, health services and other environmental determinants.*

Various socio-economic health determinants such as income, poverty and equity, gender, social support, education, and culture influence health to a large extent. For instance, poverty and health are closely related and their interaction runs in both directions, for example, poverty causes ill-health and ill-healthy causes poverty. This is often described as the vicious circle of poverty and health. According to the World Bank (2014), poverty is a major cause of ill health as well as a barrier to healthcare access. Poor people are unable to purchase the necessities of good health such as sufficient quantities of quality food and health care services due to their associated high costs, and this is a barrier to health care access. Other factors such as lack of information on appropriate health-promoting practices or a lack of voice for the social services needed are also related to poverty and ill-health. Similarly, low-income countries tend to have relatively poorer health outcomes compared to high-income countries. In addition, within any given country, people with low incomes tend to have poorer health outcomes compared with better-off people. The relationship between these factors works both ways, ill-health is also considered to be a major cause of poverty. Poverty can partly be linked to health care seeking costs and loss of income following ill-health. It occurs at the country, individual and family level. Poor families might be forced to sell off assets, borrow funds at high interest rates or become indebted to the community as they attempt to take care of ill family members. In a working population, poor individuals are more likely to take riskier jobs compared to the well-off. This can be linked to an individual's strong desire for sufficient income to meet their basic needs, regardless of the associated health risks. Thus poverty exposes workers to

more workplace hazards and increases the risk of developing occupational diseases. For this reason, a particular focus should be put on people who are poor, as they are more likely to be entrapped in a vicious circle of poverty and ill-health. Another socio-economic determinant for health is gender. Gender is defined as a social construct based on perceived interpretation of biological sex differences between men and women. It is defined differently in different countries. Gender differences result from social values, and cultural norms and values. These determine the perceived differences in roles performed by males and females within a society. Unequal distribution of resources, responsibilities, and access to health services results in gender inequity in health. Gender affects all other determinants of health in the same way as poverty. For instance, gender determines access to and use of resources, quality of social support, individual behaviour as well as the accessibility and use of health services. Gender roles may vary from one place to another. Some jobs in a given society may be termed as male and female jobs due to sex preferences between men and women. In some parts of the world, for example, manual jobs may be regarded as male jobs while domestic activities such as taking care of children is a female job. Therefore, gender differences play a role in the differences in disease patterns between men and women. For example, occupational injuries are likely to be higher in males than females because it is more usual for men to be involved in manual labour than females.

Culture is another socio-economic determinant for health that can simply be defined as behavioural patterns and the conceptual views of life acquired by a given group of people. According to Helman (2007), culture can be viewed as a set of guidelines that individuals inherit as members of a given society that influence how they view the world and experience it emotionally, and how they behave in relation to other people, supernatural forces and the environment at large. The various aspects of culture include language, arts, social structure, laws, religion, ethics, and morals.

Culture has an influence on people's attitudes, beliefs and actions in a given society. It also is dynamic and it changes over time. Cultural factors can affect health both positively and negatively, depending on the choices of health-related issues made by a given group. An example of this is the beliefs some people have that the use of personal protection at workplaces is for the weak and that those who do not use protective devices at all are considered to be strong. Such beliefs can result in the incidence of more occupational diseases and injuries among the unprotected workers. The occurrence of occupational diseases may be low in societies that believe in safety measures, including personal protection, as being good for worker health, given that other factors affecting the health of the workers remain constant. This can be linked to the fact that personal protection plays a role in the reduction of health-threatening exposures at workplaces, hence reducing the occurrence of occupational injuries and/or diseases.

Another group of determinants of health are environmental factors. These factors include sanitation, occupation, air quality, and climate among others. Sanitation refers to the disposal of excreta (faeces and urine) and other wastes. Unsanitary conditions are considered to be the main environmental health determinant in the world as they are associated with water quality conditions such as diarrhoeal diseases and other disease outbreaks.

Improper disposal of industrial wastes and other wastes resulting from developmental activities can have detrimental effects to the environment, the general population, and the working population. Almost all occupations are associated with health risks that can lead to the development of occupational diseases or increased incidence of injuries among the exposed workers. In unsafe working environments combined with poor safety and health practices, large proportions of workers are likely to be affected. A considerable number of workers in the mining industry have developed chronic respiratory conditions including silicosis, chronic obstructive pulmonary diseases (COPD), and pulmonary tuberculosis (PTB). These conditions occur as a result of prolonged exposure to high levels of dust containing silica in the mining industry. In addition, silicosis and PTB (Silico-tuberculosis) frequently co-exist among workers in the mining and construction industry as silicosis increases the risk of acquiring PTB. Also, outdoor and indoor air pollution affects respiratory health. Poor ambient air quality caused by pollutants such as industrial emissions, and the combustion of toxic materials, or due to the use of biomass as energy sources result in outdoor and indoor air pollution. Inhalation of polluted air causes acute and chronic health effects in the airways depending on the type, intensity, and duration of exposure.

Behaviour of an individual is another strong determinant for health. Behaviour modifies all the other determinants and influences an individual's health status. The way an individual behaves towards activities such as hand washing before eating, and use of personal protective devices are good examples of behavioural factors. Other behavioural factors such as alcohol consumption and tobacco smoking greatly and directly influence a person's health. For example, alcohol use impairs judgement and hence alcohol use in workplaces results in increased numbers of work-related accidents. Likewise, workers who are both smokers and are exposed to dust have an increased risk of developing adverse respiratory health effects compared to the non-smokers. Smoking modifies the effect of dust exposure, thus increasing the risk of developing occupational respiratory diseases among the smokers.

Access to health service is another prerequisite for good health. This includes both curative and preventive health services. Accessibility to health care that is evidence-based and cost-effective plays a major role in determining health. Accessibility depends on the economic level of a country, family and individuals, and the fairness of the policy for financing health services. Access to health services also depends on the other determinants for health such as culture, gender and social factors. However, general services are not easily accessible in most African countries, to say nothing of occupational health services. This latter is a relatively new concept in most African regions. It follows therefore, that the rapidly increasing economic developments experienced in many African countries coupled with inadequate occupational health services is likely to result in an unacceptably high burden of occupational diseases and injuries. As a continent, the importance of establishing proper occupational health and safety measures, especially where they are yet to be established, cannot be overemphasised.

1.1 Fundamental Concepts in Socio-Economic Development

1.1.1 The Meaning of Socio-Economic Development

In order to understand the concept of social-economic development, it is necessary to understand the concept of development in general. Development is the process of moving from one stage of a given situation to another. It can be social, political, technological or economic among other variables. Development is normally measured from one period of time to another.

Similar to the concept of development in general, socio-economic development is a process and not an event. It is a process of social and economic development. Social development includes improvement of various social indicators in a society. These include education, health, water, social protection, livelihoods, peace, and security.

Economic development involves the general development of a society from an economic point of view. This includes aspects of development beyond economic growth such as improvements in people's lives in terms of increased quantity of access to goods and services as well as an increased quality of living. This involves improvements in incomes, living standards, basic needs such as food, clothing and shelter, as well as social amenities such as water, health, education, social security and protection.

Socio-economic development thus involves both social and economic improvements in a society over time. It is over and above mere economic growth, which only measures the change in monetary value of goods and services produced in a country in a given period of time, normally a year.

Social-economic development is measured through various indicators. These indicators include but are not limited to the Gross Domestic Product (GDP). The GDP includes the monetary value of goods and services produced in a country in a year. These include goods and services produced across all sectors of the economy including mining, agriculture, industry, tourism, finance, education, and many other sectors. Other factors remaining constant (ceteris paribus), the higher a country's GDP, the greater its social-economic development. The factors that must remain constant when calculating GDP include but are not limited to equitable distribution of GDP across geographies, gender, age groups, and other demographic variables.

Other indicators of social-economic development include life expectancy, literacy, and levels of employment. Life expectancy is measured by average number of years one lives after birth; it tends to be higher in the more developed parts of the world such as Europe and North America than the less developed ones such as those in Africa, Asia and Latin America. There are, however, differences in life expectancy within and between countries. Generally, the more economically developed a given country, society, household, or individual is, the higher the life expectancy. This can be explained by the fact that the more economically advanced a country, society, household and individual is, the more access they have to the basic services needed for improving life expectancy. These include health, water, education, and related services.

Literacy level or rate in a country is another indicator of social-economic development. This includes the capacity of

the population to have basic literacy ability in reading and writing. Literacy level reflects the level of formal education in a country. As with life expectancy, the higher the literacy levels in a country the higher the economic development and vice versa. Literacy is very important for bringing about social-economic development because the ability to read and write stimulates development in various ways. The opposite is also true, economic development is important for increasing literacy rate through provision of education.

Social-economic development may also refer to the transformation of a society socially and economically. Transformation entails change over time. In this social-economic development context the transformation is from lower to higher levels of development. The process can involve a gradual or radical transformation. Normally, however, it is a gradual, step by step process producing change over time. Such transformations may lead to total change which in Latin is called *metanoia*.

Social-development usually refers to improvements - over time - in both household and individual well-being as well as in the overall welfare of society. This improvement is normally brought about and results from increases in social capital. In economic studies of the public sector, economic- and social-development include the processes by which the economic well-being and quality of life of a nation improves over time. Social-economics is primarily concerned with the interplay between social processes on one hand and the economic activities within a society on the other.

1.1.2 Roles of Various Actors in Social-Economic Development

Various actors play different roles in the social-economic development space. In the following discussion, the roles of different actors are highlighted.

Non-State Actors

The concept of Non-State Actors (NSAs) includes all those involved in various developmental aspects other than the state or the government. It is a social-political phenomenon and involves strategic collaboration to address development issues common to communities, societies, and even nations. It is a hugely complex, diverse, and dynamic arena of actors and players. Understanding “who’s who” in the NSAs family is not a simple task.

Conventionally and practically, NSAs are composed of Civil Society Organisation (CSOs) which in turn, include Non-Governmental Organisations (NGOs), Community-Based Organisations (CBOs) and Faith-Based Organisations (FBOs). Other actors that are considered as NSAs include the private sector both foreign and local, formal and informal as well as trade unions of all kinds and at all levels, and political parties, especially those in the opposition. NSAs also include various special groups such as women groups, youth groups, human rights associations, student unions, cooperatives, knowledge institutions such as higher learning and research institutions, the media, professional and business associations, and even individuals.

Lobbying and Advocacy

Each of the many typologies of NSAs is expected to play distinct roles in addressing the various issues pertaining to socio-economic development. These roles include lobbying and advocating for better policies and decision-making by

governments; giving constructively critical, opposing and alternative opinions to governments; constructively challenging established authorities and giving alternative and perhaps better solutions to issues; airing alternative voices and representing the voiceless multitudes of "ordinary" men and women.

Services Delivery

Some NSAs indulge also in delivery of goods and services to their constituents. The private sector category of NSAs has played and still plays vital roles especially in the arena of economic development. It bears the investment risks, employs labour and other aspects of production. It produces and distributes goods and services, and contributes substantially to government coffers in the form of taxes, royalties, dividends, fines, and fees.

Shaping Global Agendas

Roles of NSAs include contributing to shaping the sustainable development agenda; making and defining global public policy; critically questioning and contributing to global sustainable development issues; engaging with global governance for sustainable development; engaging in various public-private partnership (PPP) projects for sustainable development and regulating global environment.

Independent Structures

NSAs are also expected to act as independent and autonomous structures that voice the concerns and needs of communities and citizens; provide unique knowledge and insights; bridge the gap between authorities and the grass-roots levels; and ensure real ownership, participation, and empowerment of communities.

Better Working Conditions

NSAs are expected to promote better working conditions and play a leading role in the prevention of social injustice, as well as promoting social and economic equity. This role is demanded of trade unions in particular. Independent political foundations are expected to help to create a political, legal, and administrative framework that are supportive of other NSA, including youth organisations, which are an important arena for fostering advocacy and encouraging young people to develop democratic values such as transparency, tolerance and accountability, and democratic leadership skills. Academic institutions, as NSAs, are expected to engage in research on key development issues. Such research provides the foundation for other NSAs to develop advocacy and lobby campaigns in their bid to influence public opinion in favour of development policies.

Challenges Faced by Non-State Actors

Despite the noble roles played by NSAs, they face a number of challenges. These include financial, human, material, technical, and systemic challenges. These form constraints and barriers that can hinder their effective, efficient, and optimal contribution to the development process. Such challenges should be addressed by appropriate interventions that aim at capacity building for the NSAs.

The roles of NSAs in the general development as well as in specific areas of a country such as Tanzania cannot be overemphasised. It would add much value to various NSAs to identify their areas of competitive edge in contributing to the country's development. The State should consider NSAs as their partners in development and facilitate them accordingly by offering them, for instance, better working environments.

1.1.3 Roles of Academic Knowledge in Socio-Economic Development Process

Knowledge role

Intellectuals are closely associated with high levels of general and specialised knowledge. In the context of this text, they are expected to have intensive and extensive knowledge that is needed for socio-economic development. Intellectuals also are responsible for creating knowledge. This is normally done through research. Knowledge creation is extremely important for socio-economic development in general and in the current knowledge economy in particular.

In their knowledge roles, intellectuals are also expected to assimilate the knowledge created by others and even by themselves. The role of such knowledge assimilation includes simplification of complicated concepts to make it more accessible for public consumption. Socio-economic knowledge creation without dissemination would not have the desired socio-economic development impacts. This is because, once produced, knowledge is meaningless if it is not shared. Knowledge dissemination involves many different approaches and formats. These include dissemination through various media such as in books and other printed texts. Dissemination can also occur via seminars, workshops, and conferences as well as various forms of publications.

Intellectual Leadership

Intellectuals are also responsible for providing leadership for society when this is needed. Intellectuals are expected to be the objective, neutral, scientific authorities and points of reference in their areas of specialisation. They are expected to be impartial and non-partisan critics of socio-economic development visions, strategies, programmes, and projects. It is in this context, inter alia, that one would expect to see qualified intellectuals in Board Rooms in both the public as well as in the private sector. One would not expect therefore that matters requiring intellectual leadership would be led by, say, non-intellectuals.

Voicing Opinion on Socio-economic Issues

Intellectuals in general and intellectuals in the area of economic development in particular are expected to voice opinions on various issues. Such issues include but are not limited to the broad economic development path that the country should follow. Intellectuals are also expected to be movers and shakers in the identification, formulation, discussion, implementation, monitoring, and evaluation of various socio-economic development interventions. Furthermore, it is expected that various sections of the society including the government, private sector, the media, development partners, and the civil society as well as individuals would seek such informed opinions when they have ideas to be promoted and implemented.

Are intellectuals participating actively in this manner?

The above are but some of the roles ideally expected of intellectuals in the socio-economic development process in, for instance, a Tanzanian-type of an economy. But have these elites played their expected roles or not? There has not been research into this question, but some observations are possible.

A comparison of the current level of socio-economic development in Tanzania, which is rather low, with the perceived, rather large number of intellectuals, one notes a mismatch. Without more research, we cannot.

Possible explanatory factors

There are many possible explanatory factors between the seemingly lack of correlation between the existence of intellectuals in Tanzania on one side and poor socio-economic development on the other. It is possible that the intellectuals have played key roles in the economic development of the country but these efforts have not been adequate, or that the ideas proposed by intellectuals might not have been translated into actions. This might be due to many factors including inadequate dissemination of intellectuals' works to socio-economic development and related policy and decision-makers. It is also possible that the intellectuals have not been invited to contribute information to these policies and decision makers. Unless there is acknowledgement of the role of intellectuals in the development of socio-economic development policies, meaningful socio-economic development in Tanzania and by extension in other African countries, will remain a distant dream.

1.1.4 Formal Sector and Socio-Economic Development

The formal sector of the economy is the one that is officially and legally recognized by the authorities. It includes the various government authorities such as business regulating and tax services. In the context of taxation for example, the formal sector is the one storing all the documentation relating to things such as business licences, Tax Identification Number (TIN), officially known business premises and locations.

The formal sector of the economy is believed to contribute in formal and measurable ways to a country's economic development. This is mainly in the form of official statistics that are easier to capture, measure, and report from the formal economic sector than from the informal one. These official statistics include but are not limited to tax payment statistics. These form an important role in measuring economic development. More information follows below.

Formal Sector Role in Socio-economic Development: The Case of Tax Revenues

Governments across the globe provide differing levels of public goods and services to their citizens. Interventionist and developmental states, for example, attempt to provide as many public goods and services as possible. In general, the provision of public goods and services, including education, health, water, infrastructure, security, and public administration is costly. These expenses are covered by the government using various sources of funding including taxes and non-tax revenues.

Tax revenues constitute the greatest funding source for a country such as Tanzania. They contribute to making the country free from loans and aid. Loans can be costly as interest has to be paid. Aid on the other hand can have conditions attached, and may be subject to delays, both in terms of agreed frequencies and amounts. The withholding of budgetary support to Tanzania by its development partners in 2014, while understandable, results in budgeting challenges for national governments. The situation is further complicated by the need for continuous funding of public goods and services as tax payers hold governments responsible and accountable. Countries with heavy donor dependence may result in governments that are more accountable to donors than their citizens.

1.1.5 Informal Sector and Socio-economic Development

The informal sector is also important in the social-economic space. This is especially true in most developing parts of

the world, such as Africa in general and Tanzania in particular, where the informal sector is relatively very large compared to the situation in more developed parts of the world. The informal sector can be described in many ways. Typical descriptions would include the sector of the economy that is not in the formal system. More often than not, operators in the informal sector do not necessarily have all the required documentation, such as licences, addresses, formal business premises, and tax registration. It must be noted that this activity is not illegal, just less documented than the more formal economic sector. The informal sector is mainly populated by micro and small enterprises although medium ones also do feature in this business typology. The sector's assets are seen as economically and legally dead. With informality, a number of windows of opportunities tend to be closed. Unfortunately, access to some capital and tender may be blocked thanks to informality. Diverse types of economic activities are undertaken in the sector. One of the leading authorities concerning informal economic activities includes the International Labour Organisation (ILO).

1a: Production of roses is a relatively new agricultural activity in Tanzania, with new workplaces, new income but also new challenges for the worker's health. Here we see how to avoid problems with the rose thorns, using gloves and arm protection (Photo: B.E. Moen).

Formalisation of the Informal Sector

Formalisation of the informal sector implies transforming informal sector activities into formal sector activities. That is to say, where most of the policy, legal and regulatory requirements are in place. The process of formalisation in the informal sector in Tanzania has tended to include a greater use of sticks than carrots. With sticks, the informal sector is forced to have all its business earnings registered in the formal sector. We consider this to be unfortunate and bad practice. We believe that formalisation should involve more carrots than sticks. It should be about creating incentives for

those in the informal sector to automatically and voluntarily graduate from the informal to the formal sector. By and large, formalisation of the informal sector should be a gradual and natural process. Informal sector operators should engage in this process at some point in their lifespan.

Formalisation is Beyond Papers

There seems to be a faulty assumption that formalisation only concerns having the papers required by the authorities. However, informal sector experts as well as experts in the micro, small and medium enterprise (MSMEs) area would agree that the process of formalisation is much more than just having all the required documentation needed by policy, legal and regulatory structures. Having the necessary papers including business licences, tax identification numbers (TINs), business addresses etc. is just part of the process of going formal. Formalisation matters in the context of building a broader tax base that will bring cash into state coffers through the formal operations of business transactions. It involves having all necessary transactions correctly in place. These include proper and adequate records of all costs, revenues and profits in all transactions. These records are important in computing taxes that are due to the state.

1.2 The Link Between Health and Socio-Economic Development

1.2.1 Background

As mentioned before, and grounded in the definition of social-economic development means there is a strong relationship between health and development. Indeed health is very important for development of any kind, and the reverse is true as well: development is very important for health. Good health enables people to participate fully and effectively in the activities of production, distribution and consumption of goods and services that are critically important to development. As discussed previously, without good health, there will be poor production and low productivity.

1.2.2 Relationship between Health and Socio-Economic Development

Poor health is detrimental to the economy at all levels; individual, household, community, corporate, and extending to national, sub region, region and global levels. This is partly due to lost productivity (such as labour productivity) and increased cost of treatments both monetary and non-monetary. The cost of treating the sick reduces disposable income that would have been available for bringing about social-economic development. Cost of health care can be looked at as a burden to the economy in general and in the context of opportunity cost of bringing about and enhancing social-economic development. It is about fungibility of funds in which case once funds used for one purpose are no longer available for other purposes.

The cost of health care can also be looked at from a resource perspective. The time used to take care of the sick could have been used for socio-economic development purposes.

The case of COVID-19 impacts on economies across the world can be cited as among the contemporary examples of poor health cost to economies. It has led to among other things, reduced economic growth, reduced employment and associated, reduced consumption and associated consumption-based taxes such as Value Added Tax (VAT), reduced exports and much more along those lines. The health cost of COVID-19 includes also the resources set aside to fight the

pandemic which could have been used for social-economic development purposes.

Therefore, poor health has far reaching implications to employers and employees.

Implications for Employers

Health cost has many and far-reaching negative implications to employers. These include reduced productivity, reduced production, reduced sales volumes of goods and services, reduced profits, reduced dividends and extra cost of health care where employers have to contribute. At times it may be necessary to replace highly competitive, qualified and experienced sick employees with less competitive, less qualified and less experienced employees. This has negative implications to employers and by extension to the government in forms of reduced tax and non-tax revenues. This in turn (reduced revenue) can lead to reduced ability of the government to engage in social-economic development recurrent and development expenditures.

1b: Tanzanite mining gives high income to mine owners, but the mining gives high risks for health and life of the miners (Photo: B.E. Moen).

Implications for Employees

Poor health affects all employees in terms of among other things inability to work properly thereby reducing productivity and production. This can lead to reduced hours and days of work, reduced incomes and associated standards of living. The burden on employees without social security coverage – mainly those in the informal sector – the health economic burden is more severe than those with social security coverage. These have to shoulder the economic cost of treatment.

There is a non-monetary cost of ill-health to employees that is often not noticed or unknown. This is the cost of reduced or lost skills after a long period of time of one not using his or her skills. Upon recovery, one may need to undergo training and treatment. The involved costs are a burden either to employee, employer or both depending on who foots the bill. The

cost may also be on insurance companies as well as other schemes that are paying for compensations such as Workers' Compensation Fund (WCF) in a Tanzanian context.

All of the socio-economic impacts above apply to all diseases, including occupational diseases and injuries. These micro-level impacts can be transmitted to meso- and macro levels thereby negatively impacting the national economy and development in general and social-economic development in particular in the context of this work.

1.3 Health and the Sustainable Development Goals

The concept of sustainable development is described further in chapter 8. Briefly, the United Nations adopted 17 universal goals known as "*Sustainable Development Goals (SDGs)"* in 2015. SDGs are also known as Global Goals. The SDGs were adopted as a universal call to action towards ending poverty, protecting the planet, and ensuring that people enjoy peace and prosperity by 2030. The SDGs are integrated in such a way that an action in one area affects outcomes in others. The SDGs also emphasise that development must balance social, economic and environmental sustainability. As described previously, health and socio-economic development are closely related. Meaning that health affects socio-economic development and socioeconomic development affects health. However, the attainment of all SDGs might be challenging, particularly in the developing world. For example, The SDG 8 aims at promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. The decent work described in SDG 8 among other things aims at preventing work related diseases and injuries, thus fostering sustainable development. Nevertheless, the marginal level of occupational health in most African countries such as Tanzania poses a great challenge in the attainment of SDG 8. Therefore, promotion of safe working conditions for sustainable development in the African setting cannot be overemphasised.

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2 Occupational Health and Safety

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This chapter gives an introduction to the concepts in the area work with health and safety at work; occupational health and safety. In addition, the text describes how this type of work is performed, regulations and routines, and underlines the need for multidisciplinarity in such work. Specific hazards for health that might be present at workplaces are briefly mentioned, and the text shortly mentions the need for preventive work to avoid development of occupational diseases and injuries at the end.

2.0 Introduction to Occupational Health and Safety

Being able to work and contribute to society is fundamentally important to human beings. It is a means to better life both socially and economically. Globally, about half the population in the age of 16-64 years work. However, many work activities and tasks undertaken in both organised and unorganised workplaces take place under poor and hazardous conditions and are linked to increased risk of accidents, injuries and illnesses/diseases. This situation tends to be worse in small-scale or informal unregulated work settings. Accidents, injuries and diseases/illnesses occurring at workplaces have negative effects that impact not only the affected family but also society at large. Restoring health involves tremendously large costs in terms of medical and travel expenses. Furthermore, there are costs due to loss of productivity, compensation, as well as being due to potential psychological effects such as depression and anxiety. In addition, there are other considerations to take into account including, job insecurity, company downsizing, heavy workloads, long working hours, as well as insufficient managerial support. These can result in workers experiencing stress, fatigue and loss of concentration, which in turn can lead to increased numbers of accidents and injuries at workplaces.

A good example relating to workplaces in developing countries is work at an iron and steel factory (rebar manufacturing). In such factories, several activities are involved including: Manual sorting of metal scrap materials, which can contain sharp objects and explosives; working at open furnaces (with molten steel heated to above 1000 degrees Celsius); working at rolling mill machines located at the mouths of the high temperature furnace (about 960 degrees Celsius) while handling red-hot billets manually! All these tasks involve several potential hazards such as heat, noise, and electric shock. These, in turn, have a high risk of accidents and injuries that may lead to lifelong disability or death if not properly handled.

This example underlines the importance of having measures in place that will ensure good health and safety for the workers, by avoiding or minimising the potential health risks arising from work.

Such measures require a good understanding of how the work is organised and training in how such health risks can be handled safely. People involved in establishing such work require detailed training. The scientific field that gives people such training is known as Occupational Health and Safety.

As described in chapter 1, the World Health Organization (WHO) and International Labour Organization (ILO) define Occupational Health as being

> *'the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations'*.

This definition entails

> (i) the protection of the health of workers by eliminating and controlling occupational hazards
>
> (ii) the promotion of safe working environment
>
> (iii) ensuring good task or job organisations, awareness creation and training
>
> (iv) creating and maintaining working conditions that enhance mental and social well-being of workers while improving economic productivity.

In addition, it emphasises the need for protection of the workers when they must stop working due to ill-health as a result of adverse working conditions. Such protection should be considered by employers as part of the consideration of risk factors arising at workplaces.

In an organised workplace, joint efforts and responsibilities between employers and employees is vital to achieving a high quality and healthy workplace. Roles and responsibilities of each participant should be considered to ensure both business efficiency and good worker health.

2a: Posters like this show that health and safety is important (Photo: B.E. Moen).

2.1 Background

The development of the field of Occupational Health and Safety is grounded in industrial development. During the industrial revolution in the late 18th and 19th Century in Europe and the United States of America, there were a number of industrial innovations such as iron foundry, cotton spinning, textiles and steam engines. These innovations enabled the construction of factories that could carry out these processes on large scales and that provided employment to large numbers of people. The industrial revolution resulted in a change in economic structures due to the new technological developments i.e., change of patterns production and consumption of goods and trade. Initially, in these factories, men and women worked in poverty. Unhealthy environments. As a result, workers were exposed to a number of unforeseen occupational hazards including harmful gases, toxins, extreme temperatures, acids, noise, vibrations, and poor lighting. A number of injuries and disease were recorded and concerns were raised. Records include information about numerous accidents and disasters that claimed many lives and resulted in many disabilities. For example, a disaster that occurred in 1968, in Farmington mining, West Virginia. USA claimed the lives of 78 miners resulting in the establishment of the Coal Mine Health and Safety Act in 1969. Other legislation includes the National Environment Protection Act (1969) and the Occupational Safety and Health Act (OSHA) in 1970, which were enacted in the USA due to various efforts from different stakeholders including activists. Britain passed the Workmen Compensation Acts for occupational injuries and diseases earlier, in 1897.

The field of occupational health has a long history. Notable examples include Hypocrates writing in around 400 BC on the relationship between the environment and health. In 1700 AD, Bernardino Ramazzin (named as a father of Occupational Medicine) published his work on the Diseases of Workers [De Morbis Artificum Diatriba] based on his experiences as a physician where he visited several workplaces, observing of worker activities and discussing with them their health. During and especially, following, the industrial revolution (ca. 1760-1840), Occupational Health and Safety as a discipline advanced as challenges were identified that needed solutions. For example, an American toxicologist (Annie Hamilton) studied the impact of industrial metals and chemical compounds on workers and published on industrial poisoning in the USA in 1925 and 1934.

In the case of Tanzania, a developing country in Africa, the Occupational Health and Safety law was enacted in 1950s as Factories ordinances Cap.297 of 1950. This law provided health and safety standards for employees in the agricultural sector but did not cover workers employed in other sectors. This law governed health and safety standards in the country until 2003 where the new Occupational Health and Safety Act no. 5 (2003) was enacted. The Tanzanian Occupational Safety and Health Authority (OSHA) is responsible for ensuring that the provisions of this law are carried out protecting workers against potential workplace hazards that could cause occupational diseases and injuries. Since then, other legislation has included issues pertaining to safeguarding the health of workers. Such laws include the Atomic Energy Act of 2003, the Public Health Act, 2009, the Mining Act of 2010 and the Employment and Labour Relation Act of 2004. A further initiative was the establishment. The Workers

Compensation Act- cap. 263 revised in 2015 and the establishment of the Workers Compensation Fund (WCF). The purpose of the latter is to provide for adequate and equitable compensation for employees who suffer occupational injuries or who contract occupational diseases arising out of and in the course of their employment and in case of death, for their dependents.

2.2 Fundamental Concepts in Occupational Health and Safety

The following are the basic principles of Occupational Health and Safety as stipulated by ILO:- (i)All workers have right to a decent working condition and environment (ii) Occupational safety and health policies must be established (iii) A national system for occupational safety and health must be established (iv) A national programme for occupational safety and health must be formulated (v) Social partners i.e., employers and workers and other stakeholders must be consulted in occupational health and safety activities (vi) Occupational safety and health programmes and policies must aim at both prevention and protection (vii) Continuous improvement and evaluation of occupational safety and health practices must be promoted (viii) Adequate dissemination of information is vital for the development and implementation of effective programmes and policies (ix) Health promotion is a central element of occupational health practice (x) Occupational health services covering all workers should be established (xi) Compensation, rehabilitation and curative services must be made available to workers who suffer occupational injuries, accidents and work related diseases (xii) Education and training are vital components of safe, healthy working environments (xiii) Workers, employers and competent authorities have certain responsibilities, duties and obligations, and (xiv) Policies must be enforced.

2.2.1 Occupational Health and Safety as a Multidisciplinary Approach

The prevention and control of workplace hazards is, first and foremost, everyone's job. Optimal workplace design, implementation and evaluation of effective occupational health and safety programmes require multidisciplinary approaches and the involvement of every person from managerial levels to employees. It requires, among other things, substantial knowledge and skills in the field. Because there are always new challenges and new technological developments, people working in this area need to continuously update their knowledge and skills.

People involved in occupational health personnel include representatives from a multidisciplinary group of trained or qualified persons that work to provide occupational health services in hospitals, industries, companies and other occupations. They do, among other tasks, exposure and or risk assessment of the workplaces and provide information about preventive measures. This group of professionals includes a great diversity of occupational health providers such as occupational hygienists, physicians, nurses, ergonomists, toxicologists, lawyers, economists, physiotherapists, and safety engineers and specialists. Occupational health personnel provide a wide range of services in collaboration with other experienced people in recognizing, preventing, controlling, and treating occupational injuries and diseases.

Health personnel, for instance physicians, nurses and laboratory personnel, provide basic services for patients. It is important

that occupational health knowledge is included in the training of this group of professionals as they are expected to provide proper health care to workers including treatment and care for injuries and illnesses or diseases resulting from occupational exposures. They need to be able to provide proper personal and occupational history as well as a correct diagnosis to ensure optimal treatment. Lack of sufficient occupational health knowledge may lead to misdiagnosis.

There should be an official system to oversee and regulate workers welfare (while at work). Labour inspectorates provide this service. In some countries Occupational Safety and Health Authorities (OSHA) exist. They work to improve and sustain decent workplaces without jeopardising productivity. In any organised workplace, it is important to have a well functioning safety and health committee. The role of this committee is to help in the interpretation of policies, guidelines and regulations into implementable terms, as well as raising awareness of safety and health issues. Such committees are involved in designing safety and health plans to improve working environments. A safety and health committee should include (apart from elected employees) a safety manager, a representative from managerial positions, a union representative, plus occupational safety and health personnels (physicians, nurses, hygienist e.t.c).

Various stakeholders such as Trade Unions, Civil Society Organisations, local and international organisations and policy makers should also be involved in the establishment, improvement, and maintenance of decent workplaces. These organisations often initiate, make or amend policies, legislations and guidelines. When they have good knowledge of occupational health and safety issues, they are likely to provide good guidance and suggest good actions to safeguard workplaces.

2.2.2 The Occupational Health and Safety Framework in Tanzania

The Occupational Health and Safety (OHS) in Tanzania is influenced by the provisions of the Occupational Health and Safety (OHS) Act No. 5 of 2003, Regulations, the tripartite, OHS services, OHS training and workplace OHS management systems. Each of the forenamed factors has a unique role in influencing OHS practice in the country.

The Occupational Health and Safety Act No. 5 of 2003 and Regulations

Overall, Tanzanian OHS practices emerge from the Occupational Health and Safety Act No. 5 of 2003 that provides legal basis for standard OHS practice in the country. The Act recognises the tripartite interaction of the government, employers and employers' association and employees and employees' trade unions in managing labour matters. The Act has assigned specific roles and responsibilities to each member of the tripartite in promoting and enforcing compliance with good OHS practices.

Tripartite Members

The Ministerial Advisory Board (MAB) is the top OHS governing body comprising representatives from the government, employers' associations, and trade unions on behalf of employees. The MAB also has members from higher learning institutions and the labour commissioners' office. Representing the government, the Occupational Safety and Health Authority (OSHA) under the Chief inspector is charged with the responsibility for overseeing the implementation of the OHS laws and policies on behalf of the government. The agency is the primary

OHS enforcing and promoting institution, it develops, implements, monitors, evaluates, and reviews guidelines and procedures for compliance with the requirements of the OHS Act and Regulation. The agency monitors OHS compliance at workplaces through establishment of minimum compliance requirements and offering compulsory OHS services; statutory OHS inspections, occupational medical examinations and key OHS training directly to workplaces and issues a twelve month compliance licence to qualified workplaces. On the other hand, employers as workplace owners are obliged to ensure that their workplaces comply with the requirements of the OHS Act and Regulations by managing all workplace OHS matters including the funding of various OHS initiatives. Moreover, employees are required to comply with established workplace specific OHS practices thereby ensuring adequate protection of themselves and their co-workers.

Occupational Health and Safety Services

Occupational health and safety services offered to workers in Tanzania can be compulsory or voluntary. Compulsory services are linked directly to the OHS compliance licence and are offered by the OSHA or providers authorised by the Chief Inspector, while voluntary OHS services are provided and monitored by the individual workplaces in addition to compulsory services. Voluntary services such as OHS training, medical examinations, occupational hygiene measurements and ergonomic assessment are offered by private providers as per the specific professions and OHS relevancy to workplaces and the workplace needs. Apart from the fore mentioned providers of OHS services at workplaces; specific governmental authorities such as the Workers Compensation Fund (WCF), Tanzania Pesticides Research Institute (TPRI), Government Chemists Laboratory Authority (GCLA), National Environmental Management Commission (NEMC), Tanzania Atomic Energy Commission (TAEC), and Fire brigade have specific roles are per their statutory obligations which have direct impact on OHS practice and wellbeing of the working community. For instance, TPRI is responsible for ensuring proper use of pesticides and the well-being of those using the pesticides, thus reducing adverse effects of pesticides exposure. NEMC enforces environmental well being such as proper disposal of harmful waste products produced at workplaces.

Occupational Health and Safety Training

Occupational health and safety training offered in Tanzania comprises long-term and short-term programmes. Long-term programmes are offered by higher learning institutions such as the Muhimbili University of Health and Allied Sciences (MUHAS) in particular, whereas short-term courses are offered mainly by the OSHA and independent private providers. OHS courses offered by the OSHA include Industrial First Aid Training (IFAT) and Safety and Health representatives' courses (SHE-REP) as part of compulsory requirements for OHS compliance licence. Other courses offered by the OSHA are National Occupational Safety and Health Courses I & II (NOSHC I & II), working at height, OHS risk assessment, safe use of chemicals at work, OHS for oil and gas, OHS in construction industry, OHS for human resource officers/managers, safe boiler operations, accident prevention and investigation and safety of lifting appliances. Voluntary OHS training programmes are workplace-based and are provided as per an individual workplace's requirements.

Workplace Occupational Health and Safety Management

The workplaces are required to have a system in place for managing OHS matters. The OHS Act No. 5 of 2003 requires workplaces to have a Registration certificate, OHS policy, OHS risk assessment, OHS representatives, a well composed and active OHS committee, emergency services, especially first aid, and emergency evacuation and transport of casualties, and minimum OHS services.

2.3 Occupational Hazards

A hazard is anything that has the potential to cause harm to the health or safety of a person. The hazards to health which we find at workplaces are called occupational hazards. It could be equipment (e.g., machinery and tools), dangerous substances (e.g., dust, micro-organisms, chemicals, pesticides, noise), poor workplace layouts or poor work organisation . Not all hazards are present at every workplace, as the type of hazard differs according to the type of work performed. Here we will give a short description of some different occupational hazards we may see at workplaces in Tanzania. If we know about such hazards and their harmful effects , we are able to prevent the hazards from having their adverse health effects.

2b: Noise is a huge problem on industrial worksites. Ear plugs can be great for prevention of hearing loss due to noise (Photo: F. Ims).

2.3.1 Physical Hazards

A physical hazard is an agent or factor that can cause harm through its contact with a worker. Common physical hazards at work are noise, vibration, ergonomic factors, radiation, heat and cold stress:

Noise at workplaces is often defined as unwanted sound. High levels of noise may cause reduced hearing abilities. Among all the physical factors at work, noise is probably the factor that affects the highest number of workers. Every year millions of workers worldwide develop

hearing loss due to noise. This may lead to major communication problems and social isolation, and is a serious problem. The health problems related to high noise levels at work are mainly experienced in occupations where machinery and equipment are used that operate at high sound intensities. However, high noise levels may also occur in other workplaces, such as transport and agriculture. In Tanzania, there are few studies of noise at workplaces, but we have, for instance, documented harmful noise levels in the iron & steel industry. The adverse effects of high noise levels can be prevented by good technical solutions reducing the noise levels, by isolation of the source of the noise and by providing personal protective equipment such as earmuffs to the workers.

Vibration is a factor that often coexists with high noise levels at workplaces. Exposure to vibration may occur when using hand-held instruments and equipment. A typical example is drilling during construction work or mining. This exposure may cause health problems in the hands and arms of the worker. Also, workers may be exposed to whole body vibration at some workplaces, for instance while sitting on vibrating vehicles. This may cause serious low back pain.

Ergonomic factors at work cause wear and tear of the body of the worker and can also cause injuries. Examples are repetition, awkward postures, and strenuous work. If the worker experiences a very strenuous work situation, he or she may develop pain in the musculoskeletal system. This can be prevented by for instance better time plans, better plans for the load of work performed; both technical help, help from others and regular breaks.

Radiation exposure is another example of a physical factor in the workplace that may affect health. There are many types of radiation. Ionising radiation, best known as X-rays, is one example. X-rays are typically used for diagnostic purposes. While the radiation exposure dose is minimal for the patient examined, the situation is different for health personnel working with this type of equipment every day. Without protection such health personnel may develop serious health effects, such as cancer, from their longer-term exposure to X-rays.

Climate issues may also affect the health of the workers in a negative way. In Tanzania, large numbers of workers perform their tasks outdoors in areas where the sun is shining, and the temperatures rise to very high levels. These workers may develop heat stress. We need to know how to avoid hot working environments, as well as how to provide workers with sufficient rest and water supplies. Very cold temperatures may also cause serious health problems, for instance in storage areas for frozen food. Proper clothing is essential at such workplaces.

2c: Several new industries in Tanzania cause exposure to chemicals. This is from a small plastic recycling factory, producing plastic covers (Photo: B.E. Moen).

2.3.2 Chemical Hazards

Exposure to chemical factors at work may lead to serious diseases, such as acute intoxication that may lead to death. Chemical exposure may also cause chronic conditions such as cancer and lung diseases. Exposure to chemical factors may occur in many industrial settings, but also in agriculture. In both industry and agriculture, many different chemicals are used, and the workers may become exposed by inhalation of gas and vapour from the chemicals as well as by skin exposure. Skin exposure may cause absorption of the chemicals into the blood where they can then be transported to the rest of the body. The different chemicals have different health effects, and these health effects are also dependent on the concentration of the chemical in the environment. Rules and regulations related to use of chemical agents are important to reduce the risk of adverse health effects. In addition, training and information of employers and employees is very important to be able to prevent adverse health effects from chemicals. Examples of chemical hazards are:

Pesticides, which is a large group of chemicals used in agriculture. The pesticides are sprayed on crops in agricultural areas to avoid pests on the production. However, at the same time when the crops are exposed to the pesticides, the workers may be exposed to these chemical factors as well. Very serious intoxications may occur due to the pesticides .

Lead, in its inorganic form may affect several body systems and give serious acute intoxications by inhalation of high concentrations of lead fumes. This metal is stored in the skeleton of the body

and may cause anaemia and nerve paralysis. Lead exposure can, for instance, occur in metal foundries and smelters, in battery factories, and during manufacturing of glass and ceramics.

Mercury, and other inorganic compounds are used as a catalyst in many chemical industries, during manufacture of pesticides and in special types of paints. In Tanzania, mercury is used among small-scale miners for gold recovery by amalgamation (4). Mercury may cause serious disorders in the nervous system and kidney failure.

2.3.3 Safety Hazards

The safety of workers should be a key concern for all employers and supervisors. We need to prevent accidents and injuries of the workers. It is important to provide training and information about every job task, as well as to provide good tools and good routines for the work. The International Labour Organization (ILO) suggests that almost two million people a year die from work-related causes each year and estimates that there are almost 360 million nonfatal work-related injuries in the world every year (5). This number is high and unacceptable since such deaths and injuries are preventable!

Important safety hazards are:

Heights: Many workplaces have professionals who work several metres or more in the air. Even small heights can be dangerous in certain situations. Using proper safety equipment, such as harnesses, is a must, and so is training for every person working at a height. Scaffolds at building sites need to be safe and inspected both before use as well as regularly during the work. Many fall accidents occur due to unsafe scaffolds, causing death or other serious injuries of workers.

Slips, trips, and falls: Even if you aren't working at height, slipping and falling – or tripping over an object left on the ground – can lead to serious injuries. It's vital for everyone on a job site to collaborate and ensure every area is kept tidy, with little to no debris on the ground that could trip someone up.

Electrical hazards: When working with electrical wires, there's a risk of electrical shocks. Even low voltage shocks can be very dangerous and training for how to deal with them and to prevent them is vital.

Improper use of tools: Mistakes during use of equipment may cause serious injuries, like cuts and burns. Training and certification is important to avoid these kinds of accidents.

Collisions: During transport on the road as well as in industrial or agricultural areas, vehicles may collide with the workers. Training and certification in use of vehicles is crucial for avoiding such accidents and serious injuries.

2d: Sisal production is important for Tanzania. However, cutting the sisal might be related to cuts also of the worker. He has a risk of occupational injuries when he works without personal protective equipment (Photo: B.E. Moen).

2.3.4 Biological Hazards

Exposure to biological factors may occur at many workplaces. The biological agents may cause a variety of health effects in humans, such as infectious diseases, acute toxic effects, allergies and even cancer. Several occupations are at risk for biological hazards:

Health personnel are the largest occupational group at risk of developing infectious diseases, as some of them have close contact with patients with infections. The COVID-19 pandemic we see in 2021 is an example of how the risk might be rather huge for health personnel. High quality personal protective equipment including clothing, gloves and face shields are important to prevent infections among health personnel. Proper hand hygiene and vaccination are essential parts of preventive work for these health risks..

Another occupational group at risk for infections are workers in waste disposal facilities. These workers can easily encounter materials contaminated by body fluids, cut themselves or be stuck by a needle. This way they might be exposed to biological factors, resulting in diseases such as hepatitis B, hepatitis C and HIV. Good routines on how the waste is handled are important, as well as using proper personal protective equipment.

Farmers are also exposed to different biological factors at work. They might be exposed to dust from hay and different crops, as well as from animals. They are at risk of developing both allergic and non-allergic respiratory diseases due to their exposure to such factors. The work routines and methods of handling their animals and crops are important for reducing dust exposure.

Veterinarians are an example of another occupation who work closely with animals and may become exposed to biological

factors during their work. Infectious agents and different types of dust might cause health problems. This occupational group also needs vaccines and personal protective equipment.

2.4 Promotion of Safe Workplace Environment

As outlined above, there are many risk factors present in the working life. How can we prevent these risk factors from causing serious health problems among the workers? This is an important question, as we want to obtain a safe workplace environment for all workers. In the UN's Universal Declaration of Human Rights, Article 23, it is written that "Everyone has the right to just and favourable conditions of work". We need to do the right things to achieve just and favourable conditions at all workplaces.

It is very important to have relevant legislation on work and health in a country. Tanzania developed a Work Environment Act many years ago, and this provides a good foundation for this activity. However, while this act provides a framework, it needs to be further developed, along with policy documents for the implementation of health and safety guidelines in workplaces. It is necessary to teach and inform stakeholders and politicians in the country about the problems related to work and health, so they are able to develop more detailed laws and regulations. It is also important to provide sufficient resources for the functioning of the Occupational Safety and Health Authority, OSHA, which is a governmental agency to promote safety and health at workplaces in Tanzania.

It is important to provide high level education in occupational safety and health in the country, so sufficient training on these issues can be obtained by people both in governmental bodies as well as in private industrial settings. High competency in occupational health is also needed to be able to teach health personnel in different settings. Specific occupational health personnel are needed for work in and with industries, but it is also necessary that all physicians in a country have knowledge about occupational health. They need this knowledge to make correct diagnoses of workers who have developed occupational diseases. Also, reports and feedback to the government on the size and frequency of occupational health problems in different occupations and settings are very much needed to enable governing bodies to make appropriate prioritizations and decisions on behalf of the society – and, ultimately, to make working life better. It is also necessary to educate managers and employees in occupational health. Managers and employees are partners in a system of interrelationships, although they have different roles and actions in ensuring health and safety of the workplace. Managers have the main responsibility for making and keeping the workplace safe. The employees also have a responsibility to participate in routines and protocols that ensure their own health and safety in the workplace. Worker's Unions may also be important in the settings at the workplaces. The Unions often have a strong voice that can communicate on behalf of larger groups of workers.

Summarising, therefore, all parts of the working life and governmental bodies are needed for building safe workplace environments. 'Commitment is needed and engagement in the area will benefit the whole country; socially as well as economically.

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3 Occupational Risk Assessment, Management and Risk Communication

Israel P. Nyarubeli and Alexander M. Tungu

This chapter introduces the concept of occupational risk assessment. It introduces readers to the simplified steps for conducting a workplace risk assessment with a brief and summarised example in a tabular form. The important hierarchical measures for risk controls are shown. Finally the concepts of occupational risk management and risk communication are introduced as parts of the occupational health and safety management system.

3.0 Introduction

Risk assessment is an important process to be undertaken at any workplace. It aims to (i) identify existing workplace hazards, and (ii) quantify the risk of a specific exposure to workers' health or a working population. In so doing, we can estimate the magnitude and frequency of the risk pertinent to specific hazardous exposure. This is necessary for (i) designing effective prevention and control measures for potential incidents of workplace accidents, injuries, illnesses and or diseases to be established (ii) yields important information to be used as workplace educational, monitoring and surveillance tool [medical surveillance, physical and biological monitoring] (iii) facilitate decision makers to make appropriate and informed decisions regarding control of health hazards arising out of work, working systems, job tasks or activities in the working environment, and (iv) shows transparency and accountability to the health working environment and human rights. It is therefore a systematic undertaking that is intended to yield solutions that may help business owners, managers, regulators and whoever involved, in making informed decisions in control, eliminating, and mitigating hazards. In some cases, it provides a copying mechanism towards certain workplace exposures inherent to, for example, working tools, systems, and machines.

In a nutshell, occupational risk assessment is re-examination of all aspects of work and work process, in order to determine and quantify the hazards that can inflict injury, illness, disease or injury at workplace, with the goal eliminating or reducing them, or if possible, to introduce as much as reasonable, precautionary and protection measures with which the risk will be removed, reduced or controlled.

It is challenging to have a generalised and stepwise guide and method for occupational risk assessment. This is because of variability in complexity and volume of the workplace environment ranging from small, medium, and large size organisations. Furthermore, several organisations and agencies such as WHO, European Union and United states

agencies have in place existing guidelines and methods on how to conduct risk assessments for specific substances or agents like chemical substances. However, there is at least a consensus of the general principles that has to be undertaken for fulfilment of occupational risk assessment.

3a: In this work environment workers are exposed to hot items. A proper risk assessment is important to be able to provide the workers with protection from heat; for instance gloves, clothing and shoes (Photo: G.Tjalvin).

Before embarking on the actual risk assessment, preliminary steps are necessary to be undertaken to establish the process gateway. These steps may involve: -

a) **Assemble a risk assessment team**: Risk assessment is a multidisciplinary process that involves multiple stakeholders. It is therefore wise to have a team with varied professionals and experiences including the affected parties depending on the scope of work.

b) **Determine or plan risk assessment objective**: A team intended for carrying out a particular risk assessment at any workplace, should plan how to conduct and accomplish the process sufficiently. Objectives, scope and methods (the how?) need to be clearly laid down. Furthermore, it is wise to establish the existence of appropriate institutional and legal framework; international or national standards, guidelines, determined levels of exposure or concentration limits and other necessary documents.

c) **Stakeholder consultation**: every affected party in the risk assessment process should be involved and their concerns be outlined and included. This may include workers' representatives (possibly health and safety), supervisors, managers, trade unions, among others.

International Labour Organisation (ILO) has developed a generalised but simple and easy to use guide for conducting a workplace risk assessment [2]. This guide is best suitable when the team is done with the above-mentioned stage. It follows then that, after accomplishment of the initial stage, a team is obliged to conduct:

Step 1: Hazard anticipation or identification in which information or data regarding workplace organisation, plant layout, equipment and tools, work processes, job tasks, or activities are gathered for discussion and review of their hazardous potentials and likely frequency and or degree of risk related to each hazard. In this process, technical knowledge coupled with experience are essential. A clear description of how tasks or jobs are performed throughout the production processes as well as workers assignment and time is necessary. In addition, a desk review of previous reports (if any) of task or job-related accidents, near misses, injuries and illnesses need to be taken into consideration. It is wise to use a prepared checklist then to guide through the whole process of risk assessment.

Factors in the work environment that include for example physical agents [noise, vibration, lighting, electromagnetic field, heat or extreme cold], chemical agents [dust, fibres, fumes, vapours, gases], biological agents [bacteria, vectors, fungi], psychosocial factors [workload, conflict, work organisation, stress, burnout], and ergonomic factors [repetitive motion, work at height, lifting, working/standing/sitting posture, stretching, slippery floors] need to be careful studied and documented.

Method to be used may involve but not limited to:- (i) a walk through survey in all areas of the work environment, (ii) observe and describe work, job processes including manufacturers or suppliers' instructions for tools, plants, devices and equipment or material safety data sheets for substances such as chemicals (iii) study careful on presence of warning signs or labels (iv) read available reports, accident or ill health statistics, and audits (v) identify and list hazards, and (vi) familiarise about short and long term health and safety hazards.

Step 2: Identify who might be harmed and how. This involves identifying a group of workers including the public such as those collecting finished products, clients or those supplying raw materials and food to the organisation *etc.* who are at risk of exposure to identified hazards, how they are at risk and the likelihood of being affected. In this step, establishment of health and safety consequences for each identified hazard is necessary. This is so important in ascertaining hazard precautions and control measures.

Conduct **exposure assessment** in which estimation of concentrations or doses to which workers and other groups are or may be directly or indirectly exposed to identified hazards including those who are indirectly affected via the environment. Identify potential health effects that may range from for example, acute, chronic, irritation, sensitization, corrosiveness, effects to reproduction, mutagenicity, carcinogenicity. Carefully conduct a min study or measure exposure levels of identified substances (if possible) and document results for further use.

Note: Consider vulnerable groups of special concerns such as people with disabilities, new or young employees, expectant mothers, etc.

Conduct **risk characterization** where estimation of the incidence and severity of the adverse effects likely to occur in an identified group of workers or public due to actual or predicted exposure to hazard and may include risk estimation (quantification of probability of the occurrence of the hazard and the severity of the harm). This step involves determination of the interrelation among all gathered information, data and results obtained from earlier steps.

Step 3: Evaluate the risk- what can be done to control the risk

Two main questions need to be addressed in this step. The first question is '*what is the existing control measure*' and the second question is '*what further action(s) is/are necessary to improve the existing situation*'

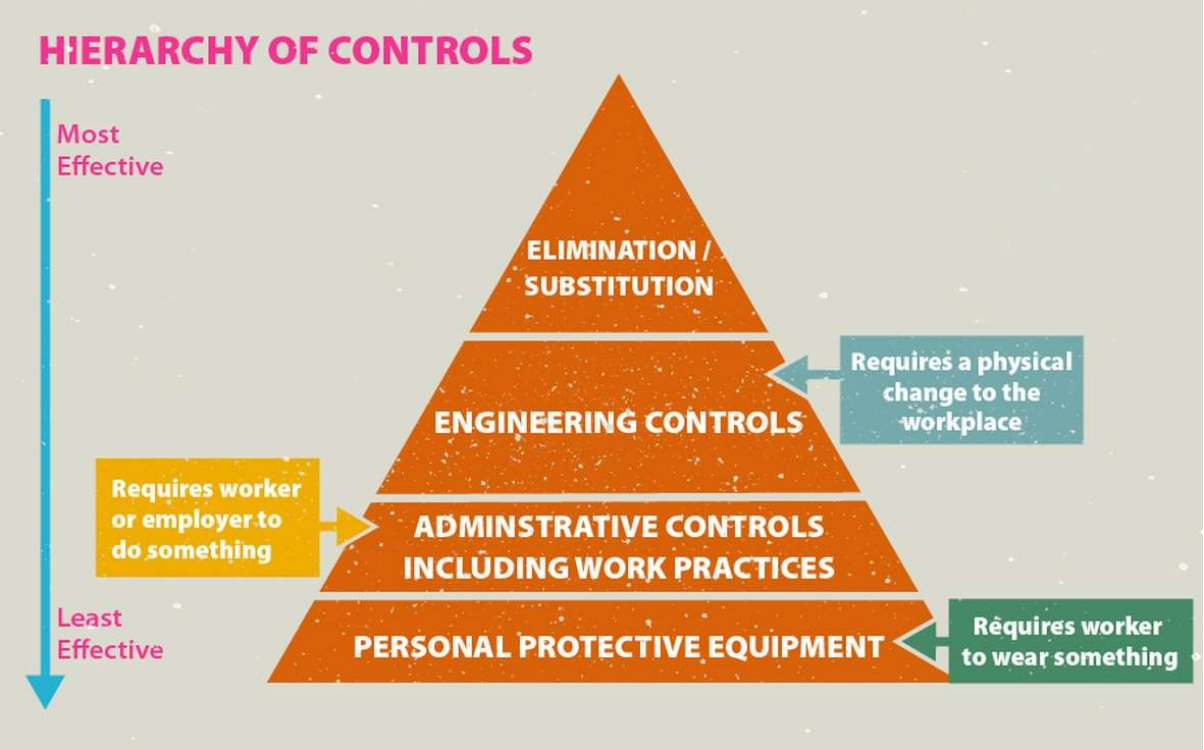
In addressing the first question, for each identified hazard, there might be control measures in place. In this case, establish and evaluate the effectiveness of the existing control measures and rate this against the standard or good practice. Identify if there is a need for further risk control measures that are feasible, efficient, and cost effective. Cost benefit analysis might be needed to guide the opinion.

For the second question, if in the process of risk assessment, it is decided that the existing control measures are either absent or are ineffective to reduce the risk of harm, it will now be a duty of the team to establish and propose the optimal risk control measures. In conducting this exercise, hierarchy for controls or along pathways (source, path, and receiver model) should be used as a guide.

3.1 Hierarchy of Control Measures

Establishing risk control measures for a particular hazard at the workplace may be problematic. Sometimes we are challenged with how to decide on the most practical and effective measures to be implemented. The use of a hierarchy **of risk controls measures model** simplifies the judgement. This model consists of a pyramid of staged orders or levels each of which may constitute a single or more options that may be combined or implemented separately. The pyramid is arranged to represent the most effective control measures at the top to the least measures at the bottom (fig 3d). It is always important to note that the overall goal is to prevent and control the occurrence of injuries, accidents, illnesses, or occupational diseases. Health or medical surveillance, at the bottom of the hierarchy, is meant to serve as a monitoring tool to ensure necessary actions are undertaken to prevent or protect workers from work-related illnesses or progression into chronic diseases. Such action may involve, -

- Annual medical screening for health conditions likely to be caused by exposure to hazardous or unavoidable working environment
- Annual lung function tests
- Audiometry for hearing screening
- Biological monitoring



3b: The hierarchy of control measures (Arjun Ahluwalia, UiB).

a. Elimination or substitution

This is considered to be the most effective measure. Elimination goals are to physically remove the hazard and thus no risk to workers. This is, in most cases, feasible for a new workplace that was well designed before the installation of machine, equipment and working tools.

Examples: -

- Introduce a new working protocol to get rid of harmful chemicals and materials in the laboratory.
- Avoid using harmful pesticides by practising organic farming.
- Avoid tasks that involve direct impact between metal surfaces.

When elimination is not feasible, substitution becomes the next best option i.e., implementation actions that can effectively reduce the risk of exposure to workplace hazards to as minimal or zero as possible.

Examples: -

- Substitute the use of hazardous substances to a less hazardous one. For example, use of water-based paint instead of solvent-based paint.
- Replace a noisy machine with a quieter one.

b. Engineering controls

This is the application or use of available knowledge, technology, equipment, tools and engineering means or making changes to processes to reduce the risk of exposure from the hazard identified. In trying to reduce noise exposure at the workplace for example, it may involve introducing barriers, enclosure, guarding and shielding, screens, ventilation, and absorbents.

Some engineering controls: -

- Use conveyor belts rather than rollers
- Avoid metal to metal contact by using plastic bumpers
- Enclosure (fitting noisy machines with soundproof enclosure)
- Putting handrail around a high work platform
- Install dust extracting system such as local exhaust ventilation

c. **Administrative controls including work practices** involve looking at the organisation at large. It requires that workers and employers cooperate in achieving a safe and healthy working environment. Activities include development of policies, regulations, guidelines, standard operating procedures, re-organizing tasks, processes, and work practices geared at reducing risk of exposure to identified hazards to workers. It may also involve establishing training needs in consultation with employers and other stakeholders. Administrative actions are for example, -

- Prepare suitable health and safety information sheets for some work processes including for example, demarcating working areas according to hazard levels such as noise zoning
- Conduct on job training (continuous education including for example, toolbox meetings) on critical areas of interest
- Conduct Job hazard analysis beforehand
- Create job rotation roaster and control time that workers should work on hazardous processes
- Introducing short breaks between tasks or processes
- Emphasise on good housekeeping practices
- Implement environmental health and sanitation programme at workplace (use of clean and safe drinking water, adequate sanitary facilities)
- Install and educate on hazard signs and posters
- Install first aid kits in strategic areas and train key personnel on the appropriate use.

d. Personal protective equipment (PPE)

This is regarded as a last resort because it mostly prevents individual workers from the risk of exposure to a particular hazard in time. Regrettably, in many cases and in limited resources, the practical use of PPE is taken as the first and foremost option in the risk control measures[3]. On the other hand, lack of appropriate knowledge on type of PPE for a specific hazard and inadequate knowledge on the use together with other limiting factors such as weather and comfortability challenge the effectiveness of many available commercial PPE[4]. There is a wide range of information of various types of PPE for each type of hazard, so it is wise to consult credible sources including careful reading manufacturer information and instructions for proper use.

Personal protection equipment mostly used in many workplaces include, footwear (safety boots), hearing protection devices (earplugs, earmuffs, ear cups, moulds), safety helmets, gloves

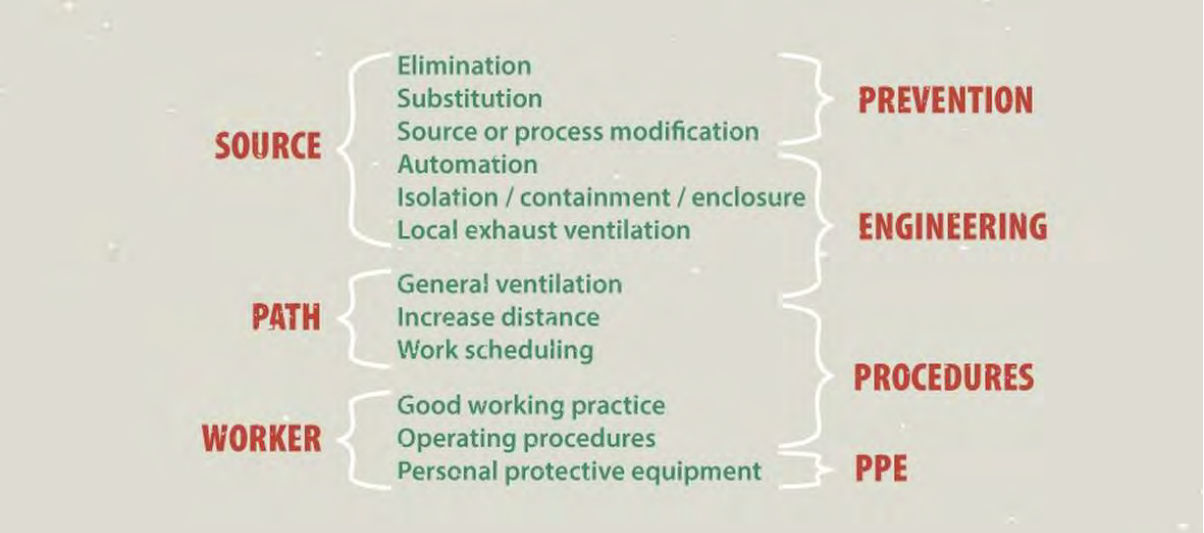
(nitrile rubber, neoprene, latex, butyl rubber, leather, coated fabric, cotton), dust masks, respirators (air purifying, combined purifiers), wet or cold weather clothing, eye protection (googles), coveralls.

3c: These workers are protected from inhaling chemicals from paint production, as a proper risk assessment has been performed. They have been provided with respiratory protective equipment (Photo: G. Tjalvin).

3d: Here, a risk assessment should be done. The feet of this worker are not much protected, and he might experience foot injuries (Photo: B.E. Moen).

3.2 The Source, Path, and Receiver Model

Risk control measures can be explained by grouping options to reduce risks at workplaces by following the trajectory of hazard or process flow. This is referred to as source, path, and receiver model. This model puts much emphasis on the control of hazards at the source, then along the path (where necessary means such as technology, engineering options are highly required) and lastly, if all measures are ineffective or not feasible by any means, then control at the receiver or worker may be necessary (fig. 3e). Logically, a similar hierarchy of risk control measures is explained using this model.



3e: The source and path of exposure and exposure control (Arjun Ahluwalia, UiB).

Generally, learning through the hierarchy of risk control measures at workplaces, there are many cases where the practical application of what seems to be the single effective control measure proves unsatisfactory results due to many factors including variability in working conditions, human error during operation and system failure just to mention a few. Therefore, it is always wise to consider using a simple, yet effective combination of options segregated into different hierarchical order of risk control (from elimination to personal protective equipment) to appropriately eliminate or reduce the risk at the workplace.

Step 4: Record who is responsible for implementing which control measure with the relevant timeframe

In this step, the team will have already identified and listed down the various risk control measures for each identified hazard. The task, then, will be to evaluate the risk, organise and prioritise the effective actions to be taken in eliminating or reducing the risk to as minimum as possible. In so doing, different actors within an organisation or the workplace will be assigned responsibilities as well as allocate time frames for its accomplishment. This exercise requires a good understanding of available resources to accomplish each proposed action. It may be good practice to group proposed actions into: -

(i) immediate or short-term actions (need to be simple and require as low resource as possible for easy improvement),

(ii) medium- term actions or solutions (reliable solutions that can be sustained), and

(iii) long-term solutions (targeting risks with potential to high impact consequences such as illnesses or occupational diseases and those require more training arrangements).

(iv) Monitoring and evaluation of the proposed solutions for sustainability and health and safety culture building at the organisation level.

The team needs to consider answers to the following concerns when evaluating the risk at the workplace and prioritising actions. First and foremost, given the existing situation at the workplace including available control measures, '*How likely is a situation that may cause an event (accident or illness) to occur*' and how frequent this may be. Analysis of underlying process, work, or task-related factors such as slippery floor, unguided machine, dim light, is vital. The probability for occurrence of accidents due to hazardous exposure can be categorised as; - (i) very unlikely (low probability), (ii) likely (moderate probability), and very likely (high probability).

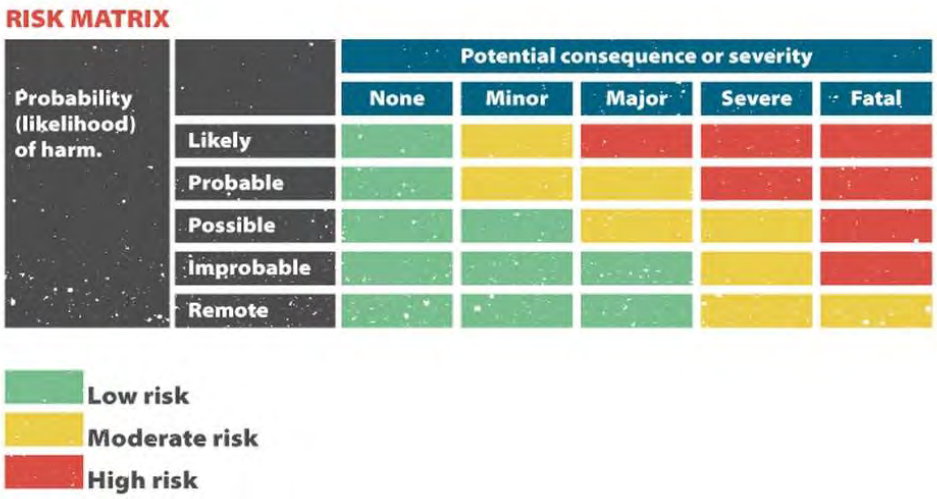
Secondly, *what are the consequences of the accident likely to be?* Possible outcomes for workplace accidents may range from; (i) insignificant consequences or no injury at all, (ii) light injury, (iii) severe injury, acute poisoning, or chronic disease, (iv) death.

Thirdly, *what is the scale or degree of the risk?* i.e., how many workers or the public, processes, machines, tools, and tasks would be impacted by the incidence?

To accomplish the risk evaluation process, a simple tool is needed to simplify the decision-making process. A simple **risk matrix** is commonly used.

3.3 Risk Matrix

A risk matrix is a decision-making tool designed for quantitatively evaluating the degree of risk in order to prioritise hazard control actions to be implemented. This is computed in a matrix form with the likelihood of harm (columns) versus potential of severity of that harm (rows) as shown in fig. 3 f. This tool can be as simple as 3x3 or can be more complex depending on the level of the organisation and complexity of the situation or work environment.



3f: Risk assessment (Arjun Ahluwalia, UiB).

A. Likelihood of an event

1) Low probability (very unlikely): not expected to occur during working period
2) Probable (likely): It can occur several times during the working lifetime
3) Highly probable (very likely): It can occur repetitively during the working lifetime

B. Potential consequences

1) **Low severity**: injuries or diseases that do not cause long term health effects or disabilities (headache, eye irritation, skin rashes). This might need only minor first aid attention. On many occasions it does not keep a worker off duty for a couple of days, if any at all.
2) **Moderate severity**: injuries or diseases that cause moderate and sometimes periodically health problems or disabilities (simple fractures, burns of second degree to a limited part of body, allergies, wounds). The incident may keep a victim off work for a substantial period.
3) **High severity**: injuries or diseases that cause severe and permanent health problems or death (amputations, noise-induced hearing loss, cancer, burns of third degree covering large parts of the body).

Step 5: Record the findings, monitor, and review the risk assessment, and update when necessary.

The final step for the risk assessment requires that efforts should be made to monitor the effectiveness of proposed actions through for example work inspections, reports and feedback from stakeholders including workers themselves or health and safety committee. Review of the risk assessment may be required at any time when there are any changes in machinery, tools, processes, or tasks OR be scheduled to be conducted after intervals, say after each year or as it may be specified or required by governing/regulatory organs.

A summarised example of risk assessment conducted by a manager of MWIKWABI cleaning company following the above outlined steps is shown in Table 3.1.

Company: ***MWIKWABI Cleaning Company*** **Section:** *General office cleaning* **Date:** 25.01.2022

STEP 1	**STEP 2**	**STEP 3**		**STEP 4**		
What are the hazards?	**Who may be harmed and how?**	**What is the existing control measure?**	**What further action is necessary?**	**Who needs to carry out the action?**	**When is the action needed to be done?**	**Done**
Manual handling (lifting and moving heavy objects, awkward posture)	Cleaners at risk for Musculoskeletal disorders (low back pain), injuries from handling or moving heavy objects eg. Waste bags, moving furniture, cleaning equipment	- Cleaners do not overfill waste bags - Trolleys are available for moving heavy waste bags	- Provide training on how to lift waste bags properly - Provide adjustable mopping system	Manager	01/02/2022	28/02/2022
Slips, trips and falls	Cleaners and others risk injuries such as fractures and bruising if they trip over objects, or slip-on spillages or wet floors and fall	- Client company instructs all staff to keep floor dry - Warning cones placed in a wet floor area - Good housekeeping	- Provide and train cleaners to wear sensible shoes, eg. Flat shoes with a good floor grip - Introduce two-mop system for cleaning hard floors (wet mopping followed by dry mopping)	Manager	15/02/2022	15/03/2022
Contact with bleach and other cleaning chemicals	Cleaners risk skin problems such as dermatitis and eye damage from direct contact with cleaning agents. Vapour from cleaning agent may	- Mops/brushes and protective gloves are provided and used - Cleaners wash rubber gloves after using them in a clean and dry place	- Replace irritant cleaning agents with available milder ones	Manager	01/02/2022	15/03/2022

	also cause breathing problems	- Cleaning agents are used according to safety data sheets - All cleaners are trained on how to safely use and store cleaning products and never transfer them to unmarked container	- Provide training on good practice i.e., wash hand gloves after use - Remind cleaners to report any health problems they think it may come from cleaning agents, and check for dry, red or itchy on their hands regularly	All cleaners	01/02/2022	21/02/2022
Work at height e.g., cleaning windows	Cleaners risk fractures and bruising if they fall from any height	- Use of appropriate equipment, eg, suitable ladder is provided and used - Instructions are available on how to re-position the ladder before cleaning another window - Ladders and stepladders only used for low level, short duration work (less than 30 minutes) - No standing on a chair while cleaning – A company policy	- No further action needed			
Cleaning machines (machines used to clean hard floors)	Cleaners risk injuries from improper use of machines, e.g., if it bucks and hit feet or ankles	- Cleaners are trained on how to use the machines safely - Right machines are provided for each job	- Remove faulty machines once detected - Improve reporting and feedback mechanisms	Manager	01/02/2022	01/05/2022

		- Schedule for regular maintenance of machines is available				
Electrical equipment	Cleaners risk shock injuries or burns from faulty electrical equipment	- Cleaners trained in basic electrical safety and do pre-use visual checks - Any faulty equipment is prompt taken out of use - Schedule for regular checks is available	- Provide standard operating procedure or checklist for pre- use visual checks	Manager	15/03/2022	30/03/2022
Fire	Cleaners risk fatal injuries from smoke inhalation or burns, if trapped.	- The company has conducted a separate risk assessment and taken necessary action	- Advise and train cleaners on emergency preparedness, including location of fire exits and assembly points	Manager	05/02/2022	10/03/2022
Lone working	Cleaners could suffer injury or ill health while working alone	- Cleaners sign in/out at the front desk. If they have not signed out by 3:30pm, security staff should look for them	- Advise cleaners on how to contact security staff or immediate supervisor in case of emergency	Manager	05/02/2022	01/05/2022
STEP 5: Risk Assessment review date: 25.01.2023 Assessment Completed by: Manager						

Table 3.1: Steps for risk assessment at MWIKWABI cleaning company.

3.4 Occupational Risk Management

Risk management is an essential to ensure safe and decent workplaces. It is a macro level for risk assessment as it deals with the organisation at large. It entails formulating and implementing actions necessary for mitigation, reduction, adaptation, or elimination of identified hazards in the risk assessment process. The process encompasses such other factors as socioeconomic, political, public/community concern, policies, legislations and regulations to conclude on a solution. In doing so, occupational risk management is considered as part of occupational health and safety (OH&S) management system.

A recent development in economy and technology has triggered an establishment of the International Standard Organization (ISO 45001) on Occupational health and safety management systems-requirements with guidance for use. In the context of risk management, incorporation of the ISO 45001 may help in the reduction of workplace incidents; minimising workers absenteeism and staff turnover which in turn may increase productivity; reduced cost of workers compensation premium; improve workers morale and build trust; improve legal compliance and hence reduce penalties; build health and safety culture at the workplace; improve commitments at various managerial levels[15].

Risk management deals with mainly two interconnected parameters each gives the feedback to the other. These parameters are (i) decision making process, and (ii) implementation of what has been justified as the best or effective solution(s), and (iii) evaluation of the implemented option(s). All these parameters involve using the gathered knowledge and understanding to technologically and scientifically arrive at the optimal and effective risk management option(s), implement the selected option to eliminate or mitigate the risk; control and monitor its performance, and evaluate its performance when implemented, and provide feedback.

3.5 Risk Communication

This is an interactive process that entails the exchange of information and opinions among interested parties about the control of risk identified or the intervention thereof. The main goal of the risk communication is to provide meaningful, reasonable, and actionable information to the affected parties i.e., the audience that may include workers, community or the general public. This may help in understanding an accepted risk management option(s). When conducted in a transparent and effective way, it builds confidence and trust among parties and this helps in making informed choices.

It is always wise in risk communication to:- (i) know the target audience, understanding their concerns, interest and feelings about the risk (ii) accommodate scientific expertise and the managers in explaining how a particular decision was reached (iii) use a credible source of information that is fair, trustworthy, has record of competence and does not have bias (iv) share accountabilities among parties such as workers management, trade union, government and other regulatory agencies(v) communicate timely and in a transparent manner.

Effective risk communication may consist of

i. Description of the risk including hazard analysis – nature, source, magnitude of the hazards; likelihood and distribution of exposure, affected workers, the public and vulnerable groups.

ii. Benefits of potential interventions for risk management options

iii. Uncertainties in risk assessment-approaches and methods for risk assessment with their *pros and cons*

iv. Potential risk management alternatives – feasibility for implementing changes, cost-benefit analysis for potential options with their justification.

3.5.1 The Role of Media in Risk Communication

Risk communication information transfer between parties is through the media. Existence of varieties of media with different policies may be a good channel in risk communication. There may be some instances where the media may interpret a message and become misunderstood by parties especially the public. Thus, guidance to effective risk communication is essential. Social amplification of risk framework, cultural theory and psychological theories may aid in accommodating the role of media in risk communication.

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4 Occupational Diseases and Injuries

Alexander M. Tungu, Dorothy Ngajilo, Israel P. Nyarubeli and Bente E. Moen

This chapter explains what occupational diseases and injuries are, how these expressions are defined. Some of the most common occupational diseases in Tanzania are described; musculoskeletal, respiratory, ear-nose- and throat, liver, renal, skin, eye and cancer diseases. How these diseases are diagnosed is described at the end, as well as duties on reporting occupational diseases.

4.0 Introduction to Occupational Diseases and Injuries

The ILO defines occupational disease as any disease contracted as a result of an exposure to risk factors arising from work activity. This basically means, for any particular disease to be qualified and or categorised as occupational disease, there should be a causal relationship between occupational exposure [physical, chemical, biological, and psychological factors that are present in the work environment acting singly or in combination or otherwise encountered in the course of employment] and a specific disease, and that the disease should occur in a higher frequency rate among the exposed group than in general population or in other working populations.

Human health is vital for social and economic development. A healthy workforce commands high productivity in a decent work environment. On the other hand, occurrences in high frequency of occupational diseases and injuries calls for establishment and implementation of workers compensation schemes that may affect an organisation in terms of paying high annual insurance premiums. This is essentially meant to ensure that the injured or diseased worker gets prompt but limited sustained benefits and to assign to the employer or organisation sure and predictable liability.

In many workplaces, especially developing countries, where conditions at workplaces are poor and unsafe for workers, the likelihood of occurrence of injuries and diseases is high. For example, development of asthma among weavers from exposure to organic dust contaminated with endotoxin, noise induced hearing loss due to long exposure to high sound levels, silicosis from exposure to silica dust among miners just to mention a few. Hence there is always a need for improvement and this is largely a preventive undertaking. Occupational diseases and injuries are preventable when preventive and risk control measures exist and effectively implemented.

4.1 Background

Occupational diseases have a long history. We will just highlight some few key events to remember:

- The Egyptian, Edwin Smith Papyrus – 1500 Century B.C, described back pain resulting from strain work.

- Hippocrates, in the third book of Epidemics – in 4th century B.C, described a case of severe lead colic in metal extraction workers[1]
- The Roman Scholar, Pliny- during the 1st century, described mercury poisoning among miners who were mainly slaves
- The Germany mineralogist, Georgius Agricola – 1556, described difficulty in breathing and lung destruction as miners' disease due to poor ventilation and dust inhalation.
- Bernardino Ramazzini – 1700 (considered as a father of Occupational Medicine), described occupational diseases from about 54 different occupations including mercury poisoning and highlighted the need for physicians to take occupational history from a patient
- Percical Pott – 1775 (after Industrial revolution in Europe), explained the increased frequency of scrotal cancer among chimney sweeps due prolonged exposure to flue dusts.

4.2 Fundamental Concepts in Occupational Diseases and Injuries

An occupational injury occurs when a worker is harmed as a result of a specific on the job accident where exact date, location and cause can be identified or determined. The incident may be fatal or non-fatal with lost work time. Occupational injuries differ from occupational diseases as these diseases typically develop over a period of time, while the injuries typically happen as one event.

An occupational accident is an unexpected and unplanned event happening on the job, which results in one or more workers incurring personal injury, disease, or death. Included as such events are acts of violence arising out of or in connection with work.

Work- related disease refers to any illness caused, and/or aggravated, or exacerbated by occupational exposures, and/or the cause of impaired work capacity. Occupational diseases are defined in a more strict manner, often differently in different countries. The term occupational disease is used for diseases that may give economic compensation for the worker.

4.3 Common Occupational Diseases in Tanzania

4.3.1 Musculoskeletal Disorders

Work-related musculoskeletal disorders (WMSD) are a range of disorders of muscles, nerves, ligaments, tendons and joints, caused or exacerbated by work activities. WMSD are among the commonest causes of sickness absence, commonly affecting the hands, wrists, elbows, shoulders and neck, as well as the spine and back.

It is estimated that over 60 percent of work-related diseases are WMSD. Specific diagnoses, such as localised nerve compression (e.g., carpal tunnel syndrome), tendinitis (e.g., lateral epicondylitis, de Quervain's syndrome), and muscle strain have been associated with jobs in all sectors of the working life. Awkward or static work postures, heavy physical work, lifting, repetitive work, use of force, vibration and low temperature are among risk factors that may contribute to the development of WMSD. Individual factors such as smoking, high body mass index (BMI), and presence of co-morbidities have also been reported to contribute to the occurrence of WMSD.

4a: Many industries require that workers lift heavy bags. Here, the workers help each other, and they also have trolleys (Photo: B.E. Moen).

In general, there is a lack of data on the burden of WMSD in Tanzania. The most reported WMSD is back pain with highest prevalence being reported in truck drivers (89%), primary school teachers (83%), nurses (74%) and seaweed farmers (67%).

Poor facilities and equipment, heavy workload, and inconsistent use of back care techniques were shown to be the risk factors for work related back pain in Tanzania.

4b: African women are masters at carrying different things on their heads. This may cause problems from their neck and back if the loads are too heavy (Photo: B.E. Moen).

4.3.2 Respiratory Diseases

A variety of respiratory diseases are caused by work related exposures. Both acute and long-term exposures to respiratory hazards may cause work related respiratory diseases. Examples of such diseases are interstitial lung diseases such as pneumoconiosis (e.g. asbestosis, silicosis, byssinosis and coal workers' pneumoconiosis); or airway diseases (e.g. asthma, bronchitis, chronic obstructive pulmonary disease and bronchiolitis obliterans).

In Tanzania, work-related respiratory diseases have been reported among coffee processors, volcanic rock miners, gold miners, coal miners, sisal processors, cement factory workers, wood workers and seaweed farmers. Some of the commonest respiratory symptoms reported among these workers include cough, phlegm, shortness of breath, chest tightness and wheezing. At clinical examinations of these workers we may find airflow limitation and restrictive pulmonary impairment on lung function testing. Risk factors for respiratory disease among these workers include exposure to organic and inorganic dust. Among sisal processing workers, the prevalence of lung disease was found to be 28%, the majority being workers from sisal brushing department. A follow-up study in a similar population of sisal processing workers revealed high prevalence of positive skin prick test (74%) among exposed workers, with 27% demonstrating elevated sisal specific IgE. This suggests that the sisal workers may develop an allergy to sisal, which again may cause respiratory diseases.

4c: Mining is a job that may cause dust exposure and respiratory health problems (Photo: S. Mamuya).

4.3.3 Ear, Nose, and Throat

Ear, nose and throat disorders have been associated with various occupational exposures. A Tanzanian study of sisal processing workers reported higher prevalence of sneezing (65%), runny nose (63%) and stuffy nose (34%) among dust exposed sisal brushing and decortication workers, as compared to unexposed security workers. This could be due to allergies developed after exposure to sisal fibre dust in the brushing department.

Noise exposure is another significant workplace hazard that has been reported to cause hearing loss among Tanzanian workers. High prevalence of noise induced hearing loss (NIHL) has been reported among textile industry workers (58%), electric plant workers (53%), iron and steel workers (48%) and miners (47%). Among miners, highest prevalence of NIHL was shown in those working underground (71%) as compared to open pit miners (28%). While younger miners (20–29-year-old) showed higher risk of NIHL, the pattern was reversed among textile workers where older experienced male workers had the highest risk. Given the debilitating nature of NIHL, hearing conservation programmes are recommended to prevent occupational hearing loss. Moreover, employers should conduct noise monitoring, provide free annual hearing examinations, hearing protection, and training; and evaluate the effectiveness of available noise control measures to ensure that workers are not exposed to noise above the recommended limits.

4.3.4. Liver Disorders

Common occupational gastrointestinal (GI) disorders are diseases of the liver. This is due to the liver's role in the conversion and detoxification of drugs, chemicals, and metabolites absorbed in the gastrointestinal tract. The detoxification function of the liver makes the organ suffer if the worker is exposed to hepatotoxins. Effects of hepatotoxins can be acute or chronic liver disorders. Acute liver disorders present with acute onset of tenderness in the right upper quadrant, hepatosplenomegaly, and jaundice. Chronic liver disorders present as gradual onset of symptoms such as pain in the stomach and jaundice (yellow eyes, skin). Principally, clinical and/or morphological presentation of occupational liver disorders does not differ from that induced by drugs, except for a few chemicals causing specific lesions in the liver. This causes difficulties in the differentiation of occupational from non-occupational causes. Therefore, the history of exposure to occupational hepatotoxins, with personal or workplace exposure levels, is very important in diagnosing occupational liver disorders.

Occupational liver disorders can be caused by exposure to chemical, physical or biological agents at workplaces. Examples of exposure to hepatotoxic chemical agents include arsenic in the manufacture and use of pesticides, beryllium in the ceramic industry, carbon tetrachloride in dry cleaning, halothane in anaesthesiology, trichloroethylene in degreasing/cleaning solvents, and vinyl chloride in rubber and plastic industries. Physical agents causing hepatocellular injury include radiation exposure in X-ray machines and laboratory chemicals. Biological agents causing occupational liver disorders include exposure to the infectious agents hepatitis A, B, C, D, and E. This kind of exposure may occur among sewage and health care workers.

4.3.5 Renal Disorders

Just like the liver, the kidney is also susceptible to toxic injury related to its regulatory function. The kidney regulates the volume and composition of body

fluids and excretes metabolic waste products through the nephron as its functional unit. Therefore, occupational renal toxins can be highly concentrated in the kidney and cause damage to several nephrons. These toxins can damage the glomerulus of the kidneys, renal tubules, or both, resulting in acute or chronic renal disorders.

Acute renal disorders occur as a result of acute exposure to high levels of nephrotoxins such as lead, cadmium, mercury, and organic solvents. The clinical presentation of acute renal disorders includes oliguria, nausea, vomiting, abdominal pain as well as confusion. By examinations one may find proteins in the urine. In blood tests one may find elevated urea nitrogen (BUN), elevated serum creatinine, and elevation of serum electrolytes such as potassium (hyperkalaemia).

Chronic renal disorders can result from prolonged exposure to small and repeated doses of nephrotoxins. In turn, progressive damage of renal tubular cells and renal interstitium (tubulointerstitial nephritis) following exposure may occur. Chronic exposure of such toxins may cause progressive damage to the nephrons and decrease in the number of nephrons. This will lead to a progressive decline in renal function. The presence of albumin in urine (albuminuria) suggests a glomerular disease (glomerulonephritis).

Examples of occupational nephrotoxins include mercury, organic solvents, silica, lead, cadmium, chromium, and uranium.

4.3.6 Occupational Skin Diseases

The human skin is exposed to a wide range of workplace hazards, and is a commonly injured organ. Work-related skin disorders can develop following exposure to various workplace hazards, and are preventable. These conditions can be induced by specific workplace exposures (occupational skin diseases) or pre-existing non-occupational skin diseases can be worsened by workplace exposures (work-aggravated skin diseases). Work-related skin conditions are common, and they affect many different occupations. In industrialised countries, work-related skin conditions contribute up to 30% of all occupational diseases. The prevalence of skin diseases in Tanzania is not well known. Occupational skin diseases result from a variety of known exposures at workplaces, and several different types exist. Here we describe contact dermatitis, contact urticaria, photodermatitis and skin infections.

Occupational Contact Dermatitis

This is a group of inflammatory skin conditions that result from workplace exposure to irritants (irritant contact dermatitis) or sensitising substances (allergic contact dermatitis). Occupational contact dermatitis can be acute, sub-acute, or chronic contact dermatitis. Acute contact dermatitis is caused by several irritant or sensitising substances and photoreactive agents. Acute irritant contact dermatitis develops as a result of acute exposure to irritants. This type of occupational skin condition follows a non-immunological response to skin irritants. Allergic contact dermatitis develops following an immunological response to sensitising agents (allergens). In allergic contact dermatitis, allergens are initially tolerated for a given period without causing dermatitis but sensitise the skin to generate antibodies against the allergens. Subsequent exposures of the sensitised skin to the allergens, even in trace amounts, trigger acute skin reactions.

Morphologically, allergic and irritant contact dermatitis cannot be distinguished. Nevertheless, the

distinction between the two types is important when providing advice to the workers. Clinically, acute occupational contact dermatitis can present with erythema, vesicles, and bullae. Sub-acute contact dermatitis results from the cumulative effect of repeated contact with both weak and moderate irritants. The sub-active forms of contact dermatitis are characterised by dry, red plaques. Prolonged exposure leads to chronic contact dermatitis. Chronic forms of contact dermatitis present with dryness, scaling, pigment changes, lichenification, and are sometimes accompanied by minimal vesicles. Hands, fingers, wrists, and forearms are common sites affected by chronic contact lesions of the skin.

Occupations at risk of dermatitis	Irritants	Allergens
Bakers	Fruits, vegetables	Flour, spices
Construction workers	Fibreglass, glue, thinners	Chromates, epoxy, resins, turpentine, wood dust
Dental technicians	Detergents, disinfectants	Acrylic monomers, anaesthetics, epoxy, formaldehyde, mercury, nickel
Farmers	Disinfectants, fertilisers	Fungicides, insecticides, plants
Hairdressers	Bleach, shampoos	Dyes, nickel,
Medical personnel	Detergents, disinfectants	Antibiotics, anaesthetics, formaldehyde, latex, rubber
Metal workers	Cutting oils, petroleum distillates	Biocides, colophony, epoxy, rubber
Textile workers	Fibres	Dyes, formaldehyde

Table 4.1. Examples of occupations where the workers are at risk of developing dermatitis due to irritants and allergens.

Occupational Contact Urticaria

Occupational contact urticaria develops following contact with allergens or non-immunological agents at workplaces. Contact urticaria is an immediate hypersensitivity reaction that occurs immediately or develops within a few days after being exposed. It presents with reddening (erythema) and oedema at the area of contact that fades away within hours after the removal of the exposure. Examples of allergens causing occupational contact urticaria include latex, corn starch, animal fur and dander, acrylates, formaldehyde, and foodstuffs such as eggs, carrots, milk, meat, and fish. Non-immunological agents causing contact urticaria include ethyl/butyl/isopropyl/ acetyl alcohol, sorbic acid, benzoic acid, and sulphur

dioxide. Some agents can cause both allergic and non-allergic contact urticaria, for example, ammonia, ammonium sulphate, cinnamic acid, potato, apple, and lettuce.

Occupational Contact Photodermatitis

This is a skin reaction that occurs either due to exposure to light sources alone (natural and artificial light) or in combination with chemicals, plants, or drugs that can induce phototoxic or photosensitive skin reactions. Most photoreactions on the skin are phototoxic. A phototoxic skin reaction is generally limited to light-exposed areas alone while a photosensitive reaction can develop even on non-exposed body areas. In occupational contact photodermatitis, light energy in combination with workplace exposure to or contact with agents/chemicals, photo irritants and/or photosensitizers that cause inflammatory changes of the skin.

Clinical presentation of acute photodermatitis includes erythema, vesicles, or bullae formation on the light-exposed skin such as the face, extensor aspect of forearms, and anterior thighs. Non-exposed areas such as the skin under the chin, nasolabial fold, retro-auricular and inner aspects of forearms are spared in acute photodermatitis. Chronic photodermatitis presents with skin dryness, skin pigment changes, scaling, and lichenification of the affected areas of the skin. Minimal vesicles can also be observed on sun-exposed skin in patients with chronic contact photodermatitis.

Examples of occupations exposed to phototoxic and photosensitive agents include exposure to coal tar derivatives among construction workers; exposure to drugs such as azathioprine, cephalosporin, phenothiazines, and sulphonamides in medical, nursing, and pharmaceutical industries; exposure to dyes such as eosin, methylene blue, rose bengal and paper whiteners such as thiourea among workers in printing industries; and exposure to plant derivatives such as psoralens (furocoumarins) among forestry workers.

Occupational Skin Infections

Skin infections occur due to exposures to biological agents such as bacteria, fungi, viruses, and parasites. Occupational skin infections can be primary or secondary infections of the skin when workers come in contact with infected humans, animals, or tissues at workplaces. Bacterial infections occur in several occupational settings. However, some occupational settings increase the risk of bacterial skin diseases among workers such as animal breeders and handlers, farmers, fishermen, food processors, and hide handlers. Similarly, occupational fungal infections are common among bakers, bartenders, cannery workers, cooks, dishwashers, child-care workers, and food processors.

Parasitic skin infections are seen most often among agricultural and livestock workers, grain handlers and harvesters, longshoremen, and silo workers. Examples of parasitic infections include scabies, pediculosis, tungiasis, and hookworm-related cutaneous larva migrans. Occupational viral skin infections include milker's nodules among dairy workers, herpes simplex among medical and dental personnel, and sheep pox among livestock handlers. Clinical presentations of occupational skin infections depend on specific causes, and they are similar to non-occupational viral, bacterial, fungal, and parasitic skin infections.

4.3.7 Occupational Mental Disorders

There are many types of mental disorders, but very few of them are recognized as

work-related and even fewer as an occupational disease that may give compensation to the worker. Assessment of occupational mental disorders can be challenging in ascertaining the relationship between the occupation of an individual and related exposures. The most commonly occupational mental disorder accepted as an occupational disease is Post-traumatic Stress Disorder (PTSD) which occurs following exposure to traumatic stressors or events. Occupational PTSD develops following workplace exposure to a traumatic event. The traumatic event related to work can be experienced by a worker, witnessed, or confronted, involving actual or threatened death, serious physical injury, or a threat to the physical integrity of the worker or others. As a result, the stressor causes serious psychological consequences to the worker.

The work-related traumatic event causes symptoms long after the traumatic event. The most common symptoms are trouble sleeping, night mares, trouble concentrating, irritability, aggressive behaviour and being easily frightened. The traumatic event can also be re-experienced by the victim being exposed to factors that remind of the traumatic situation, for instance high sounds resembling gun shots (if that was part of the trauma). The impacted worker may present with persistent avoidance of stimuli related to the traumatic event such as avoiding thoughts, feelings, or conversations related to trauma; avoiding activities, places, or people that might result in arousal or recollection of the traumatic event. Therefore, PTSD causes clinically significant distress impairment in social, occupational, or other important functioning of the worker. The diagnosis is not set before the symptoms have been present for more than one month. However, the development of symptoms may sometimes be delayed for 3 months or even years causing delayed-onset PTSD.

4.3.8 Occupational Eye Diseases

Occupational eye disorders occur as a result of exposure of the eye structures to a variety of workplace hazards. Just like other occupational disorders, occupational eye disorders can easily be prevented. However, occupational eye disorders, to a large extent, are likely to be underreported. Common occupational eye problems result from foreign bodies and chemical irritation in the eye, and are categorised as occupational injuries.

Occupational disease in the eye is typically cataract. Occupational cataract may occur among workers exposed to ionising radiation or ultraviolet light such as among welders and those with excessive sun exposure in outdoor activities.

4.3.9 Occupational Cancer

Several neoplasms occur following exposures to hazards at workplaces. Malignant occupational neoplasms (cancers) occur due to exposure to carcinogens at the workplace. Historically, the first cases of occupational cancers were reported by Percival Pott, a surgeon at St Bartholomew's Hospital in London in 1775. He noted an increased incidence of scrotal cancer among chimney sweeps and associated the disease with soot exposure among these workers. Soot contained polynuclear aromatic hydrocarbons such as Benzo(a)pyrene and Dibenzo(a,b)anthracene that were proven to be responsible for scrotal cancer among the workers. Later, cases of bladder cancer were reported by Rehn among workers in the aniline dye industries in 1895. Workers in the dye industry were exposed to a variety of aromatic amines such as 2-Naphthylamine and 4-Aminobiphenyl, Benzidine, and Methylene-bis-o-chloroaniline. These

aromatic amines have been associated with bladder cancer causation.

Worldwide, the burden of occupational cancers has been increasing since the first cases were reported. This increase can be linked to the rising number of industries that use human carcinogenic agents, lack of preventive measures, lack of substitutes for such chemicals, and the lack of knowledge related to occupational cancers. Occupational cancer in Tanzania is mostly unknown, and the prevalence of such cancers is probably low today. However, this situation might change when industrialisation increases.

Most occupational cancers have a long latent period as they take many years to develop after exposure. Some cancers develop after a few years, such as leucemia after benzene exposure, but many other carcinogens can develop 10 or more years after exposure. Cancer caused by asbestos may develop 20- 40 years after exposure. The long latent period can cause difficulties in establishing the association between exposure and cancer if a proper occupational history is not taken. This calls for competent physicians.

Carcinogens are agents that are known to cause cancer upon exposure. Carcinogens can be genotoxic or epigenetic. Genotoxic carcinogens such as Bis (chloromethyl) ether, 2-Naphthylamine, and nickel salts are capable of changing cellular genetic material and can cause cancer after a single exposure (extremely high exposure is needed) . Epigenetic carcinogens such as asbestos, Ethanol, Diethylstilboestrol, Azathioprine, and bile acids seem to have no direct effect on genetic material, thus requiring prolonged exposure for cancer causation. The International Agency for Research on Cancer (IARC) classifies carcinogens in the world, using five group categories. These groups include proven human carcinogens (Group 1), probable human carcinogens (Group 2A), and possible human carcinogens (Group 2B), not classifiable as carcinogenic to humans (Group 3) and probably not carcinogenic to humans (Group 4). *Group 1 contains agents that are proven to be human carcinogenic***.** In this group, epidemiological studies have proven that these agents cause cancer among exposed workers. *Group 2A contains agents that are probable human carcinogens***.** Studies among agents in this group are suggestive of carcinogenicity but there is insufficient data to satisfy the criteria for causal-effect relationship in humans. Nevertheless, experimental studies in animals carried out under conditions relevant to human exposure have shown a causal-effect relationship. *Group 2B consists of agents that are possible human carcinogens***.** Agents in group 2B exhibit clear statistical and biological significance in terms of an increase in the incidence of malignant tumours in more than one animal species or strain. Administration of group 2B agents preferably with different routes and at different dose levels increases the incidence of cancers in the exposed animal species or strains. *Group 3 consists of agents that are not classifiable as carcinogenic to humans whereas Group 4 consists of agents that are probably not carcinogenic to humans.*

Clinical presentation of occupational cancers is similar to that of non-occupational cancers in terms of symptoms and histology. Therefore, it is important to exclude non-occupational causes such as genetic predisposition (family history), lifestyle factors such as smoking, dietary factors, overexposure to the sun in the outdoors and use of certain medications.

Examples of the most common occupational cancers include pleural cancer (mesotelioma) caused by asbestos,

lung cancer resulting from crystalline silica dust, diesel exhaust, and X rays; nasal cancer from wood and leather dust exposure.

Prevention of occupational cancers entails workplace risk assessment (RA) and putting in place control measures to reduce exposure. Due to the cancer latency period, employers should keep registers of all exposed workers and carcinogenic agents for at least 20 years.

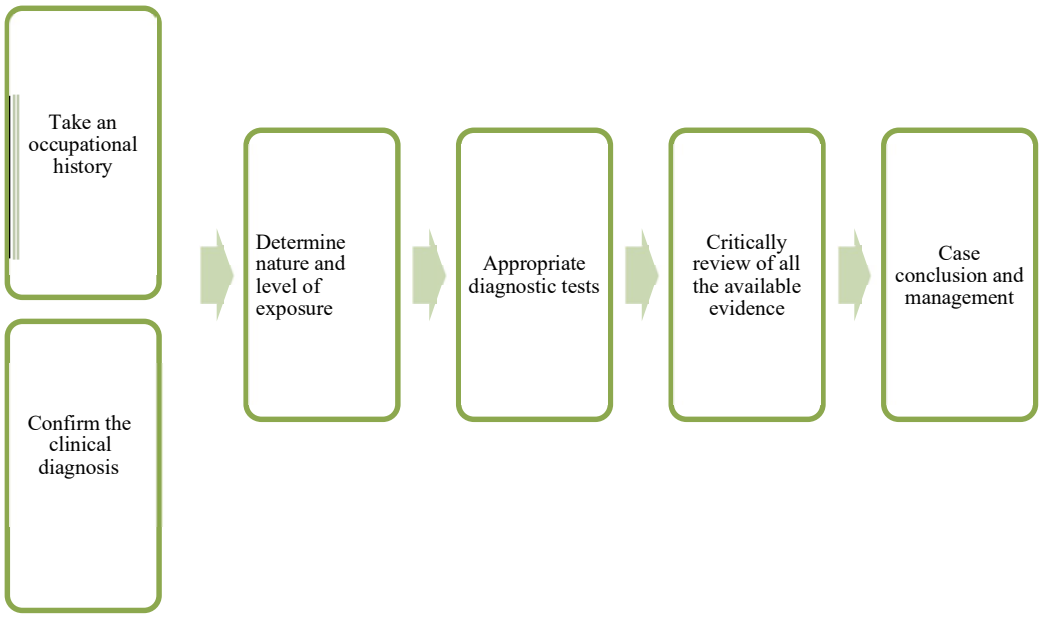
Carcinogenic agent (or manufacturing processes) AND Cancer site or type	**Occupations or industries at risk**
Asbestos: Mesothelioma. Lung, larynx, ovary	Miners and quarry workers, Insulating, Shipyard workers, Asbestos cement industry, Plumbers and pipefitters, Construction and housebuilding, Machine- and motor mechanics
Silica dust, crystalline (quartz): Lung	Granite and stone industries, Miners and quarry workers, Road- and tunnel construction, Metallurgical industries, Sandblasters, Ceramics, and glass industries
Wood dust: Nasal cavity and paranasal sinus, nasopharynx	Logging and sawmill workers, Furniture industries, Carpentry, and construction
Leather dust: Nasal cavity and paranasal sinus	Shoe and leather workers
Chromium (VI) compounds: Lung	Chromate production plants, Dyes and pigments, Plating and engraving, Chromium ferro-alloy production, Stainless steel welding, Corrosion-resistance, Leather tanning, Drilling muds.
Nickel compounds: Lung, nasal cavity, and paranasal sinus	Nickel refining and smelting, Welding
Formaldehyde: Leukaemia, nasopharynx	Formaldehyde-production industries, Production of resins and plastic products, Pathologists, Laboratory workers, Textile industry, Manufactured board mills and foundries
Benzene: Leukaemia	Shoe production industry, Chemical, pharmaceutical and rubber industries, Printing industry, Oil and gas industry

Polyaromatic hydrocarbons (PAH): Lung, skin	Production of coal tar and coke, Coal gasification, Road paving and construction, Metal workers, Machinists/mechanics, Aluminium production, Chimney sweeps
X-radiation, γ-radiation: Salivary gland, oesophagus, stomach, colon, lung, bone, female breast, kidney, urinary bladder, brain and CNS, thyroid, and leukaemia	Radiologist, X-ray technicians, nuclear power workers
Aluminium production: Urinary bladder, lung	Aluminium production
Rubber manufacturing industry: Urinary bladder, lung, stomach Leukaemia, lymphoma	Rubber manufacturing industry
Painting: Urinary bladder, lung. Mesothelioma	Painter

Table 4.2. Examples of carcinogenic agents, cancer site, and occupations or industries at risk (Source: Moen et al. 2018, pp 155).

4.4 Diagnosis of Occupational Diseases

Making an accurate diagnosis of an occupational disease is not only crucial for instituting appropriate treatment, but also for preventive, epidemiological, regulatory and compensation actions. In addition to the usual methods for making a clinical diagnosis, the diagnosis of occupational diseases involves taking a good occupational health history including a comprehensive history of exposures; use of specialised diagnostic tests to establish work relatedness; and review of all available evidence to make a conclusion for reporting of the case to relevant authorities (Picture 4d).



4d: Diagnosing an occupational disease.

Occupational History

A simple set of screening questions may be used to identify the link between a patient's illness and their occupation (Table 4.3). These questions may be included in a self-administered questionnaire at a busy clinic and can be useful in obtaining an efficient occupational history. If the answers to any of these questions is suggestive of work relatedness between the patient's symptoms and their work, a comprehensive occupational history should be obtained.

- What type of work do you do?
- Do you think your health problems might be related to your work?
- Are your symptoms different at work and at home?
- Are you currently exposed to chemicals, dust, fumes, metals, radiation, noise, or repetitive work?
- Have you been exposed to chemicals, dust, fumes, metals, radiation, noise, or repetitive work in the past?
- Are any of your co-workers experiencing similar symptoms?

Table 4.3: Sample screening questions (Adapted and modified from: Newman LS, 1995 and Goldman R et al, 1981).

When taking an occupational history, make sure to record a full job history including the name of the employer, employment dates, job title, main duties performed, and all positions held. It is important to distinguish job duties from job titles because a title may not give a clear picture of the activities performed and thus may give misleading information about occupational exposures.

Evaluation of Exposure

In assessing specific exposures associated with work activities, it is important to list major exposures associated with every job title and duties. An in-depth exposure history should be obtained for tasks relevant to the patient's current symptoms. It is important to note that a patient may be affected by exposures originating from other parts of the workplace, therefore, both direct and indirect exposure situations should be recorded. For instance, asthma in a wood industry may be caused by wood dust, but may also be exacerbated by spray paint fumes originating from spray booths 20 metres away from their station.

It is also important to elicit information about the exposure dose because although the workplace may be using a number of chemicals, some may be used in larger quantities than others. In addition, the patient should be asked about presence and efficacy of control measures, such as ventilation, as these may significantly affect the level of exposure. This may also include provision, consistent use, fit, storage and maintenance of appropriate personal protective equipment.

Another component of an occupational history that is crucial for determining work-relatedness is the assessment of the temporal relationship between work and symptoms. For instance, a patient with contact dermatitis may report appearance of symptoms when at work and abatement during weekends or long

holidays. A patient should be asked about any changes in symptoms during the workday, over the work week, on weekends, on vacations and onset of symptoms away from exposure. In addition, a patient should be asked about symptoms linked to contact with a certain work substance, performing a certain work process or with change of materials and other work activities. In this regard, patients should be asked whether anything different at work preceded the onset of their symptoms, such as change of task or work process, new product, or new job assignment. Changing patterns of symptoms associated with time at work may provide helpful hints not only to the diagnosis but also the etiologic agent. However, it is important to note that, with many occupational diseases, these work-related changes may become less obvious as the disease progresses, and with prolonged exposure.

A patient should also be asked about non-occupational exposures including during recreational activities, hobbies, or unpaid work. For instance, a baker may be exposed to flour both at work and at home, therefore an occupational history should allow for the evaluation of the relative contribution of exposures, both on and off the job, to a disease.

Clinical Examination

All patients must be thoroughly examined clinically by a physician. In addition, different tests can be conducted in the evaluation of a patient suspected to have an occupational disease. This may include:

1. Tests to assess pathophysiology: These are tests conducted to identify what is pathophysiologically wrong with a patient. This includes all routine medical tests such as radiological imaging studies, chemistry panels, hemograms and specific occupational medicine tests such as non-specific inhalation challenge tests, spirometry or measurements of enzyme levels (e.g., cholinesterase).
2. Tests to assess or quantify exposures: These are tests conducted to determine the presence of a specific causal agent in an organ or body tissue. These tests may also be referred to as “biological monitoring” and one example is measurement of whole blood to evaluate lead levels. While such tests may provide indication of exposure, it is important to note that identification of a toxin does not necessarily confirm presence of disease.
3. Tests to assess the relationship between an exposure and a health effect: A few tests may be conducted to confirm the causal information. These may include identification of specific antibodies to a sensitising agent in a patient presenting with occupational allergies and asthma. In this case, if antibodies to a specific work allergen are found in the blood of a patient in significant quantities, occupational allergy/asthma is confirmed. Likewise, skin patch tests and specific inhalation challenge tests are types of tests used to confirm possible exposure and sensitization and may give an indication of the relationship between the level of exposure and a specific health effect.

Review of all Available Evidence

While information obtained from the patient is enough to raise suspicion, an accurate diagnosis can only be made after getting additional exposure information

from different sources whenever possible. This additional information is useful in identifying the specific hazard to which the patient has been exposed, to determine the exposure dose; and to validate information obtained from the patient. Additional exposure information may be obtained from:

1. **Prior medical records**: May be used to confirm the patient's similar or related previous complaints; provide objective measures of previous physiologic status; and corroborate or modify the history taken.
2. **Exposure records from an employer**: This may include safety data sheets (SDS) for hazardous substances used in the workplace, results of previous workplace risk assessments and exposure monitoring data e.g., air sampling information or blood tests.
3. **Regulatory agencies**: In workplaces that have been inspected by regulatory authorities such as OSHA, it may be useful to obtain the report of these inspections. However, it is important to note that these inspections may not reflect the possible harm that may occur at levels below "acceptable limits" e.g., in the case of allergic sensitization.
4. **Direct workplace site visit**: For current or recent exposure, a workplace visit is crucial as it offers the advantages of contacting employees at the site, making an association between history and observable facts, and enables direct assessment of exposure and dose. Conducting a workplace visit will also allow for collection of samples to be used for immunological testing, specific inhalational challenges and skin patch or prick tests.

All additional information should be obtained with prior permission from patients, always safeguarding patients' confidentiality and privacy. Alternative strategies may be employed if the patient is reluctant to have the physician contact the employer, and this may include patients making requests for information themselves or through a representative of a trade union, if present. Alternatively, for chemical exposures, the physician may contact the manufacturer or supplier of the suspected chemicals to obtain more information. Usually, labels on chemical containers provide the names of appropriate contacts.

Case conclusion and management

After gathering all the necessary information, the final step is synthesising all the information obtained and drawing conclusions which will aid in instituting appropriate management including reporting the case for preventive and compensation purposes.

4.5 Notification of Occupational Diseases and Injuries

A robust system of recording and notification of occupational diseases and injuries is an important part in occupational health and safety management. While most health care providers are familiar with the notification requirements for infectious diseases, less attention is given to recording and reporting of work-related conditions. Occupational diseases and injuries notification is a critical step in the prevention of work-related conditions through identification of sources of

exposure toward which control measures can be instituted.

Reporting of occupational diseases may be hindered by lack of expertise in diagnosing occupational diseases, poor compliance by employers, long latency periods between exposure and disease development which makes it difficult to make an exposure-disease association and health care professionals' concerns about becoming involved in litigation and about safeguarding employee confidentiality. In Tanzania, notification for occupational diseases and injuries is mandated by law, for both preventive and compensation purposes.

According to the Occupational Health and Safety (OHS) Act, 2003, any incident occurring in a place of work arising out of or in connection with work activities, in which a person is injured or dies, should be reported to the Chief Inspector within twenty-four hours. Furthermore, the act requires that medical practitioners who examine or treat a person for a disease they believe to be occupational, should report such cases to the employer and to the Chief Inspector within fourteen days from the day of examination or treatment. The requirement for reporting under the OHS Act is for preventive purposes, ensuring that these incidents are investigated to identify the risk of exposure and developing effective strategies for improved workplace health and safety. An incident and occupational disease notification form to the Chief Inspector is provided in Appendix 1.

Moreover, the Workers Compensation Act, 2008, requires the employer to notify the Director General of the Workers Compensation Fund (WCF) of an accident within seven days after receiving a notice from the employee or having learned in some other way that an accident has occurred (Appendix 2). In the case of occupational diseases, the Act requires that an employee or a trade union, on behalf of the employee, gives a written notice to their employer as soon as possible after the occurrence of an occupational disease. After receiving this notice, an employer is required to notify the Director-General within seven working days, irrespective of whether the employer believes that the employee did or did not contract the disease while in the employment of the employer or a previous employer. The Act also allows for an employee to give a written notice of the disease directly to the Director General.

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5 Medico-legal Aspects

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This chapter defines fundamental concepts when it comes to medico-legal aspects in general, and describes the duties and rights among medical personnel and different actors related to the workplace and to the Workers Compensation Fund in Tanzania.

5.1 Introduction to Medico-legal Aspects

The Medical Personnel work is very likely to involve Law if anything goes wrong in the course of treatment, prescription or surgery. The problem of professional practice is of course, the ones which give rise to the most obvious and immediate concern, but apart from these issues medical staff face the same wide range of legally enforceable rights and duties as other employees in their everyday work. The purpose of this paper is to give Medical Personnel such general information on these basic questions as may help them to do their work correctly and with confidence.

The practice of medical personnel concerns important issues in people's lives. Medical personnel may experience complaints from patients in the clinical setting. It is useful to look at the various forms of medico-legal issues and precautionary measures that exist, including the duties and rights of medical personnel.

The subject is very wide ranging hence three major issue, which would be of interest, for the audiences are:

5.1.1 Consent

Consent in medical practice means voluntary agreement, compliance or permission on part of the patient, authorising the doctor to perform a therapeutic procedure proposed to be done.

1. Every conscious adult patient of sound mind is entitled to decide for himself whether or not he will consent to submit to a proposed course of treatment.
2. It is the doctor's best protection against a potential claim of liability. In order to be legally effective, the consent obtained should be an informed consent. Hence it is the duty of the doctor to provide the necessary information to the patient to enable him to make a decision. The doctor does not have the right to decide on behalf of the patient.

5.1.2 Medical Negligence

A physician is said to be guilty of medical negligence when he fails to exercise reasonable care and skills in treating the patient, resulting in injury or death of the patient.

Negligence is said to have occurred when it is proved that there was: -

1. Duty of care.

2. Dereliction or breach of duty.
3. Damage to the patient.
4. Damage was approximately related to the dereliction of duty. A bad result does not necessarily mean that there has been negligence.

5a: Medicine and law can be difficult to understand (Colorbox).

5.2 Fundamental Concepts in Medico-legal Aspects

Regulations, rules, litigation, and medical errors are not the most popular topics for the busy medical personnel. Most of us would rather gargle nuclear waste than spend a precious evening reading about these issues that plague the pure and honourable practice of medicine. However, we avoid such matters at the peril of our patients' safety as well as our own personal and professional well-being.

Since few (if any) of us will invest in a treatise the length of War and Peace on the subject, I have assembled the following short list of Medical-Legal Basis on what. Every Provider Must Know for the busy physician, nurse, and advanced practice Medical personnel:

5.2.1 Medical Negligence

Negligence may therefore be described as the breach of legal duty to take care which results in damage undesired by the defendant to the plaintiff. For the prosecution to prove medical negligence, the following element must be established; duty of care by the Medical Personnel to the patient, breach of that duty by the Medical Personnel, damage to the patient resulting from such breach. It is therefore convenient to use instances of what constitute professional or medical negligence as listed in Observance of Code of Ethics as per **section 57 of The Medical, Dental and Allied Health Professionals Act, No. 11 of 2017** in order to elucidate the forms of medical negligence.

5.2.2 Professional Misconduct

Misconduct has been identified as a conduct that is of a grave and weighty character as to undermine the confidence which should exist between an employee and the employer, working against the deep interest of the employer amounts to gross misconduct entitling an employer to summarily dismiss the employee. However, where the contract of employment is clothed with statutory flavour, there requirement of the statute must be compiled within the dismissal of an employee. Where a hearing is provided for; it must comply with the rule of natural justice. Professional misconduct is an unacceptable conduct or an act of un-becoming which is inimical to the image of the profession.

5.2.3 False Imprisonment

False imprisonment is a restraint of liberty of a freeman although he is not put in prison custody. Medical Personnel may be liable for false imprisonment, if he/she restrains the patient from leaving the hospital after receiving medical treatment for any reason other than on medical grounds. In a case of **Union Bank of Nigeria Ltd vs Ajaku**, where a customer of a bank was not allowed to leave the bank premises by a gateman after he finished his transaction with the bank, the Supreme Court held that this was a false imprisonment.

5.2.4 Assault and Battering

An assault is any act committed intentionally or recklessly, which leads to another person to fear immediate personal violence. Assault can be in civil or criminal cases. It amounts to assault, when medical personnel threaten or shout at a patient not to stand up or to sit down or move out, otherwise he will deal with the patient. It will be regarded as battering, if such threats are followed with actual use of force.

5.2.5 Euthanasia

Euthanasia literally means assisted suicide or mercy killing. It is a deliberate act done by a doctor to bring the life of a patient to an end at the patient's request. It is not lawful for a doctor to administer a drug or injection to his patient in order to bring about the death of such a patient, even though that course is prompted by a humanitarian desire to end his suffering, however great suffering may be. The law prohibits euthanasia. The use of drugs to reduce pain and suffering is justifiable in law, but not with the primary purpose of hastening the moment of a patient's death. Thus a doctor who intentionally causes the death of his patient commits the offence of murder.

5.2.6 Vicarious Liability

The term vicarious liability refers to the situation where the employer is liable to the victim for damage caused to the victim by the negligence or other tort of his employee. It is not necessary that the employer should have participated in the tort or been present at the fault. The employer is liable simply because he stands in a particular relationship with the employee.

The vicarious liability of the employer is not limited to professional staff and it also includes non-professional staff. For instance, once a Hospital authority has accepted a patient for treatment, it comes under a duty to treat the patient with reasonable care and skill and any breach of that duty is actionable regardless of who may be responsible for any wrong decisions or acts concerning the patient.

5.2.7 Confidentiality

Medical personnel must generally treat in strict confidence any information received from or about his patients. Common sense also suggests that unless the patient can be sure of this, he will not tell the medical personnel all they may need to know about his condition. If confidence is abused deliberately or otherwise, the patient or his next of kin may complain to the Hospital Management (medical personnel's employer) or the medical or nursing council as the case may be, so that disciplinary action may be taken against such medical personnel.

5.2.8 Defences against Medical Negligence Claims

The following can be the probable defences:

1. Assumption of risk.
2. Emergency.
3. Contributory negligence.
4. Mishap.
5. Mistake.
6. Statutory limitation.
7. Res Judicata.

5.3 Duties and Rights of the Workers Compensation Fund

5.3.1 An Employer

An employer means any person, including the Government and an executive Agency who employs an employee. For the purposes of the law is deemed to be an employer on the date of recruitment of the first employee.

Rights of the Workers Compensation Fund to an Employer

- To be assured with certificate of registration
- To be supplied with information about contribution
- To be supplied with a report about the OSH report conducted by the Fund.
- To get information about a claim submitted by her employee
- To get a report of annual financial report
- To get awareness about the benefits and other issues conducted by the Fund.

5.3.2 An Employee

Any a person including an apprentice or who in any manner assists in carry on or conducting the business of an employer and who receives or is entitled to receive any remuneration, but excluding an independent contractor who works for another person

Rights of the Workers Compensation Fund to an Employee

- Right to adequate and equitable compensation (sections 19 (1), 22 (1) and (2) and 29)
- Right to rehabilitation (sections 3(b) and 69)
- Right to medical aid (sections 19(3) and 62 (1))
- Right to claim compensation to the Director General (section 39(1) and 40(1))
- Right to be transferred for medical services (sections 61(1) and (2))
- Display of employees rights (sections 77 and 78)
- Right to information (section 91)
- Right to sue the Board of Trustees of the Workers Compensation Fund (section 12 (2) (a))
- Right to appeal (section 80 (1) and (2))

5b: It is important to know the correct law paragraphs (Colorbox).

5.4 Duties and Rights of Medical Personnel

5.4.1 Rights and Obligations of the Patients

The patient has the right to receive information concerning issues relating to the nature of his illness, clinical findings, treatment to be given, probable duration and alternative mode of treatment, risk in pursuing the treatment and chances of recovery. The patient has the right to dignity of the human person, and under this right a patient shall not be subjected to inhuman or degrading treatment, this right is not subject to derogation. The patient has the right to refuse and object to treatment. The patient has the right to have access to the healthcare provider.

5.4.2 Rights and Obligations of the Medical Personnel

These are some of the rights of the medical personnel as enshrined under different legislation. These include, right to work under equitable and satisfactory condition of service and receive equal pay for equal work, right to freely take part in clinical research and scientific discovery, right to liberty and security of his person, right to dignity of human person, the right to life, right to personal freedom and right to privacy and personal security.

The duties of the medical personnel have been spelt out under various domestic and international legal instruments. For the purpose of this discussion, the obligation of medical personnel can be classified into three; duty to the patient, duty to the profession and duty to the state.

The medical personnel have the following duties to the patients: Duty to provide medical treatment, prescriptions and information relating to the medical treatment, obtain consent from patient before treating the patient, exercising standard care and diligence and respond to any request for medical assistance in emergency cases or on humanitarian ground.

Another critical area of medical practice is the duty to the profession. The medical personnel have the following duties to their respective professions:

- Duty not to refuse professional service on religious ground, nationality, and
- race, political or social status; not to associate with unregistered medical
- practitioners and not to allow them to practice what they are not qualified for; not
- to indulge in self-advertisement, not to issue false certificates and bills; not to
- attend to a patient when under the influence of alcohol.
- Other duties also includes, treating patient with respect and dignity and keep
- information given by the patient with confidentiality

- Medical personnel have the following duties to the state:

The medical personnel is expected to make himself available to the patients and give them equal access to treatment. The medical personnel shall respect the occupation of other staff working in the hospital; this is known as dignity of labour. The medical personnel are always needed to be an honest man with strong moral principles. The medical personnel are also expected to be patriotic to his/her nation and dedicate himself/herself to the service of humanity.

5.5 Duties and Rights of the Labour Officers

Section 45 (1) For the purposes of the administration of labour laws, a Labour Officer may-

1. at any reasonable time enter any premises with a prescribed certificate of authorisation and-

   (i) require that the premises or any part of it shall not be disturbed during an inspection as long as it is reasonably necessary to search the premises;

   (ii) search for and examine any information book, document or object;

   (iii) seize, make a copy of any information, book, document or object;

   (iv) take a sample of any object found;

   (v) take measurements, readings, recordings or photographs; and

   (vi) question any person on the premises;

2. order, in the prescribed from, any person to appear before him at a specified date, time and place and to question that person;
3. require any person who has control over any information, book, document or object to furnish it and explain any entry in the information, book or document or on the object;
4. examine, make a copy or seize any book, document or object produced in terms of paragraph (c);
5. take a sample of any object produced in terms of paragraph (c);
6. give directions on where notices required in terms of this Act are to be posted;
7. request a member of the Police Force to assist in the exercise of the powers referred to in this subsection;
8. request any person to assist as an interpreter or otherwise in the powers referred to in this subsection; and

   (i) institute proceedings in the Resident's or District Court in respect of a contravention of any labour law and may appear and prosecute in the name of the Labour Commissioner.

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6 Workers Compensation Systems

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This chapter gives fundamental knowledge about the worker's compensation system in Tanzania. The text tells about how impairment and disability are assessed after occupational injuries and diseases and how the compensations are decided.

6.0 Introduction to the Workers Compensation System

Workers compensation is a social protection system based on the principle of providing a compulsory "no-fault" form of insurance for workers who suffer injuries and diseases both outside of and in the course of their employment. Virtually every country provides some form of entitlements to workers or their survivors in the event of an occupational injury or illness. Workers' compensation laws usually require employers or their insurers to replace part of the injured workers' lost wages and all of their medical or rehabilitation expenses. Workers compensation provides income benefits, medical expenses, and rehabilitation expenses to workers with work-related injury and disease, as well as to members of the worker's surviving family in the event of fatal work-related injuries and diseases. Workers' compensation provides wider coverage than that provided by the common law system. It is designed to ensure prompt, but limited benefits and it assigns certain and predictable liability to the employer. Under workers' compensation, work-related injuries and illnesses are compensable even if they are only partially work-related.

Workers compensation systems are meant to narrow the gap between social justice and economic efficiency. Compensation for injuries occurring at workplaces is an ancient concept. The idea of workers' compensation has existed for as long as the history of mankind. Records from ancient Sumer – present-day Iraq – may perhaps document the first implementation of workers' compensation. As far back as 2050 BC according to the laws of ancient Sumer, compensation should be given for injuries to a worker's specific body parts. Ancient Greek, Roman, and Chinese laws implemented similar systems for specific injuries. In these ancient systems, compensation was given to individuals for specific affected body parts and a distinction was made between impairment and disability.

The concept we have today, that workers should be protected from and compensated for injury or illness occurring in the course of work or at the workplace, is a result of the rise of trade union movements at the beginning of the 20th century. Given the prevailing poor safety and working conditions previous to that time, as well as the devastating economic effects on the worker and their dependents following illness or injury, this provided the foundation for the idea of compensation. During these early times, workers were obliged to work under demeaning conditions to earn their wages while employers were, to a greater extent,

only concerned with making maximum profit.

Workers Compensation is a system that ensures that an employee is awarded compensation (paid) for injury, illness or death occurring in the course of employment. Furthermore, it ensures that treatment and rehabilitation is provided for the respective worker.

The worker or dependents are compensated following an injury or illness arising out of and in the course of employment by the employer whose strict liability for such compensation is established by law. Workers' compensation statutes however commonly include explicit exclusions for injury caused intentionally, by willful misconduct, or by voluntary intoxication from drug abuse.

The early days of the 20th Century and the beginning of formal workers' compensation legislation, however, were dark days when compared to the benefits available to workers today. In its infancy, industrial development brought with it inequities and unfairness to the workers with employers having the upper hand in deciding who were compensated and for how much. Employers also had great influence in any legislation that was put forward to govern compensation. The first known use of the phrase "workers' compensation" was in 1925.

6.1 Background

While the earliest mention of workers' compensation is ancient, it is more contemporary, documented history whereby employers are financially responsible for the injury or death of their employees in their workplace was first established under Bismarck in Germany in 1884. In 1897, Great Britain enacted a workers' compensation legislation requiring employers to compensate employees or their survivors for injury or death regardless of who was at fault. However, in some other parts of the world such as North America, workers' compensation is a result of historic compromise in which employees gave up the right to sue employers for negligence, for employers agreeing to pay the cost of medical care and compensate of their worker for time lost from work using the principle of no-fault. In the United States of America, workers' compensation started in 1908. Workers' compensation began with occupational injuries, as occupational diseases were not as easy to identify. For many years after its introduction, workers' compensation was preoccupied with claims for traumatic injury and less than half of all the claims for occupational diseases were given compensation.

6.2 Fundamental Concepts in Workers Compensation

6.2.1 A Worker or Employee

To understand workers' compensation, we must first be clear as to what is implied when referring to a worker or employee. The definition of a worker or employee may vary slightly in terms of coverage from country to country, but in general a worker is a person who works under a contract and, in relation to the work, is an employee. Only an individual can be a worker. This means that if a business engages a company, trust, or partnership, then the company, trust, or partnership cannot be a 'worker'. A contract of service refers to the contract between an employer and an employee. Many individuals work under a contract of service. The worker or employee is viewed broadly
under workers' compensation laws and includes part-time, seasonal and temporary workers, minors, trainees,

immigrants, and working 'family members. Every person in the service of another under any contract of employment, expressly stated or implied, oral or written, is an employee or worker.

6.2.2 The No-fault Concept

The basis of Worker's Compensation is that it is a "no fault" system where the worker will not need to prove that their employer's negligence was responsible for their injury or illness. What this basically means is that regardless of how the worker was injured at work, whether it was the workers' fault or the fault of another person, the worker is still entitled to the benefits awarded through worker's compensation.

This condition of the worker's compensation system supersedes any clauses or provisions made in employment contracts and as such no contract of employment can remove the worker's entitlement to receiving compensation.

The no-fault system ensures that compensation for the injured employee does not require the employee to lodge a personal injury claim against the employer and at the same time the employer is spared massive compensation claims and subsequent liabilities.

6.2.3 Impairment and Disability

For a worker/employee to be compensated, it must first be verified that the worker/employee sustained an injury or developed a disease out of and in the course of his/her work. Once this has been established, then the question arises whether the worker has any impairment arising from the respective injury or disease. The terms impairment and disability are frequently used as if they are synonymous. They are however quite different especially in connection with how they are defined by workers' compensation.

a) Impairment

Impairment is an absence of or significant difference in a person's body structure or function or mental functioning. For example, problems in the structure of the brain can result in difficulty with mental functions, or problems with the structure of the eyes or ears can result in difficulty with the functions of vision or hearing.

Structural impairments are significant problems with an internal or external component of the body. Examples of these include a type of nerve damage that can result in multiple sclerosis, or a complete loss of a body component, as when a limb has been amputated.

Functional impairments include the complete or partial loss of function of a body part. Examples of these include pain that doesn't go away or joints that no longer move easily.

The American Medical Association (AMA) defines impairment as a significant deviation, loss, or loss of use of any body structure or body function in an individual with a health condition, disorder, or disease[2]. As this is a medico-legal issue, "functional impairment" is defined more restrictively in some societies, to avoid misinterpretation. The American Social Security Administration (SSA), for instance, defines a "medically determinable impairment" as an impairment that results from anatomical, physiological, or psychological abnormalities which can be shown by medically acceptable clinical and laboratory diagnostic techniques. The SSA further states that a physical or mental impairment must be established by medical evidence consisting of signs, symptoms, and laboratory findings—not

only by the individual's statement of symptoms.

b) Disability

Disability, on the other hand, is not purely a medical condition. It involves physical, social, psychological, and vocational restrictions. It is an existing difficulty in performing one or more activities. Disability can affect the bones, muscles and joints and can lead to substantial restrictions of the movements of the limbs, organs and systems, or any form of cerebral palsy. It is a lack of ability or restriction of ability to perform a task to the level that is considered normal for other individuals. The WHO defines disability as an activity limitation that creates a difficulty in the performance, accomplishment, or completion of an activity in the manner or within the range considered normal for a human being. According to WHO, disability has three dimensions:

1. **Impairment** in a person's body structure or function, or mental functioning. As an example, impairments can include loss of a limb, loss of vision, or memory loss.
2. **Activity limitation**, such as difficulty seeing, hearing, walking, or problem solving.
3. **Participation restrictions** in normal daily activities, such as working, engaging in social and recreational activities, and in obtaining health care and preventive services.

The activities referred to in workers' compensation are not work-related (for which the worker is employed) but rather activities of daily living (ADL's). An individual, therefore, can be significantly impaired and yet have no disability, while another can be quite disabled with only limited impairment.

Physicians are therefore encouraged to rate impairment based on the level of impact that the condition has on the performance of activities of daily living (ADLs) rather than on the performance of work-related tasks. Generally, physical impairment leads to functional limitation and functional limitation leads to disability and therefore, impairment and disability should be regarded as two different scenarios.

It is important, when dealing with workers' compensation, for physicians to keep in mind that disability can be related to conditions that are present at birth and may affect functions later in life, including cognition (memory, learning, and understanding), mobility (moving around in the environment), vision, hearing, behaviour, and other areas.

c) Impairment Assessment

Disability is a legal determination that reflects the impact of a workplace injury or disease on a claimant's ability to work. Impairment determines the degree of the worker's disability. Thus, as impairment is an essential component for determining the disability, it is paramount that it is described as objectively as possible.

Impairment assessment for workers' compensation is an objective, evidence-based, clinical determination of the workers' significant deviation, loss, or loss of use of any body structure or body function because of injury or disease out of and in the course of his/her work.

The assessment is a purely medical task performed by a competent medical professional. The medical professional performs a complete medical examination to assess functional abnormality or loss accurately and objectively. The use of laboratory tests and other investigations

may improve the accuracy of the impairment assessment. In principle, impairment assessment is performed only when the worker has reached maximum medical improvement.

d) Maximum Medical Improvement (MMI)

This is the point in time at which the condition of an injury or work-related disease of a worker has stabilised, and no further recovery or significant improvement is expected even following additional medical intervention. It is a medically determined status that requires assessment by a medical professional with the appropriate knowledge and competence.

e) Whole Person Impairment Concept (WPI)

The concept of whole-person impairment makes it impossible for an individual to be more than 100% impaired. The whole-person impairment is expressed as a percentage, ranging from 0-100%. The whole person is divided into functional subunits. Each subunit has a relationship to the whole person. For example, a leg is 60% of the whole person. The left and right arms are separate subunits, as are the left and right legs

f) Future Impairment Deterioration

Impairment assessment does not give room for future deterioration. It is a point and time assessment. The medical professional cannot give extra rating for anticipated deterioration or change of condition. The worker however has a right to lodge a claim and be considered for re-assessment in future if the impairment caused by the same injury or disease condition worsens.

g) Types of Impairment/Disability

An injury or disease may heal with or without impairment. Where the worker can have partial or total impairment and the impairment can be either temporary or permanent.

A Temporary Partial Impairment (Temporary Partial Disability or TPD) means an injured/sick person can return to work but is temporarily limited from working at his/her full capacity. He/she can work part-time or with restrictions on which tasks to perform.

Temporary Total impairment (Temporary Total Disability or TTD) entails that the injured person is totally unable to work, but only on a temporary basis usually during the period of acute injury or sickness.

Permanent Impairment (Disablement) means the injured/sick person has suffered a permanent damage or loss of use of some part of the body. This is a medical condition where there is an anatomic or functional abnormality or loss after the worker has achieved maximum medical improvement, and the physician considers the abnormality or loss stable or non-progressive at the time of making the evaluation. The impairment can be partial or total.

Permanent partial impairment/disablement (PPD)*:* This is where the worker has permanent impairment but can return to some type of work.

Permanent total impairment/disablement (PTD): If, after assessment at MMI, the worker is deemed unable to return to any type of employment, then the impairment rating is permanent total.

6.3 Disability Assessment

6.3.1 Meaning of Disability

The term disability relates to an individual with a physical or mental impairment that

substantially limits one or more of this individual's major life activities. This may mean any condition that makes it difficult for the person (a worker with that condition) to perform his / her usual activities.

WHO offers a definition of disability in the areas of health policy, which differentiates between three dimensions of disability, namely (1) *impairment* loss (total absence) or abnormality (significant difference) of psychological, physiological or anatomical structure mostly of a person's body structure or body functions or mental functions. Examples include loss of memory, loss of vision, and extend to loss of a limb. In this context, the consequence of such impairment or loss resulting in substantial limitations is what is called disability. (2) *Activity limitation is* a restriction or lack resulting from an impairment of ability to perform an activity in a manner or within the normal range for a human being, including difficulties in walking, difficulties in problem solving, or difficulties in seeing. (3) *Participation limitations i.e.* a disadvantage for an individual, resulting from an impairment that limits or prevents the fulfillment of a role that is normal taking into account age, sex, social and cultural factors for that individual. This is sometimes termed a handicap.

ILO Convention of 1983 (No; 159) defines a '*Disabled person'* as an individual whose prospects of securing, retaining, and advancing in suitable employment are substantially reduced as a result of a duly recognized physical or mental impairment. Though not comprehensive, this definition provides a clarification of what a disability could mean in the context of employment and labour.

In modern times, the concept of disability often exists at the intersection between social and employment policies and is thus considered part of both social and vocational terminology rather than being limited to medical terminology. Hereunder is a selection of other possible definitions for disabled persons.

- those whose ability to perform is affected in one or several key areas, namely communication, mobility dexterity, and speed
- those whose ability to work is permanently restricted because of a physical, psychological, or sensory defect
- persons who, for a period of time, as a result of an illness, injury, a mental or physical weakness, are not able to earn from work that corresponds to their potential abilities and cultural level.
- those whose opportunities to obtain, secure, and retain employment are restricted by either lack of or limitations in their mental or physical capabilities
- those who because of physical, mental or sensory limitations experience substantially reduced or restricted opportunities in securing and retaining employment appropriate to their age, experience, and qualifications

Whichever definition is chosen, it should reflect the social dimension without sacrificing the specificity of the disadvantage based on the impairment, and without losing its quality as an operational definition.

6.3.2 Temporary Disability (Partial or Total)

Although eligibility for any disability benefit depends on administrative decisions, it is important that medical examinations and consultations are undertaken to clarify whether the

temporary disability is either *partial* or *total*. It is important to note, that for both total and partial temporary disability the impact of the illness or injury is temporary. *Temporary partial* disability is a temporary inability, due to an accident or occupational disease, to perform the whole of the work at which one was employed at the time of the accident or occupational disease, or the inability to resume working at a rate of pay not less than that at which he/she was receiving at the time of the accident or occupational disease. In this case the disability will only last till recovery.

Temporary total disability is the inability of the worker to perform the work at which he/she was employed at the time of the accident or at the time of contracting the occupational disease or even the inability to perform a similar work, as a result of an accident or occupational disease. In this case the worker is completely incapacitated only for a period of time.

6.3.3 Permanent Disability (Partial or Total)

Permanent disability means a permanent inability of a worker to perform any work as a result of an accident or occupational disease for which compensation is payable. It can be total or partial.

Permanent partial disability is an impairment that will not go away after a disabled person has recovered from a workplace injury or illness. This means that some form of permanent impairment will remain making the worker unable to perform at his or her full capacity. Examples are hearing loss, finger amputation, back injuries etc.

Permanent total disability on another hand is the complete inability of a worker to perform the work at which he/she was employed at the time of the accident, or at the time of contracting the occupational disease, or even the inability to perform similar work as a result of an accident or occupational disease. Here the affected person cannot work at all, or is presumed to be totally disabled because of a loss of e,g both eyes, both hands or total paralysis.

6.3.4 Disability Assessment

This is also known as 'fitness to work' assessment. Over time, different compensation regimes have evolved leading to different disability eligibility criteria and different systems for assessing the degree of disability. As a rule, disability status is generally determined by a competent national authority on the basis of findings after examination of individual cases, which are based on medical, rehabilitative, statistical or juridical findings. Two approaches can be used to evaluate and assess the degree of disability, namely the system for calculating compensation based on the degree of permanent partial disability, and the system for assessing reduction in fitness for work. Assessment of permanent partial disability is based on the evaluation of an occupational deficit for the purpose of placing such workers in a special workshop depending on their capacity at work (i.e *the degree of the loss of working capacity relative to the applicants recent and specific occupational situation*) versus their capacity for work (*i.e the loss of working capacity for disabled persons with chronic illness who have not worked for a long time*).

6.3.5 Parameters for Consideration in Disability Assessment

The degree of disability is mainly established on the basis of an official scale that takes into account several factors as prescribed by a given country's social security laws. When assessing the degree

of disability, in addition to the commonly used medical criteria, one must also take into account the vocational, social, and personal contexts. In summary, the following parameters should be considered;

- The disabled person's general condition
- the nature and severity of the disability
- the disabled person's age
- the person's occupational training and previous occupation
- the applicant's physical and mental capacity
- the applicant's residual fitness for work

Although improvements in working environment conditions may substantially reduce dependency and reduce restrictions for severely disabled workers, their participation in social and professional life will continue to be restricted, and they will therefore continue to have a need for social protection. Thus, in conclusion; any assessment ought to identify those disabled persons (i) needing medicare (ii) needing rehabilitation and / or retraining if not to the status quo ante at least to an equivalent situation (iii) needing income replacement due to permanent disability in the form of a fixed pension based on the degree of disability, these payments are intended to compensate for disabilities acquired while working to earn a living.

6a: 'If you do your best to practice, you will get better soon'. Some centers for rehabilitation are established in Tanzania, and may improve the lives of injured workers (Photo: G. Van den Bergh).

6.4 The Compensation Framework in Tanzania

6.4.1 Structure of the Compensation Framework

The workers' compensation system in Tanzania is not new. Tanzania inherited the Workmen Compensation Act Cap 263 from colonial rule, which dealt with compensation on work-related injuries and diseases suffered while at work. This was administered through the Labour Commissioner until 2015. There was also a complementary Public Service Act, which provided worker compensation to public servants. However, compensation benefits paid were outdated and payment processes were lengthy and bureaucratic. To combat this new legislation was enacted - the Workers' Compensation Fund (WCF) was established in 2015.

The WCF is a social insurance scheme under the Prime Minister's Office - Labour, Youth, Employment and People with Disability. The Fund is headed by a Director General who performs duties specified by the Board of Trustees of the Fund. There are three directorates under the Director General, one of which is the Directorate of Assessment Services. This oversees the provision of medical aid, rehabilitation services, and assessment of temporary and permanent disability for employees who sustain occupational injury. The Directorate also collaborates with other stakeholders, such as Occupational Safety and Health Authority (OSHA), to promote the prevention of occupational accidents and diseases.

The WCF became operational on 1st July 2015. Since then the Fund has addressed pre-existing challenges as well as significantly improving the provision of compensation benefits, which meet the requirements of international standards. There is a mandatory compensation scheme in Mainland Tanzania for both public and formal private sectors. With its vision to become "*A Role Model for workers' compensation Services in Africa*", the Fund has made Tanzania a positive example of best practices regarding the administration of workers' compensation services for developing countries. Currently, employers in the public sector are contributing 0.5% of their monthly wage expenses, while private sector employers contribute 0.6%.

The International Labour Convention No. 102 of 1952 on the Minimum Standard for Social Security forms the framework for the provisions of benefits for work-related injuries, diseases, and even death. The Convention specifies nine benefits under which the members of the pension funds and their families are covered. The benefits include: Old age, invalidity, survivorship, employment injury, maternity, medical care, sickness, family and unemployed benefits.

The workers' compensation laws implement Convention No. 102 by providing employment injury benefits. Benefits are payable to an employee who sustains injuries as a result of occupational accident or disease. In the event that the occupational accident or disease results in the death of an employee, a benefit is paid to his dependents. The Fund started to pay benefits on 1st July 2016. Claims for compensation must be submitted to the Fund within twelve (12) months of the date of the occupational accident or the date when the occupational disease was first diagnosed by a Medical Practitioner.

When an employee sustains injuries as a result of an occupational accident or disease, the employee is entitled to any of the following benefits:

- Medical aid
- Rehabilitation services

- Temporary Disablement
- Permanent Disablement
- Constant Attendance Care Grants
  In case of death of an employee, the following benefits are provided:
- Compensation to dependents of the deceased employee
- Funeral Grants

6.4.2 Procedures for Logging a Compensation Claim

The Workers' Compensation Fund (WCF) has been mandated to provide adequate and equitable compensation for employees who suffer occupational injuries or who contract occupational diseases arising out of and in the course of employment. In the case of an employee's death, the Fund is tasked with providing adequate and equitable compensation for the employee's dependents.

To access compensation benefits, the employer, employee or any person on behalf of an employee is required to notify the Fund about the occurrence of the occupational incident. The notification of the incident as well as claim tracking is done online through the ***portal.wcf.go.tz.***

Notification of Accident

Employees or any person on behalf of an employee is required to notify their employer within two (2) working days following the occurrence of an accident. The notification process follows a series of steps:

a. The employer shall fill the notification form (**WCN-1**) (See Appendix 2) through the WCF online notification system, ***portal.wcf.go.tz.***

b. The employer will print and provide the online generated **WCN-1 form** to the injured employee to enable him access medical aid services. An employment identity card or introduction letter from the employer will also be needed by the health care provider to verify the injured employee.

c. While the injured employee is on treatment, other documents are required for claim verification (Employer incident report, a copy of an employee contract of employment or letter of employment and Police report if the accident is conveyance-related).

d. Following verification, the Fund shall inform the employer and employee concerning the acceptance or rejection of the reported accident.

e. An employer, employee or any other person on behalf of an employee whose notification has been accepted will proceed to submit his/her claim for further processing.

f. An employer, employee or any other person on behalf of an employee whose notification has been rejected may apply for review to the Director General by submitting Application for Review Form (WCC-5) within twenty-one (21) working days from the date of receipt of such award.

g. Appeal to the Minister responsible for labour matters within thirty (30) working days by submitting a duly filled Form (WCC-6) if he/she is not satisfied with the reviewed decision of the Director General.

h. Appeal against the decision of the Minister, within sixty (60) working days, to the High Court (Labour Division).

Notification of Disease

An employee or any person on behalf of an employee shall notify their employer within fourteen days (16) working days from the date of diagnosis of suspected occupational disease. The following are easy steps to follow:

a. The employer shall fill the notification form (WCN-1) through WCF online notification system, **portal.wcf.go.tz**. The employer is required to attach a medical diagnosis report and a copy of an employee contract of employment or letter of employment for disease claim verification.

b. The Fund shall inform the employer and employee on the acceptance or rejection of the reported disease after verification.

c. An employee whose notification has been accepted will visit the health facility with one copy of WCN-1 together with the employment identity card/introduction letter from the employer to access medical aid services;

d. An employer, employee or any other person on behalf of an employee whose notification has been rejected may apply for review or appeal as shown in step (f) to (h) of the notification of accident above.

Notification of Death

The following steps should be followed during notification of any death that arose out of and in the course of employment:

a. The employer of the deceased employee or a representative of the deceased employee shall fill the notification form (WCN-1) through WCF online notification system, ***portal.wcf.go.tz.*** A copy of the online generated form shall be given to a representative of the deceased employee for his records. The employer is required to attach the employer's incident report; a copy of an employee contract of employment or letter of employment; a copy of death certificate; a copy of burial permit and police report if the accident occurred was conveyance accident motor traffic for claim verification.

b. The Fund shall inform the employer and representative of the deceased employee on the acceptance or rejection of the reported death incident after verification.

c. An employer or representative of the deceased employee whose notification has been rejected may apply for review or appeal as shown in step (f) to (h) of the notification of accident above.

Logging a Compensation Claim for Occupational Accident or Disease

After accepted notifications, while the injured employee or employee who contracted occupational diseases is on treatment, initial medical report (WCC-2A) and progress medical reports (WCP-3) filled in by a medical practitioner will be required for temporary disability benefits payment. After completion of treatment, the final medical practitioners report (WCC-2B) is required for payment of permanent disability benefits. For accepted notification of death, the following documents shall be required: a duly filled dependent's claim compensation form (WCP-7); marriage certificate if the deceased employee had a spouse; birth certificates of the surviving children of the deceased employee; Family Minutes for the appointment of

the administrator of the Estate of the deceased employee; Court Ruling for the appointment of Administrator of Estate; Letters of Appointment of Administrator of Estate (Form No. 6) and Dependents' Bank details for further processing of a claim.

In the situation where an employer or employee has incurred costs for treatment, they will be required to submit Workers' compensation Claim (WCC-1) form, receipts and any other supporting documents to claim for refund. The Director General shall communicate the award of compensation to the employer and employee (or representative of the deceased employee). An employer, employee or any other person on behalf of an employee who is not satisfied with the award may apply for review or appeal as shown in step (f) to (h) of the notification of accident above.

6b: Serious injuries may lead to loss of a limb. Protheses exist for help (Photo: B.E. Moen).

6.4.3 Eligibility for Compensation

Eligibility for compensation depends on different factors including location (country) where the incident has occurred, type of the incident (workplace or conveyance), and exclusion as guided by the legislation.

When determining claim for compensation occurred within Tanzania the following criteria will be considered:

a. Whether the employee sustained occupational injuries or as a result of occupational accident or exposure to a hazardous substance.

b. Whether the accident or exposure occurred in the actual discharge of the employee's duties.

c. Whether there was serious or willful misconduct on the part of the employee.

d. Whether the employee has been disabled as a result of occurrence of an accident or occupational disease where death has not occurred.

e. Whether the accident is attributed to the nature of the employee's duty.

f. Whether the employee has a written contract of employment with the employer or letter of appointment from the employer.

g. Whether the employer has notified the Director General within 12 month from the date of accident or death, or 12 month from the first date of occurrence of occupational disease.

Claims for compensation for incidents occurring outside Tanzania shall be considered upon:

a. Issuance of a legal document supporting the entry and presence or working of injured employees in a foreign country.

b. Approval of the employer to attend such work.

c. Issuance of a medical practitioner's report.

d. Receiving more information regarding the occurrence of the occupational injury in a particular country if circumstances require more information as may be advised by the Director General. The information may be obtained through liaison with the Tanzanian Embassy in that particular country and/or other embassies and/or other relevant Authorities, as may be considered suitable under the circumstances.

e. Proof of any other issue that may be required by the Director General in relation to the claim.

Factors to be considered when determining claims in relation to a conveyance accident, shall include:

a. Employee must have been involved in an accident when going to or coming from his workplace.

b. Employee must have been involved in an accident when exercising his duties for his workplace or travelling on duty.

c. Proof of occurrence of conveyance accidents such as submission of police report, air traffic control report, air marshal report, marine accident report as the case may be.

d. Proof of being one of the passengers in a public transport involved in a conveyance accident through submission of passenger list, passenger ticket, or boarding pass, as the case may be.

e. The location of the accident in relation to the most dominant and effective direct route to or from the place of employment.

f. Proof from the employer which authorises the employee's

travelling such as nomination letter or email.

g. Any other relevant information as may be determined by the Director General.

Factors to be considered when determining compensation to dependents of the deceased employee:

a) Proof of death of the employee such as death certificate, burial permit

b) Proof of appointment of administrator of estate such as letter of Estate administrator

c) Proof of relationship of dependents of the deceased such as marriage certificate or presumption of marriage for spouse, birth certificate for a child, relevant identification document for other dependents

d) Proof of court proceeding such as court ruling, family minutes

6.5 Compensation Services

6.5.1 Monetary

WCF pays cash benefits as compensation to employees for disabilities as a result of occupational accidents and diseases and to the survivors of deceased employees who die as a result of their employment. Disability benefits can be either for total or partial disability and can be either temporary or permanent. Cash benefits are only intended to replace a portion of the wages lost by the injured or deceased employee.

Temporary partial or total disability benefit is paid to an employee who is hospitalised, on sick leave or exempted from duty for more than 3 days up to a maximum of 26 months. The benefits aim at guaranteeing income to an employee who could not work during the healing or recovery period from occupational injuries. The Fund may extend compensation payment for temporary partial or total disability if the disability of the employee recurs or deteriorates and the employee receives further medical aid to reduce the employee's disability.

Permanent partial or total disability benefit is paid to an employee who has been determined to have permanently lost all or part of the ability to perform his. The benefit is paid in form of lump sum payment to an employee who has a disability of thirty percent (30%) or less and monthly pension payment to an employee who has a disability of more than thirty percent (30%) for the employee’s lifetime.

Constant attendance care grant is paid to a person of 18 years of age or above, nominated as a caretaker by an employee who is unable to perform daily living activities without the constant support of another person. The caretaker is paid forty percent (60%) of the pension paid to an employee who has a permanent disability. The employee may replace a nominated caretaker after 3 months.

Compensation for dependents of deceased employees is paid to the spouse, children, or other dependents of an employee who dies as a result of an occupational accident or disease. The law recognizes the surviving spouse and children as sole dependents of the deceased employee. Other dependents such as parents and other close relatives will only be considered as dependents in the absence of a surviving spouse and children of the deceased employee. The distribution of payment is as below:

- forty percent (60%) of the monthly pension that would have been

payable to the employee if had the employee been 100% permanently disabled to a surviving spouse (s) of the deceased employee throughout his/her life period;

- twenty percent (20%) of the monthly pension that would have been payable to the employee if had the employee been 100% permanently disabled to each child of the deceased employee subject to a maximum of sixty percent (60%) of the seventy percent (70%) of the gross monthly earning of the deceased employee immediately before the incident.
- In the case where the deceased employee leaves no spouse, children under 18 years are entitled to receive a monthly pension not exceeding forty percent (60%) of the monthly pension that would have been payable to the employee if had the employee been 100% permanently disabled, payable until the children reach the age of 18 years.
- In case there is no spouse or children, other dependents will be compensated in accordance with their level of dependency on the deceased employee.
- A funeral grant is paid to the family of the deceased employee who dies as a result of an occupational accident or disease. The amount that is paid as a funeral grant is flat rate to all employees.

It is important to note that the compensation benefits provided are not taxable while the pension provided is subject to pension indexation. Pension indexation aims to improve the security and adequacy of benefits and/or the financial sustainability of the Fund by appropriately reflecting changes in internal or external economic parameters. Indexation shall be applied to benefits payments which are paid on a periodic basis over a duration exceeding 26 months in line with the recommendations of actuarial evaluation.

6.5.2 Medical

Injured employees are entitled to medical aid benefits under workers' compensation laws. An employee who sustains injury or contracts diseases arising out of and in the course of his employment is provided medical coverage for his or her covered injuries or diseases. This benefit is provided without any cost sharing on the part of the employees. Eligible employees do not have to use their personal insurance or pay coinsurance or satisfy any deductibles when receiving medical care. Medical aid is provided to help an employee heal or recover from injuries sustained or contracted occupational diseases for 26 months from the date of accident or diagnosis of disease. It may be extended if the Fund believes the provision of medical aid beyond 26 months will reduce the permanent disability of an employee. Medical aid services include:

- Ambulance
- Medical consultation
- Medical examination
- Surgical consultation
- Skilled nursing services
- Medication
- Provision and repair of prosthesis

6.6 Rehabilitation Services

This benefit is provided to reduce the impact of permanent disability on an employee's ability to earn income or participate in other community activities. It aims to help an employee regain the physical and mental abilities that were lost or impaired as a result of occupational accidents or diseases and ultimately reduce avoidable dependency and poverty in the working age population. It also intends to protect the labour force and increase productivity by ensuring that the experience and training of workers is not lost as a result of disability due to injury suffered in the course of employment.

The rehabilitation benefits provided may consist of clinical rehabilitation for the purpose of the employee's physical and psychological recovery, vocational rehabilitation to assist an employee in maintaining his employment, obtaining alternative employment or acquiring vocational independence, as well as social rehabilitation to assist in restoring an employee's independence to the maximum extent practicable.

Although participation in vocational rehabilitation is voluntary, returning to work, even at a reduced capacity, is generally required if it is determined that the employee's condition permits at least a partial return to work. If a worker can only partially return to work, partial disability benefits are provided in addition to the pay the worker receives from his or her employment.

It is well known that long-term work absence and unemployment are harmful to physical and mental health and wellbeing. Likewise, the negative impacts of remaining away from work do not only affect the absent employee, the families of the affected employee suffer consequences, for example, from being poor and having decreased educational opportunities. Research on employee return to work (RTW) rates indicate that the longer a person is absent from work, the harder it is for them to return to work. For example, people who are absent from employment for 20 days, have a 70% return to work rate. However, people who are absent from work for 70 days, have a 35% return to work rate. This underlines the importance of rehabilitation services for both the injured employees and the working population in general.

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7 Challenges Facing Occupational Health and Safety and the Workers Compensation System in Africa

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This chapter gives an overview of different challenges related to occupational health and safety and the workers compensation system in Africa. To develop such a system is not easy, there are many factors to consider. Here we can read about legal challenges, lack of resources, need for training and information in the population, and the need for engagement among politicians and policy makers.

7.0 General Information

The human, social and economic costs of occupational injuries and diseases is a long-term concern among stakeholders. Various measures and strategies have been designed to prevent, control, reduce or eliminate occupational risks through the establishment of comprehensive systems that provide occupational safety and health services and workers' compensation.

According to the ILO Occupational Safety and Health Promotion Framework, Convention, 2006 (No. 187)[1] the right to safety and health at workplaces should be guaranteed to everyone through effective OSH systems. Employment injury schemes, popularly known as workers compensation schemes, have also been established to cover the potential risk of occupational injuries and diseases. These schemes complement the activities of official OSH institutions in ensuring prevention of occupational injuries and diseases, rehabilitation services, and/or reintegration of victims of occupational injuries and diseases.

Despite the importance of these schemes to economic growth and social wellbeing, the schemes themselves are faced with a myriad of challenges that significantly impact their effectiveness, particularly on the African continent. This may possibly be due to the fact that they are not aligned or anchored within the sustainable economic development strategies of many African countries. The rapidly rising burden of work-related injuries and diseases on the continent underlines the need for improvement in preventive measures, worker compensation, and rehabilitation services. Therefore, combining and synergizing efforts from different actors in safety and health, and worker compensation systems is an optimal approach.

The core aspects for enhancing the performance of these systems in developing countries include coordination

and engagement of the tripartite and other relevant stakeholders. This will ensure effective implementation, inspection and enforcement support, collection of adequate and reliable information, training and research, backed by strong political will. Nevertheless, a number of challenges face both OHS and worker compensation schemes in Africa. In this textbook, we briefly describe the categories of challenges in the section below.

7.1 Challenge Categories

Various categories of challenges face the systems for occupational safety and health and worker compensation and negatively impact the systems being able to achieve their objectives. These categories are;

1. **Legal and regulatory framework challenges**: In many countries, these legal instruments tend to be fragmented and outdated. Most are old-fashioned, and do not concur with the current situation in today's workplaces including current technological advancements. In addition, the systems are generally administered by different institutions with different enforcement mandates. The net result is a significant challenge to the effectiveness of OSH and worker compensation (WC) initiatives because there is no adequate coordination, cooperation, or information sharing among the enforcing institutions. This leads to duplication of efforts and increased operational costs, in addition to its ineffectiveness. In the case of Tanzania, for example, the challenge has been addressed by cooperation through memoranda of understanding in identified areas of mutual interest and information sharing between the Workers Compensation Fund (WCF) and Tanzania Occupational Safety and Health Agency (OSHA).
2. **Enforcement capacity challenges**: The effectiveness of these systems are also affected by limited human and financial resource capacity to effectively and sufficiently execute the vested mandates. With limited enforcement capacity, meeting the ever growing needs for OSH services on the continent is impossible. As a result, most of the enforcement activities such as monitoring, inspections, consultation and compliance assistance programs are conducted in the most accessible and regulated areas, with the result that the majority of the workforce is left significantly exposed and unregulated. The effect of the limited capacity of these systems for building resilience and responding to new and emerging risks has been particularly underlined during COVID 19 era.
3. **Training, education and research challenges:** The need for training and awareness of occupational safety and health and worker compensation issues is high in Africa. This is aggravated by a number of factors including an absence of OSH training institutions and inadequate funding for OSH awareness programmes, among others.
4. **Coverage related challenges:** The scope of coverage of the OSH and WC systems is generally narrow and restrictively defined in most of the governing laws. Schemes are mostly open to workers in formal employment, but only effectively

reach a fraction of the formally employed population. They exclude the self-employed and those working in the informal sectors, leaving them exposed to multiple hazards with little or no protection at all. These latter groups often have an increased risk of having an occupational injury or disease where they have no access to compensation or any compensation benefits once they suffer.

5. **Challenges related to evidence-based decision making:** Policy makers are dependent on receiving high quality safety and health information to formulate evidence-based and targeted preventive strategies, and to enable them to estimate the cost and burden of work-related accidents and diseases. However, in most African countries, the system for safety and health surveillance, and national systems for notification and recording of occupational accidents and diseases are lacking, poorly functioning or they are managed by different institutions with little or no coordination between institutions.

7a: It is a challenge if compensations for injuries are cheaper than preventive actions at the workplace (Photo: G.Tjalvin).

7.1.1 Challenges Related to Occupational Health and Safety

World Health Organization (WHO) estimates show that Sub-Saharan Africa experiences about 10% of the world's occupational injuries and fatalities, and that this number is increasing. The large and increasing burden in Sub-Saharan Africa reflects the fact that the measures in place to control occupational health and safety risks among workers in Africa

in general are inadequate. These include ineffective legal and administrative frameworks, inadequate trained and skilled occupational health and safety service providers, insufficient financial resources, and a general lack of awareness about the problem. Other challenges include rapid advancement in technologies, the impacts of emerging economies, and the fact that many workers are part of the informal economic sector. These challenges adversely impact the occupational health and safety of the workers in different ways. These challenges are interlinked in a cascade manner whereby one challenge impacts the others leading to increased risk of occupational injuries and disease and their inherent consequences to workers. This is further discussed below.

Inefficient Legal and Administrative Tools

In many African countries, occupational health and safety matters are controlled by multiple government authorities. This increases the difficulty of enforcing OHS compliance. In some countries, the designated authorities responsible for occupational health and safety matters still face several challenges such as inadequate collaboration and/or coordination between the designated authorities and other actors in this area. This creates competition between the various involved authorities, and results in duplication of efforts and inefficiency. Also, there is a tendency to exclude or provide only partial legal coverage for some individuals or some economic sectors in the occupational health provisions. For example, occupational health and safety laws in majority African countries exclude workers in the informal sectors from their guidelines.

Shortage of Trained and Skilled Occupational Health and Safety Professionals

In Africa, in most universities, colleges, and other training institutions, there are no specific occupational health and safety training programmes, nor is such training integrated into other professional learning programmes provided by these institutions. As a result there is an insufficient number of professionally trained occupational health and safety professionals available to work in Africa. This, in turn, leads to shortage of qualified occupational health and safety inspectors, trainers, researchers and voluntary service consultants.

Financial Challenges

Unfortunately, government officials, politicians, leaders, workplace owners, and employers, have not tended to prioritise occupational health and safety among other workplace issues. This has led to fewer financial allocations for activity in this area. Inadequate funding is the main cause of limited research, low numbers of skilled professionals, system / programme development and implementation, and ineffective occupational health and safety management in this area.

Information Sharing Challenges

To create awareness of the importance of OHS, there needs to be effective information sharing between government officials, politicians, employers, employees, and other stakeholders. This will ensure that together they can promote the development of an occupational health and safety culture shared among all actors and stakeholders. In Africa thus far, there are few instances of promotional strategies such as occupational health and safety publications, media coverage, and

conferences. There is therefore limited and inadequate awareness with poor OHS culture and practices as a result.

Rapid Technological Advancement

The challenge of developing good OHS in African countries was further challenged by the rapid technologic and economic development many countries experienced in recent decades. Lack of OHS knowledge and infrastructure meant that health and safety technologies and routines were not prioritized., Appropriate controls of occupational hazards associated with technologies were not implemented and there was a lack of OHS professionals available to provide leadership and manage the new technologies safely.

Emerging Economies

Developing countries in Africa are experiencing rapid growth in new economic activities including industrialization. Many of these are associated with a number of diverse challenges including informal operations, using unskilled and semi-skilled labour as their major labour force, as well as technologies with relatively high occupational health and safety risks. In addition, such economic activities are likely to be part of the informal economic sector, where OSH regulatory coverage is generally poor.

Informal Sector

The majority of the working population is employed in the informal sector. This covers a broad diversity of economic activities, most of which do not pay much attention to OHS. Workplaces and employers in the informal sector are frequently excluded from official OHS guidelines and regulations. As a result, workers in this sector are exposed to greater risks of occupational injuries and diseases.

7.1.2 Challenges Related to Workers Compensation

Almost all African countries have systems of worker compensation or the so-called Employment Injury (EI) Schemes. These systems face many challenges which limit their ability to achieve the social security goals of these programmes. Challenges include the narrow scope of coverage, inadequacy of benefits, unsustainable funding mechanisms, and poor administrational and institutional frameworks. More details follow below:

Narrow Scope of coverage: Despite the fact that social protection and the right to social security are internationally recognized fundamental human rights, countries in the African continent offer the lowest social security coverage in the world. The coverage of national EI schemes is also very narrow. It serves mostly the workers in the formal employment sector and excludes the self-employed and informal sector workers. In addition, certain categories of employees are specifically excluded from the scope of EI protection. These include for instance casual workers, domestic workers and some public servants. As up to 85.8% of employment in Africa is in the informal sector, such exclusions mean most workers are not covered for EI. The ISSA Country profile (2019) reported that the 49 African countries with social protection coverage have statutory provision on at least three social security policy areas (disability, EI, family, maternity, old age, sickness, survivors and unemployment). Only six countries have fully comprehensive provision in place, 30 have coverage in five to seven areas, while 13 address only three or four.

7b: Machines like this may cause serious injuries if the worker is careless and unlucky. Serious injuries may give health problems that reduce the ability to work, and the worker might need to be economically compensated (Photo: B.E. Moen).

Inadequacy of benefits: Benefits provided by EI schemes are inadequate. There are still a number of employer liability schemes in Africa, where benefits are paid in the form of a lump sum. Such lump sum payments are problematic because workers may not have the skills to invest large sums of money and they may be easily exhausted. Furthermore, the value of benefits paid out is often very small especially when legislation sets maximum limits. In addition, the maximum benefits prescribed in law are often outdated. On the other hand, even where benefits are paid in the form of pensions, they are also inadequate as a result of decreasing of their purchasing power over long periods due to inflation. Most laws do not provide for indexing of pensions benefits for inflation. For example, in Tanzania the maximum temporary or permanent disability pension was TZS 3 685 852.69 a month. This was recently increased to TZS 8 200 000 per month.

Unsustainable funding mechanisms: It is recommended that EI benefits be financed by the employers as they are responsible for compensating for unsafe conditions. That being the case, sustainability of EI schemes is reliant on employers correctly contributing remittance as well as proper investment of such funds by administering institutions as well as in improving working conditions, which will also reduce the number of occupational incidents. In Africa, there are problems facing all these three factors. One is the weak enforcement in collection of remittance, inefficient bureaucratic procedures, and non-automation of the administration process. This leads to inaccurate evaluation of remittance levels owing or

even to a lack of remittance contributions to the scheme. Second, optimising the investment of such funds requires skills, knowledge, and planning. The pursuit of uncertain investment options or even poor investment choices may push the schemes into projects providing negative returns on investment. In such cases, the schemes may succumb. Third, the sustainability of the EI scheme is questionable if efforts to develop prevention initiatives are separated from compensation efforts. In particular, preventive initiatives benefit the overall compensation process because when applied successfully, they will lower the numbers of claims for compensation. Unfortunately, weak enforcement of occupational safety and health is still a huge problem in African countries.

Poor administration and institutional framework: There are many shortcomings in the administration of EI compensation claims. These include confirming that the injuries in question occurred during the course of employment, delays in processing claims due to the interactions between many parties (the administrative institution, employee, employer, health care providers, and sometimes the court) and further delays by legal challenges as to the percentage of disability. Indeed, administrative constraints in the organisations involved in the benefit-processing process led to delays in claim processing. The institutional framework for the EI system in many African countries is fragmented by design. There are three main types of EI systems: social insurance, employer liability, and mixed social insurance and employer liability systems. Employer liability schemes have various disadvantages. These make their continued operation inadvisable as they do not meet ILO requirements on the provision of EI benefits. For example, individual employer liability schemes provide compensation as a lump sum, while social insurance schemes provide a combination of periodic payments for severe disabilities and lump sums for more minor ones. Several countries in Africa continue to use a mixed system of individual employer liability and social insurance. The administration of these systems is also undertaken by different institutions with similar mandates to different groups of workers. The fragmentation issues are worsened by poor coordination, limited information sharing and networking between the institutions involved.

7.1.3 Cross-cutting Issues

Poor compliance and weak enforcement: The effectiveness of the occupational safety and health frameworks are directly related to the monitoring and enforcement capacity of administrative institutions. Most of the institutions face challenges of human resources and financial constraints. These prevent them from carrying out inspections at all or only limiting inspections to industrial areas.

Under-reporting of occupational accidents and diseases: Occupational safety and employment injury laws impose duties on employers and employees to report occupational accidents and diseases. However, many accidents are not recorded or reported according to the guidelines and therefore reliable data about the number of occupational incidents is not known. Countries also have poor OHS surveillance systems, as well as poor national occupational accidents and diseases notification systems.

Limited coordination and networking: inadequate coordination and networking has the negative impact in relating between the EI with the occupational safety and health systems. Institutions that promote occupational accident and

disease prevention do not receive information on accidents and diseases from the EI schemes. This is due to the failure of employers and employees to report occupational accidents and diseases and lack of a proper recording and notification systems.

Focus on compensation: EI systems in Africa are mainly compensation-focused, with little or no efforts on prevention of occupational accidents or diseases or on rehabilitating and reintegrating workers who are injured at work or contract an occupational disease to alternative work or any gainful employment. An effective EI scheme is the one that adopts a holistic approach, linking the functions of prevention, rehabilitation, and compensation. South Africa, Zimbabwe and Tanzania have started a process of linking the administration of rehabilitation services to the injured workers or those who contract an occupational disease.

Inadequate awareness among key stakeholders: In many of the African countries, there is limited awareness of workers compensation, or of OSH which, understandably, leads to non-compliance with OSH and employment injury laws. This might be caused by inadequate funding for awareness programmes, poor communication and cooperation between OSH promotion and workers' compensation, as well as inadequate research on OSH and EI matters. However, certain countries do recognise the need for raising awareness of these issues and have adopted or are planning measures to promote new EI schemes, including Tanzania, Malawi and Ghana.

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8 Towards Sustainable Development in Tanzania: A Way Forward

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This chapter briefly describes the concept of sustainable development and the associated challenges in the African context. Also, it introduces readers to the way forward in achieving sustainable development in relation to occupational diseases and injuries. Finally, it describes the role(s) of a wide spectrum of stakeholders in the prevention of work related health conditions.

8.0 Fundamental Concepts in Sustainable Development

8.1 Background

As previously described in chapter 1, the United Nations adopted 17 global goals (SDGs) in 2015. SDGs aim at ending poverty, protecting the planet, and ensuring that people enjoy peace and prosperity by 2030. The SDGS are universal and have a complex inter-relationship. They carry a global vision, with a slogan *"Leave No One Behind".* The SDGs inter-relationship calls for development to balance social, economic and environmental sustainability. Therefore, various measures are needed in sustainable development. The following are some of the important measures:-

(i) Technology

One of the important measures in attaining sustainable development is the use of technology that is appropriate, locally adaptable, eco-friendly, cost effective and culturally suitable. Technology should mostly involve the use of locally available resources and labour. This is because locally technologies are more useful, cost-effective and sustainable. Technology should involve nature by incorporating natural conditions of a particular area in a given technological model. This is also referred to as "design with nature". Furthermore, technology should use as minimum resources as possible, with minimum waste production. In addition, technology should reduce human suffering such as reducing the development of occupational diseases and injuries at workplaces.

(ii) Reduce, Reuse, and Recycle

This 3-R approach aims at minimising resource use, advocating re-use of resources several times rather than discarding them as wastes and recycling the materials. This will

reduce pressure on the available resources and minimise waste generation and pollution. It is important to note that minimisation of emission and/or pollution is vital in preventing work related health conditions. This will eventually minimise the associated costs such as medical, monetary compensation and rehabilitation costs.

(iii) Promoting Environmental Education and Awareness

This aims at making environmental education a centre of all learning processes and changing the thinking pattern and attitude towards the earth and the environment. Introduction of this concept among students in the lower levels will impart a feeling of belongingness to earth since childhood. This concept is also called *"earth thinking"*. This type of thinking is expected to have long term effects as it will gradually be incorporated in human thinking and actions. Eventually, the *"earth thinking''* will help in the transformation to sustainable lifestyles.

(iv) Utilising Resources as Per Carrying Capacity

Carrying capacity is simply described as the ability to sustain a limited number of organisms on a long-term basis. This can either be *supporting capacity* meaning that it has the capacity to regenerate or *assimilative capacity* meaning that the capacity can tolerate different stressful conditions. Sustainability of a system depends on its carrying capacity to a large extent. Therefore, sustainable development is based on the capacity of the resources to regenerate and developmental changes should not exceed the tolerance capacity of a given system. Environmental degradation sets in and worsens progressively if the carrying capacity of a system is exceeded, such as when there is over exploitation of resources. Nevertheless, the concept of carrying capacity in human beings is more complex compared to other living organisms. This is due to the fact that human beings not only need food for their living but also need to maintain quality of life. Therefore, a balance of such factors is crucial, hence the need for sustainable development.

(v) Improving Quality of Life in Social, Cultural and Economic Dimensions

Sustainable development emphasises on benefiting the rich and the poor while conserving tribal, ethnicity and cultural heritage. This can be achieved through strong community participation in policy formulation and practice while stabilising population growth.

8.2 Development and its Sustainability

The concept of sustainable development, as described by the 1987 Brundtland Commission Report, refers to "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs".*

Sustainable development involves three intertwined aspects: *Society, environment, culture and economy.* On the other hand, sustainability involves thinking about the future while balancing environmental, societal and economic considerations in the process of improving quality of life. A good example is the thinking that a healthy environment is important for the provision of food and resources, safe drinking water and clean air for citizens in a prosperous society.

Sustainable development differs from sustainability in that sustainability is a long-term goal (i.e. towards a more sustainable world), whereas sustainable development denotes the different processes and/or pathways for its achievement. Examples of processes for achieving sustainable development include sustainable agriculture and forestry, sustainable production and consumption, and research and technological transfer.

8a: Sustainable Development Goals (Photo/ill: UN).

8.3 Challenges Towards Achieving Sustainable Development

The word sustainable development is frequently used to underline the vision of the future in overcoming all the problems encountered on the earth today. Examples of existing problems that need to be eliminated include depletion of natural resources, gender inequality and an unequal distribution of resources. Sustainable development therefore strives to remove all such problems. However, the all-encompassing nature of sustainable development seems to be unachievable. This is due to the extent of the problems on earth and the difficulty of completely eliminating such problems, thus rendering the concept of sustainable development as abstract. Even though the concept of sustainable development seems to be difficult to achieve it; important to understand the concept with respect to the current environment so as to live a more conscious and selfless life.

Ideally, the concept of sustainable development denotes a long-term solution with respect to planning our indefinite progress in the future without causing detrimental effects to the environment. This gives a guarantee for a safe environment for future generations to survive and continue developing and caring for the environment in a sustainable way. Therefore, sustainable development insists on satisfying the needs of the present generation without sabotaging the opportunities of future generations. Therefore, the concept of sustainable development encompasses a wide range of important matters that affect our daily lives such as environmental, social, and economic development.

The 17 SDGs are intended to be used as guidelines for the future and optimal conscious development, globally. Since the SDGs are intertwined, they need concentrated efforts to be achieved. However, the intertwining of influences the achievement of the SDGs in many African countries including Tanzania. This is because poor performance in one SDG negatively affects the performance of other SDGs and vice-versa. For example, lack of financial resources and/or unequal distribution of resources, conflicts, occurrence of natural disasters, and corruption are examples of the many challenges in the achievement of global goals in the African context. Therefore, collective measures to address such challenges will pave the way towards sustainable development by 2030.

The relationship between health and socio-economic development is described in chapter 1. Poor health affects socio-economic development at all levels from individual, household, community, corporate, national, sub regional, regional and global levels. At workplaces for example, reduced productivity of the workforce and increased monetary and non-monetary costs for workers suffering from occupational diseases and injuries and/or disability negatively influence socio-economic development. The sick labour force, funds and the time used to take care of the sick could have been used for socio-economic development purposes. Thus, prevention of work-related health conditions is vital towards sustainable development.

8.4 The Way Forward

The national economic requirements and the demands of globalisation drive the growth of the informal sector in Tanzania. They create large numbers of workers who exist outside legal frameworks and in extreme poverty. Factors that promote working environments that are extremely unsafe and unhealthy. Workers in the informal sector lack the resources necessary to protect their health. Women and children are particularly vulnerable in these working environments. National governments have a responsibility to ensure the appropriate structures and mechanisms exist to alleviate poverty among these workers since they encourage these work activities. The Industrial revolution also creates processes that are hazardous to workers. The processes need to also improve the working conditions with regard to safe and healthy working environments. This must be done within clearly defined policy frameworks developed by all national stakeholders. As we look at a way forward towards sustainable development that frees its people from occupational diseases, injuries and workers compensation capacity building at all levels is key.

8.4.1 Capacity Building

Tanzania, as in most African countries, is struggling with unsafe working conditions in agriculture and industries such as mining, construction, manufacturing and even service. This despite knowledge about effective interventions to prevent occupational hazards and to protect and promote health at the workplace is a challenge. There are large gaps between and within workplaces regarding the health status of workers and their exposures to occupational risks. Large companies, such as large mines, take health and safety policy more seriously by investing a little on capacity building compared with small informal companies. The Occupational Safety and Health Act, 2003 creates conditions that favour the formal sector, however due to lack of capacity do not even satisfy the sector, live alone the informal sector. The importance of capacity building on occupational health and safety is emphasised to advocate for sustainable development.

Capacity-building is defined as the process of developing and strengthening the skills, instincts, abilities, processes and resources that organisations and communities need to survive, adapt, and thrive in a fast-changing world. It consists of a clear policy framework, institutional development and legal framework, citizen/democratic participation and oversight, human resources improvements including education and training, and sustainability.

Education and training in Occupational Health and Safety is used to develop capacity to deal with workplace hazards and risks. Education develops the ability of the mind to know through learning while training focuses on skills development. Education and training both aim at learning through the acquisition of knowledge, skills, and/or attitudes. There is little education in occupational health and safety at schools and universities in Tanzania and competencies in health personnel, politicians and other stakeholders are often low. This situation will need to be addressed if occupational health capacity is to increase.

Attitudes and behaviour play a big role in shaping the workers manners and thinking about workplace hazards and risks. For example, there was a belief that frequent

deaths at workplaces among the small-scale miners in Tanzania were necessary for these precious stones to be found. That it is the cost that the earth demands for giving them up. It may just be an extreme example of a group of workers that has had no choice but to accept one of the fundamentals underlying occupational health and safety: that the health and safety of workers is a basic cost of production that cannot be avoided. Unfortunately, this kind of attitude is very common throughout.

Workers and their families have an obvious concern about the impact of work on health that will shape their attitudes towards preventive actions. Is the worker safe in the short run and in the long run? Will the worker be able to contribute economic support to his/her families as long as necessary? Will the worker stay healthy into old age, even after s/he stops working? Are family members at risk from one member's job?

There is a big need for building capacity to improve workers' health and safety and thereby prevent and reduce poverty. OHS is concerned with the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations. Complete OHS programmes deal with work organisation, psycho-social issues, ergonomics, rehabilitation, legislation, occupational health services, economics, insurance and multidisciplinary research.

Economic, institutional, political and social aspects form primary barriers to more effective OHS programmes. There is a need for systematic and detailed occupational health programmes, taking into consideration the barriers, at national level, beginning with a policy commitment to specific, time-bound objectives. The OHS programmes should be inclusive in considering capacity for formal and informal sectors to implement them.

Institutional Capacity Building

OHS coordination among all relevant government agencies that are involved in OHS activities is essential. Institutional capacity building aims to enhance the capacity of governments, business, non-governmental groups and communities to plan and manage OHS efficiently and effectively. It addresses capacity building beyond the provision of education and training of professionals. Since OHS implementation cuts across both government and non-government institutions there are tendencies for laxity when the regulatory authorities lack capacity to enforce legislation.

At times, there is conflict between different government ministries and agencies when some of the functions assigned to the Ministry of Labour-OHS Authority (Chief Inspector and the Inspectors) also fall under the jurisdiction of other government offices. For example, issues related to fire and boilers, though are conducted by the Occupational Safety and Health Agency (OSHA) also fall under the jurisdiction of the Ministry of Home Affairs. This Ministry is more equipped with resources to deal with fire accidents, inspection of boilers and fire extinguishing equipment than OSHA. Recognition and utilisation of existing institutional capacities is vital.

The public and all stakeholders should be informed of laws and regulations to facilitate compliance. The measure of success or capacity of an institution is to be able to manage OHS in the country, this will also require the public and all stakeholders to participate to ensure

implementation/adherence of laws and regulations.

Human Resource Capacity Building

Implementation of laws and regulations requires a pool of skilled human resources and substantive financial resources. Knowledge and skills among providers and staff at workplaces is remarkably inadequate. There is a shortage of OHS skills both in the public and private sector. The level of occupational health and safety awareness among workers, employers and community at large is very low. In addition, there has been little investment in the OHS education and training of regulators, inspectors, health care providers, health and safety representatives etc which impacts negatively on OHS performance.

Groot and Molen (2000) defined human resources capacity building as the development of knowledge, skills and attitudes in individuals and groups of people relevant in design, development, management and maintenance of institutional and operational infrastructures and processes that are locally meaningful.

If the nation wants to effectively reduce occupational accidents and diseases, there is a need to increase human resources and skills level, both in enforcement agencies as well as within all levels of the workforce. OHS public and private institutions are understaffed and unable to attract or retain suitable skilled and experienced personnel. There are significant skills deficits in both the public and private sector. The resources for enforcement of occupational health legislation are limited and unevenly distributed.

The shortage of technical equipment also limits the diagnosis of occupational diseases. Laboratory expertise and technical equipment are in short supply, making measurement of hazards impossible in most instances. The need to train and educate professionals to improve capacity in enforcement and monitoring, as well as occupational health service delivery. Awareness creation campaigns among stakeholders to develop safety culture will benefit workers and employers and the community at large. The Government in collaboration with other stakeholders need to ensure education and training on issues related to OHS to employers, workers and community at large are conducted.
The Government should develop a programme for developing OHS skills and competences in both public and private sectors, ensuring the availability of adequate and competent
professional and technical staff.
The Government also need to allocate sufficient resources to effectively and efficiently carry out duties and responsibilities, which include administration, supervision, and monitoring,
training, provision of enforcement services. Reward systems such as salaries, bonuses and allowances will also contribute towards increased efficiency and effectiveness.

Increasing Accessibility to Services

Occupational health and safety services in Tanzania are a multi– sectoral entity with many players including Government Ministries, Employers Workers, NGOs CBOs and private individuals. OHS services include health surveillance, risk assessments and communication, health education, training and research, diagnosis of occupational diseases, prevention of accidents, emergency preparedness, maintenance of good health, and record keeping.

The lack of resources impacts on access to healthcare. Resources other than human capacity are scarce, such as vehicles, which prevents inspectors visiting workplaces in more remote areas to carry out vital functions. What little information there is about the availability of OSH professionals also indicates a scarcity and disparity within the country which might hinder accessibility to OHS Services. Work-related diseases may not be recognized in clinics or general hospitals, and are often undiagnosed or misdiagnosed as something else. It may seem that, by comparison, occupational health and safety is a less pressing issue and perhaps something that should wait until other challenges have been dealt with. The reality is that the survival of individuals and families depends on the ability of breadwinners to earn a living, however meagre.

Out of a population of 60 million people in Tanzania about 31 million are employed in diverse sectors such as agriculture, service, construction, fisheries, and mining. Majority are not directly covered by OSH Act, 2003. In working life there are difficult challenges resulting from the changes taking place globally including globalisation, privatisation and liberalisation. Despite regulatory protection for workers and trade union demands on health and safety, problems facing workers continue to increase.

Limits in regulatory enforcement, and the demands of an increasingly competitive global economy exacerbate the need to maintain and improve safety and healthy working conditions

The need to develop a strategy for, and commit resources to, the establishment of occupational health and safety programmes for the informal sector. The need to develop adequate and effective systems to ensure the management, rehabilitation and social security of workers with occupational illness and injury.

Strengthening Occupational Health and Safety and Compensation Services

The provision of occupational safety and health services mainly focuses on promoting and maintaining the highest degree of physical, mental and social well-being of workers in all occupations. Where also, workers' compensation schemes play a pivotal role not only in providing financial assistance, compensations, benefits and rehabilitation services to injured workers but also in enhancing prevention of occupational injuries and diseases. Integration, support and cooperation will guarantee improved occupational safety and health services.

Knowledgeable experts (Competence) in adequate numbers (Staffing) supplied with adequate resources (Funding) are the main pillars to strengthen OHS and compensation services. In details, the following are significant specific actions to be taken order to strengthen provision of occupational safety and health and workers' compensation services:

i. **Enhance education, training and awareness:**

   "*Education is the most powerful weapon which you can use to change the world"* this is wisely said by Nelson Mandela. The enhanced awareness and skill will accelerate the change and improvement desired at the workplace and national level. To strengthen the existing safety and health and workers' compensation services depend essentially on capacity and competence of the personnel who

are involved in various functions at the national and enterprises level. In cooperate OSH and WC training in vocational, university and other elementary levels of studies to nurture an improved capability which matches with the current need. Those already practising there should be an institution based initiative for capacity building and improving staffing levels. Enhanced training and awareness should take into account the current trends in the intensive use of science and technology and internet based teaching and learning platforms for developing learning contents and for delivering such as virtual reality, interactive animations among others.

ii. **Enhancing OHS compliance services**: Adhering to safety and health standards is fundamental in preventing the consequences of poor working conditions. Innovative and action oriented compliance enhancing approaches will stimulate employers' ability and willingness to comply with the legislative requirements. Traditional enforcement approaches which are reactive and routine proved to be insufficient in enforcing and achieving sustained compliance. Considerable changes in the world of work call for improved and effective compliance programs which proactively promote and enforce compliance, must be risk – based, must be collaborative and sustainably assisted by relevant regulator (s).

iii. **Enhancing action oriented research on safety and health and workers' compensation:** Safety and health and workers' compensation research provides important information about work related challenges, their patterns, trends and burden as well as opportunities for intervention and improvements. Research support in formulation action and evidence based

To strengthen OHS research, we need to methodically identify and define OHS research priorities and the enhancing institutional capacity for conducting research and effective dissemination of research results for various uses.

iv. **Promoting the use of advanced technology:** Leveraging the opportunities from the current advancement in technology will enhance the efficiency and effectiveness in service delivery and in research. For example, the new innovative methods and digital instruments for workplace hazards identification and exposure assessments; the use of digital media for OSH communication and information sharing are powerful tools for raising OHS knowledge, awareness and influence appropriate preventive practices.

v. **OHS Institution and legal framework improvement:** Improvement in institutions, administrative and governing machinery is essential in driving up improvement in occupational safety and health and workers' compensation services rendered to stakeholders.

vi. **Enhancing OHS resilience and sustainability at national and enterprises levels**: There are constant changes in the world of work and workforce which might adversely affect the service and delivery modality. This is a new reality which brings dynamism in ensuring resilient capacity in responding to new and emerging risks as well as the sustainability of preventive measures at national and enterprise levels.

vii. **Effective stakeholders' collaboration**: Effective involvement of all relevant stakeholders is essential in strengthening safety and health and workers' compensation. Coordinating various initiatives, efforts and abilities will enhance safety and health services delivered to employers and employees.

viii. **Strengthening safety and health data and information and management:** Establishing a national system for recording and notification of occupational accident and diseases enhances collection of accurate, comprehensive and reliable data and information which support for strategic decision, establishment of evidence based initiatives and action oriented research.

Establishing Occupational Rehabilitation Centres

WHO defines rehabilitation as *"a set of interventions designed to optimise functioning and reduce disability in individuals with health conditions in interaction with their environment*". Rehabilitation enables individuals with health conditions to reach and maintain optimal levels in terms of physical, sensory, intellectual, psychological and social functional levels. It provides tools needed for attaining independence and self-determination. Thus it helps individuals to be as independent as possible in various aspects of daily life.

Occupational rehabilitation can reduce the impact of illness or injuries, complement other health interventions, and help to achieve the best outcome possible by minimising or slowing down the disabling effects. Effective rehabilitation enables employability of the individuals with disability.

People with disability following occupational accidents or diseases can be effectively reintegrated and returned back to work and can be very productive in many types of work. There are three types of rehabilitative services namely medical, vocational and social rehabilitation. In Tanzania currently, the Workers Compensation Funds (WCF) offers medical rehabilitation among other benefits, and expansion to vocational and social will commence in the near future. The Fund is engaging rehabilitation stakeholders and utilising the existing rehabilitation centres in the country after major renovation and improving infrastructures in those centres. The Fund also has undertaken training for capacity building to rehabilitation experts and case managers in Tanzania, conducted in collaboration with Germany Social Accident Insurance (DGUV).

Expanding service Coverage to the Informal Sector

The informal sector is still accommodating the majority of workers who have no or little access to social protection and

occupational safety and health services. Despite efforts made so far to expand coverage to the informal sector the coverage gas is still so vivid. Expanding occupational service and workers' compensation services to the informal sector should be through a comprehensive and integrated national strategy led by the government and embedding social protection with other strategies so as to facilitate the transition from the informal to the formal economy. The approaches should be designed to meet workers' needs in the informal sector. Awareness and information sharing will enhance the adaptation of these approaches.

Research Capacity Building

Research is important in finding new OHS information and providing solutions to health and safety problems; however, Tanzania has no comprehensive nationally coordinated
occupational health and safety research strategy. There is also inadequate capacity to perform in– depth investigative work, such as accident investigations, arising from day to day service operation's needs. Capacity to perform research to support standard – setting recommendations is also inadequate. All these require research skills training and dedicated budgeting allocation.

Research also supports awareness of socio-economic indicators, i.e poverty, inequality, unemployment, huge challenges to health, scarce resources for health, necessary to prevention of occupational diseases and accidents. Research capacity building has been defined as *"a process of developing sustainable abilities and skills enabling individuals and organisations to perform high quality research"*. OHS as the science of anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, considering the possible impact on the surrounding communities and the general environment requires strong research capacity.

In order to regulate OHS effectively and prevent human suffering, regulators need access to current research findings, international legislation and policy, and to attend relevant meetings and receive training (especially on how to interpret scientific data submitted with health impact assessments).

Research capacity can be enhanced through networking activities, with the centres of expertise and other researchers or individual occupational health and safety professionals dealing with the health and safety of the working population. The importance of strengthening links with national, regional and international networks to communicate and use research results, and with ministries of labour, health and related sectors in defining national agendas for OHS research cannot be over-emphasized.

Moreover, better use of mass media to disseminate the results and promotion of links between researchers and grassroots organisations, including workers' and community organisations, is needed to encourage participatory multidisciplinary research, so as to involve the target communities actively in both the conduct of studies and in the ensuing actions to remedy problems identified.

The Government in collaboration with stakeholders should develop a comprehensive nationally coordinated occupational health and safety research programmes and provide research funding for short and long-term research activities

Employers Capacity Building

Many accidents are not reported because employers don't know that they should be reported or prefer not to. Employers should ensure health and safety at workplace, establishment of health and safety committees at workplaces, conduct training and report accidents, diseases and other dangerous occurrences to relevant authorities.

The capacity of employers to comply with existing OHS laws and regulations require regular communication between employers, employees and government. Interpretation of laws is better taught and monitored.

Employees Capacity Building

At formal workplaces, workers form and participate in occupational health and safety committees, report any hazardous situation to respective authorities and comply with occupational health and safety requirements at work. However, workers don't know that they should report accidents or illnesses related to work, or are afraid of losing their jobs if they do.

Employee capacity building is a systematic process to improve employees' knowledge, skills, understanding, values, attitude, motivation, and capability necessary to perform well at work. The reality is that in these circumstances, workers desperate to get and keep jobs do not press for better working conditions, or refuse to take on dangerous tasks, even if they are aware of the dangers. Self-employed have competing priorities and health and safety is usually at the bottom of the list. Despite the difficulties, the responsibility of governments, employers and stakeholder organisations to play an active role in safeguarding the health and safety of workers is an obligation. The cost of occupational injury and illness is mitigated by better social support, and the risk of such injury and illness is much less

Financial Capacity Building

The implementation of all developmental activities is highly dependent on the availability of resources. As a general rule, financial resources are scarce, hence the need for strong financial management skills. Financial capacity building, particularly in the African context is vital in developing strong financial management skills. This is due to the fact that it improves employees', organisations' or country's performance in various socio-economic activities. By implication, strong financial management skills enable individuals, groups, organisations or countries to effectively control their own affairs, hence achieve planned goals. On the other hand, lack of financial management capacity makes the future uncertain as it may be difficult to predict when the money will fall short and/or may become impossible to finance crucial developmental activities. Financial capacity building therefore involves imparting financial management skills that enable proper use of financial information, skills, and methods to ensure meticulous use of resources.

Likewise, financial capacity building is vital in the implementation of occupational health and safety programmes. Adequate financing and strong financial management skills can effectively prevent the occurrence of work related diseases and injuries. The following is a brief description of the components of strong financial management;

i. ***Planning and budgeting:*** This involves making decisions on the objectives and

forecasting on the associated costs for achieving the set objectives. This is formulation of a budget within the specified period. A regular monitoring of the budget involves comparing the actual performance with budget forecasts. This allows taking appropriate actions such as decreasing funding or undertaking more fundraising, and reporting.

ii. ***Accounts record-keeping:*** Accurate and up-to-date accounting records transactions are important in financial management. These records provide important information for management of an organisation or country. The records are also used in the preparation of internal and external financial reports.

iii. Financial reporting: This includes producing periodic accounting statements such as annual statements and reporting to relevant authorities and/or stakeholders.

iv. Financial controls: Financial management also involves protecting property and equipment of the organisation, and minimising the possibility of errors and theft. This involves creating effective financial control measures such as putting in place systems for authorization of expenditures when transactions are made.

8.4.2 Creating an Integrated Health Management Information System

Currently, there is no national system in place for recording, compiling and reporting occupational accidents and diseases. This leads to absence of information to enable implementation of necessary interventions for improving the occupational health and safety situation.

In the Integrated Health Information System approach, it is not just data that is integrated, but ways of working and the social relations which support the health information systems at global, national and local levels. The concept of integration viewed from standpoints such as from a development and a sociological perspective can borrow from experience of 'integration' as applied in health interventions eg. Tanzania Essential Health Interventions Project (TEHIP), to include not only integration of data and management procedures, but also integration of socio-political and cultural mindsets of community members, local health workers, government and donor communities. The scope of integrated health information systems could be broadened to consider the integration of not just management information but also epidemiological data.

Integrated HISs helps the healthcare providers to control some health conditions like hypertension, cholesterol level, diet, and obesity. Using information systems, the providers can access the data of individuals from multiple levels of the health system. An integrated approach that does not confine to health information is important when set up to combine monitoring and risk assessment of workplaces both formal and informal.

The Government in collaboration with other stakeholders should put in place a reliable ICT based system for the collection, recording, notification and dissemination of occupational health and safety Information.

Establishing a National Database for Occupational Health and Safety

The International Labour Organisation encourages the development of country profiles in occupational health (and other issues) as a means of consolidating information, identifying needs, establishing baselines and informing strategies for

targeted action. The profile of occupational health and safety in Tanzania has not been described in detail due to weak information systems in occupational health and safety and lack of reliable information.

The need to produce and use data to direct interventions, monitor occupational health and
safety and identifying problems is real.

Linking the Health Management Information Systems

The International Labour Organisation encourages the development of country profiles in occupational health (and other issues) as a means of consolidating information, identifying needs, establishing baselines and informing strategies for targeted action. The profile of occupational health and safety in Tanzania has not been described in detail due to weak information systems in occupational health and safety and lack of reliable information. The need to produce and use data to direct interventions, monitor occupational health and
safety and identifying problems is real.

8.4.3 Promoting a Multi-sectoral Approach

In order to control health hazards, a common approach ought to work effectively in all settings. Regulatory framework for the control of pollution of the environment, and hazards in the workplace is a combination of laws that have been passed, amended, and re-amended over decades. Reasons for linking environmental and occupational health are governed by the fact that the source of the hazard is usually the same, whether it is an agricultural activity or an industrial activity.

Multisectoral approach (MSA) refers to deliberate collaboration among various stakeholder groups (e.g., government, civil society, and private sector) and sectors (e.g., health, environment, and economy) to jointly achieve a policy outcome. In OHS these collaborations will be better if they go beyond the national boundaries, as there are a lot of experiences in other countries that can be shared. Also, industries that pollute our environment sometimes have been shifted from other countries with their hazards well known. There are international conventions, treaties, protocols and charters that should be signed/ratified and implemented to promote multisectoral approach in solving socio-economic impacts of OHS.

The protocol on health in the Southern African Development Community (SADC) signed in 1999 and became operational in 2004 denotes that …

> "…*Every worker in the Region has the right to health and safety at work and to a healthy and safe environment that sustains human development*…" and that… "*Workers have the right to services that provide for the prevention, recognition, detection and compensation of work-related illness or injury, including emergency care, with rehabilitation and reasonable job security, after injury and adequate inflation adjusted compensation...*"

Relatively few OHS-related conventions have been ratified by our country, but belonging to regional blocks and signing charters and protocols on health requires us to implement them.

Participation of the social partners in a tripartite advisory board should enhance the performance of regulatory mechanisms; necessitate the establishment of policy guidelines
to facilitate better understanding; and continual compliance to the policy rules and regulations. The Ministry responsible for Labour matters should define the role of each stakeholder in respect of occupational health and safety and be the lead in multi-sectoral approach
matters.

8.4.4 Strengthening Political Support

Substantial cross-national variations have been demonstrated in political support/institutional confidence; It identifies at least three separate schools of thought seeking to explain this phenomenon: the role of cultural values, government performance, and political institutions. The findings indicate that institutional confidence is most likely to be highest in parliamentary democracies characterised by plurality electoral systems, two-party or moderate multi-party systems, and unitary states, and that these relationships are confirmed even after controlling for differences in levels of economic development and post-material values; social background and education are also related to institutional confidence, while the influence of socioeconomic status and gender are very modest. The results replicate one of the main theoretical principles of Anderson and Guillory (1997)—that winners express more confidence in the system than losers, and they also show that majoritarian institutions tend to produce greater institutional confidence than consociational arrangements.

Political parties form the cornerstone of democratic society and serve a function unlike any other institution. They aggregate and represent social interests; provide a structure for political participation; train political leaders who will assume roles in governing societies; and contest and win elections to seek a measure of control in government institutions. In many areas of the world today, however, political parties are facing a crisis of public confidence due to their organisational and political shortcomings. Parties are perceived as ineffective, corrupt and out-of-touch with their constituencies. They lack credibility and often fail to attract young leadership to their ranks. At the same time, support has risen for independent candidates, special interest parties and anti-party movements. This crisis poses a dire threat to democratic development. Political party building, an often misunderstood and underutilised element of democracy building, must become a central issue among the worldwide network of pro-democracy activists, elected leaders and scholars. The goal of the “Strengthening Political Party Systems” panel was to address the primary challenges facing political parties and political party systems. The panel provided an opportunity to heighten awareness of political parties and the key role they play in democratic development, and aimed to identify measures that will strengthen parties and promote more inclusive and participatory political systems. The panel discussion focused on the difficulties faced by political parties and explored.

8.4.5 Strengthening Institutional Collaborations

Collaborations between and within institutions play a fundamental role in developing and diversifying occupation

health services including workers compensation in resource-limited settings. This can be in the form of shared agreements or contracts (short or long term) between organisations who have common goals, objectives, programmes and or projects. Organisations working in the same geographical locations may agree to share training and activities for capacity building or partner in service provision, if deemed so. This is important in improving efficiency and effectiveness, saving time and improving outcomes for beneficiaries. It also reduces the possibility of duplication of available resources that would otherwise be used for other programmes.

The necessity of institution collaboration should be emphasised and inclusive, from international, regional, national and local both public and private, without leaving behind small and informal institutions that may exist in different localities.

Labour Laws and Enforcement Authorities

Many countries have systems including establishments that manage and guide occupational safety and health practices. For example, In Tanzania, the responsibilities of labour inspectorate lie within the Ministry responsible for Labour, Youth and Employment Development. The main functions includes;- (i) conduct and coordinate workplace inspections (ii) preparing and reviewing guidelines on the workplace inspection services (iii) ensure compliance with labour legislation, rules and guidelines (iv) providing consultative legal guidance when deemed necessary, and (v) disseminate information on workers rights and obligations to employers and employees.

The responsibilities for ensuring a safe work environment is shared between the Ministerial labour office; the Occupational Safety and Health Agency (OSHA) who have the sole responsibility of overseeing occupational safety and health matters at all workplaces granted under the Occupational Safety and Health Act no. 5 of 2003. Some of core functions of this Government agency includes (i) conduct workplace inspections (ii) workplace registration (iii) workplace risk assessment related to occupational safety and health (iv) ensuring compliances to occupational safety and health guidelines and standards (v) conduct workplace accident investigations (vi) conduct workplace occupational hygiene surveys and advise accordingly, (vii) conduct public awareness on safety and health at workplaces and (viii) provide technical guidance and advice on occupational safety and health matters. The Agency i.e, OSHA has Zonal offices across the countries where officers are allocated to undertake day to day activities.

In line with ensuring a continuum for protection of safety and health of employees, the existence of the workers compensation scheme is vital. In Tanzania for example, the Workers Compensation Legislation was enacted in 2008 and went through amendment seven years later. Since July 2015, all employers were required by the law to contribute 0.5 percent for the public and one percent for private employers of employee's wages each month to the workers compensation fund. This contribution is deducted from employees salaries. The goal for the Fund is to provide for financial compensations for employees who suffer or contract occupational related injuries and diseases arising out of work and related outcomes such as death or disabilities. The Workers Compensation Fund agency, among other

duties, deals with registration of employers, collection and management of employers' contributions, occupational exposures risk assessment, determination and hence payment of compensation to workers or related beneficiaries, and conducting public awareness on safety and health at workplaces.

National Social Security Scheme, professional associations and Trade Unions also share responsibilities to improve decent, safe and healthy work environments.

Laws Covering Organisation and Functional Composition

Comprehensive labour law and regulatory reforms related to employment and labour relations are important towards sustainable development. These reforms are needed in accommodating arising issues in relation to workers' well-being. For instance, the reform process, supported by ILO in Mainland Tanzania resulted in the enactment of several new laws. Also, the laws have been supplemented by several regulations. Examples of new laws in Mainland Tanzania include; *"The Occupational Health and Safety Act, 2003; The Employment and Labour Relations Act, 2004; The Labour Institutions Act, 2004; The Workers Compensation Act, 2008; and The Social Security (Regulatory Authority) Act, 2008".*

Also, regulations that resulted from reforms in Mainland Tanzania include "*The Employment and Labour Relations (Code of good practice) Rules, 2007; The Labour Institutions (Mediation and Arbitration), Rules 2007; The Employment and Labour Relations (Forms) Rules, 2007; The Labour Institutions (Code of Conduct for Mediators and Arbitrators) Rules, 2007; The Industrial Court Rules, 2007; and The Labour Institutions (Mediation and Arbitration Guidelines) of 2007".*

Similarly, such reforms were supported by ILO in Zanzibar. Examples of new laws that resulted from the reforms in Zanzibar include "*The Employment Act No. 11 of 2005; The Labour Relations Act No.1 of 2005; The Occupational Safety and Health Act No. 8 of 2005. The Workers Compensation Act No.5 of 2005.The Zanzibar Social Security Fund Act No 2 of 2005".*

Scope of Labour Inspection

The labour inspection staff in the ministry are in charge of coordinating the labour inspection system in the country. They are responsible in particular for planning, reporting, general guidance and the preparation of inspection forms.

Partner Institutions

Several partners play a vital role in the training and research in the area of occupational safety and health. This includes a wide range of local, national, international organisations both public and Non-Governmental organisations.

Training and Research Institutions

Training and research institutions are important for OHS welfare in the country. These institutions play a key role in imparting knowledge and skills among OHS personnel. In addition, they provide knowledge for policy formulation and evidence based decision making. The Muhimbili University of Health and Allied Sciences (MUHAS), University of Dar es Salaam (UDSM), University of Dodoma (UDOM), Catholic University of Health and Allied Sciences (CUHAS), Mzumbe University in Tanzania, for instance, train

Postgraduate and Undergraduate level and offer short courses related to OHS and labour laws. Para medicals and diploma institutes participate in production of non-degree programs for OHS related courses. Nevertheless, the number of OHS personnel is critically low in the country to date. The shortage can partly be linked to the small number of students admitted in OHS training programmes, inadequate investment and shortage of funding/scholarships for prospective and interested individuals. Thus increasing the number of admissions, among other things, is important in OHS capacity building in the country.

International Organisations

Tanzania has been a member of the ILO since 1962 and has been implementing various programs, in collaboration with the ILO tripartite constituents (government, workers' and employers' organisations). These programs include, among others, employment creation, cooperative development, entrepreneurship, social protection, labour law compliance, HIV/AIDS, elimination of the worst forms of child labour, and strengthening social dialogue.

Non-Governmental Organisations

Community Based Organisations, Non-Governmental Organisations, religious institutions are important in the implementation of OHS strategies. They collaborate and compliment Government efforts in sensitization and awareness creation and implementation on issues pertaining to OHS. In addition, these organisations employ a considerable number of workers, thus they are obliged to fulfil the OHS minimum requirements for safe workplaces and comply with the national standards.

8.4.6 Fostering Community Involvement

Article 1(d) of the ILO Recommendation No. 197 emphasises on raising workplace and public awareness on occupational safety and health through national campaigns linked with appropriate other initiatives. In the process to strengthen safety and health and workers compensation, the community should be involved through various initiatives intending to raise awareness and encourage their participation. In Tanzania, a nationwide mass media campaign marking the World Safety and Health, safety and health work exhibitions, tailor made awareness and for sensitization and behavioural change, radio and print media are widely used to channel messages to the community. In this regard the community should be recognized and taken as an integral part of the prevention initiatives. A sensitised community is likely to attain and propagate preventative actions beyond workplaces. In so doing, community involvement facilitates, establishes and strengthens a positive mindset in the prevention of work related diseases and injuries in all sectors.

Community as a Source of Manpower and Employers

Employers are part of the community as they come from among them. Employers are few privileged fellows who use resources and materials to produce by using other fellows (employees) from the same community. Every employed person comes from the community and every day after work goes back to the community. Work is an important social determinant of a community's health. A healthy community gives out healthy employees and the vice

versa is also true. Health employees are an asset to the employers, and the employer has legal responsibility to ensure that while they work for them they should return safe and healthy back to the community. Nevertheless, community and workplaces owners (employers) affect each other, for good or ill.

Community in Relation to Occupational Diseases, Injuries and Impairments

The impacts of occupational diseases, injuries and impairments reach beyond the workplaces. Increased economic and social burden to the community may as well be caused by ailments originating from the workplaces. Building and maintaining effective collaboration with the community will harness their readiness to participate in promoting well-being, protection and prevention of occupational diseases and injury at community level.

Community as a Tool for Diseased, Injured and Impaired workers

But also the community may be a source of communicable or infectious diseases which can be introduced to the workplace.

Community as a Source of Financial, Social and Psychological support

Community provides care and support for the workers who suffer occupational diseases, injuries or impaired by either. Community may support the basic pre-hospital care crucial for saving lives and mitigating the effect of severe occupational injuries.

Employees as a Target for Promoting Safe and Healthy Work Environment

Health and safety oriented culture is effectively instigated at the workers or employees level. Significant impact of the awareness and promotion campaigns for safe and healthy workplaces can be attained by involving the employees themselves. Workers-led safe and healthy workplace initiatives are relevant to the local workforce and can achieve the intended outcomes within a planned period of time.

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Appendix

INCIDENTS AND OCCUPATIONAL DISEASE NOTIFICATION

THIS FORM IS MADE UNDER SECTION 101 OF THE ACT No. 5 of 2003; IT SHALL BE FILLED IN BY AN EMPLOYER OR OTHER RESPONSIBLE PERSON AND SUBMITTED TO THE CHIEF INSPECTOR WITHIN SEVEN DAYS

OSHA 4

A- Particulars of the Workplace (*Maelezo ya Eneo la kazi*)

1. Name of the workplace(*Jina la eneo la kazi*):
2. Postal address (*Anuani ya Posta*):
3. Location of the workplace(*Mahali lilipo eneo la kazi*):
4. Telephone No.(*Simu*):

B- Particulars of the Affected Person (*Maelezo Binafsi ya Majeruhi/Mgonjwa/Marehemu*)

5. Name of the person involved in the incident (*Jina la mhusika*)
6. Title (*Cheo*):
7. Date of birth(*Tarehe ya kuzaliwa*):
   Sex: M/F (*Jinsia: Me/Ke*):
8. Period of employment (*Kipindi cha utumishi*):
   Months (*Miezi*):
9. Date/time of incident(*Tarehe/muda wa tukio*):
10. Location where the incident happened (*Jina la sehemu ya tukio*):
11. The affected person is [tick √] (*Mhusika ni [weka √]*):
    - ☐ An employee (*Mwajiriwa*)
    - ☐ An employer (*Mwajiri*)
    - ☐ Self employed (*Mtu aliyejiajiri*)
    - ☐ Other (*Ingine*): .....

C- Mechanism of Event (*Chanzo cha Tukio/Ajali*)

12. [tick √] ([*weka √*])
    - ☐ Fall, trip or slip (*Kuanguka, kujikwaa au kuteleza*)
    - ☐ Hitting objects (*Kugongana kwenye kitu*)
    - ☐ Sound or pressure (*Mlio mkali au mgandamizo*)
    - ☐ Body stressing (*Kubanwa na kitu/shinikizo*)
    - ☐ Heat, radiation or energy (*Joto, mionzi au nishati*)
    - ☐ Being hit by moving objects (*Kugongwa na kitu*)
    - ☐ Mental stress (*Msongo wa mawazo*)
    - ☐ Biological factors (*Vijidudu vya magonjwa*)
    - ☐ Contact with electricity/ electrical discharge (*Shoti ya umeme*)
    - ☐ Drowned or asphyxiated(*Kuzama au kukosa hewa*)
    - ☐ Injured by an animal (*Kujeruhiwa na mnyama*)
    - ☐ Exposed to an explosion(*Mlipuko*)

Other kind of incident, please mention (*Ingine, tafadhali taja*):

.....

D- Nature of Injury or Disease (*Aina ya Jeraha au Ugonjwa*)

13. [tick √] ([*weka √*])
    - ☐ Fatal (*Kifo*)
    - ☐ Fracture of spine (*Kuvunjika uti wa mgongo*)
    - ☐ Puncture wound (*Kuchomwa na kitu chenye ncha*)
    - ☐ Other fracture (*Jeraha linginelo*)
    - ☐ Poisoning or toxic effects (*Sumu*)
    - ☐ Dislocation (*Kuteguka*)
    - ☐ Multiple injuries (*Majeraha*)
    - ☐ Sprain or strain (*Maumivu ya kifundo au msuli*)
    - ☐ Damage to artificial aid (*Kuvunjika kiungo bandia*)
    - ☐ Head injury (*Jeraha la kichwa*)
    - ☐ Disease, nervous system (*Athari kwenye mfumo wa fahamu*)
    - ☐ Internal injury of trunk (*Maumivu ya kiwiliwili*)
    - ☐ Disease, musculoskeletal system (*Kulemaa viungo*)
    - ☐ Amputation (*Kukatika kiungo*)
    - ☐ Disease, skin (*Ugonjwa wa ngozi*)
    - ☐ Disease, eye (*Ugonjwa wa macho*)
    - ☐ Open wound (*Kidonda*)
    - ☐ Disease,digestive system(*Athari kwenye mfumo wa chakula*)
    - ☐ Superficial injury (*Jeraha dogo*)
    - ☐ Disease,infectious or parasitic (*Maambukizi ya vimelea*)
    - ☐ Bruising or crushing (*Kuchubuka au kukandamizwa*)
    - ☐ Disease, respiratory system (*Athari kwenye mfumo wa kupumua*)
    - ☐ Foreign body (*Kuingiwa na kitu au kihatarishi mwilini*)
    - ☐ Burns (*Kuungua*)
    - ☐ Tumour (malignant or benign) (*Uvimbe*)
    - ☐ Nerves or spinal cord (*Neva au ugwe mgongo*)
    - ☐ Mental disorder (*Matatizo ya akili*)

Any other, please specify (*Ingine, tafadhali taja*):

.....

E- Description of the Incident (*Maelezo ya Tukio*)

14. Describe briefly, or you may attach separate sheet(s) (*Fafanua kwa kifupi, au ambatanisha karatasi ya maelezo*):

F- Treatment of the Affected Person (*Matibabu*)

15. Type of treatment provided (*Matibabu yaliyotolewa*):
    - ☐ None (*Hakuna*)
    - ☐ First Aid (*Huduma ya kwanza*)
    - ☐ Sent to Doctor (*Kutibiwa*)
    - ☐ Hospitalized (*Kulazwa*)

G- Notification to Chief Inspector (*Taarifa kwa Mkaguzi Mkuu*)

16. Name and position of the person reporting the event (*Jina na cheo cha anayetoa taarifa ya tukio*):

.....

.....

Signature (*Saini*): .....

Date (*Tarehe*): .....

WCN-1

WORKERS COMPENSATION FUND
NOTIFICATION FORM FOR OCCUPATIONAL ACCIDENTS, DISEASES OR DEATHS
(Made under regulations 15, 16 and 17)
(To be completed by an employee, employer or any person on behalf of an employee in triplicate)

A. **TYPE OF NOTIFICATION (mark (√) appropriately)**

Occupational accident		Occupational disease		Death	

B. **EMPLOYER'S PARTICULARS**

Name of employer……..…….....
WCF Reg. No ……..
Contact address…….....Street/Village…….....
District……...……Region……Country…….....
Tel ……..Fax……Cell phone……..……
E-mail……...

C. **EMPLOYEE'S PARTICULARS**

Name of employee ……...……..……
Employee's Code No. ……National ID ……...Employee's ID …….
Job title …….....Section/Department……..…
Date of birth……Sex…… Marital Status……..……No. of Children……..…..
District……...……. Region ……..……..Nationality…….……..…
Street/Village ……..Plot No…… Block No……...……
Tel……...Fax…….…….. Cell phone……...…….
E-mail…….. Next of kin……..……..

D. **PARTICULARS OF OCCUPATIONAL ACCIDENT**

Date of accident……Time of accident……Place of accident……...…..…….
Date of reporting occurrence of an accident to the employer……..
Activity/Duty performed at the time of accident
…….……..……..……
Describe in brief how accident occurred ……
……
……..
Witness (s):-

1. Name……Cell Phone ……...
2. Name……Cell Phone ……...
3. Name……...Cell Phone ……..

Supervisor's name …….……..…….....Section/Department……

E. **PARTICULARS OF OCCUPATIONAL DISEASE**

Date of diagnosis……..Occupational disease diagnosed ……..……..
Date of reporting disease to employer…….
Name of the health care provider where the diagnosis was established……
Name and address of medical practitioner who diagnosed the disease…….
……
……
……

F. **PARTICULARS OF DEATH (mark (√) appropriately)**

Name of employee's representative……..……..…….
Contact and physical address of employee's representative ……..…….
…….....
Date of death…… …….. Place of death ……....
Cause of death - occupational accident ( ) or occupational disease ( )
Date of reporting to the employer ……..
Medical practitioner (name and contact address)
……..
……..
……..
……..

DECLARATION

I, ……., declare that what I have stated herein above is true to the best of my knowledge and if it is proved that there is forgery or fraud in relation to the information provided, legal action should be taken against me.

Name……
Signature……..
Date…….....

Employer's acknowledgement of receipt of notification

Date of receipt of notification by employer	**Notified by (Name and designation)**	**Received by (Name, designation, signature and official stamp)**

I, ……,declare that the information provided herein above is true to the best of my knowledge.

International Labour Organization

ILO List of Occupational Diseases

(revised 2010)

INTERNATIONAL LABOUR CONFERENCE

Recommendation 194

Recommendation concerning the List of Occupational Diseases and the Recording and Notification of Occupational Accidents and Diseases

The General Conference of the International Labour Organization,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its 90th Session on 3 June 2002, and

Noting the provisions of the Occupational Safety and Health Convention and Recommendation, 1981, and the Occupational Health Services Convention and Recommendation, 1985, and

Noting also the list of occupational diseases as amended in 1980 appended to the Employment Injury Benefits Convention, 1964, and

Having regard to the need to strengthen identification, recording and notification procedures for occupational accidents and diseases, with the aim of identifying their causes, establishing preventive measures, promoting the harmonization of recording and notification systems, and improving the compensation process in the case of occupational accidents and occupational diseases, and

Having regard to the need for a simplified procedure for updating a list of occupational diseases, and

Having decided upon the adoption of certain proposals with regard to the recording and notification of occupational accidents and diseases, and to the regular review and updating of a list of occupational diseases, which is the fifth item on the agenda of the session, and

Having determined that these proposals shall take the form of a Recommendation;

adopts this twentieth day of June of the year two thousand and two the following Recommendation, which may be cited as the List of Occupational Diseases Recommendation, 2002.

1. In the establishment, review and application of systems for the recording and notification of occupational accidents and diseases, the competent authority should take account of the 1996 Code of practice on the recording and notification of occupational accidents and diseases, and other codes of practice or guides relating to this subject that are approved in the future by the International Labour Organization.

2. A national list of occupational diseases for the purposes of prevention, recording, notification and, if applicable, compensation should be established by the competent authority, in consultation with the most representative organizations of employers and workers, by methods appropriate to national conditions and practice, and by stages as necessary. This list should:

a) for the purposes of prevention, recording, notification and compensation comprise, at the least, the diseases enumerated in Schedule I of the Employment Injury Benefits Convention, 1964, as amended in 1980;

b) comprise, to the extent possible, other diseases contained in the list of occupational diseases as annexed to this Recommendation; and

c) comprise, to the extent possible, a section entitled "Suspected occupational diseases".

3. The list as annexed to this Recommendation should be regularly reviewed and updated through tripartite meetings of experts convened by the Governing Body of the International Labour Office. Any new list so established shall be submitted to the Governing Body for its approval, and upon approval shall replace the preceding list and shall be communicated to the Members of the International Labour Organization.

4. The national list of occupational diseases should be reviewed and updated with due regard to the most up-to-date list established in accordance with Paragraph 3 above.

5. Each Member should communicate its national list of occupational diseases to the International Labour Office as soon as it is established or revised, with a view to facilitating the regular review and updating of the list of occupational diseases annexed to this Recommendation.

6. Each Member should furnish annually to the International Labour Office comprehensive statistics on occupational accidents and diseases and, as appropriate, dangerous occurrences and commuting accidents with a view to facilitating the international exchange and comparison of these statistics.

ANNEX

List of occupational diseases [1] (revised 2010)

1. Occupational diseases caused by exposure to agents arising from work activities

1.1. Diseases caused by chemical agents

1.1.1. Diseases caused by beryllium or its compounds
1.1.2. Diseases caused by cadmium or its compounds
1.1.3. Diseases caused by phosphorus or its compounds
1.1.4. Diseases caused by chromium or its compounds
1.1.5. Diseases caused by manganese or its compounds
1.1.6. Diseases caused by arsenic or its compounds
1.1.7. Diseases caused by mercury or its compounds
1.1.8. Diseases caused by lead or its compounds
1.1.9. Diseases caused by fluorine or its compounds
1.1.10. Diseases caused by carbon disulfide
1.1.11. Diseases caused by halogen derivatives of aliphatic or aromatic hydrocarbons
1.1.12. Diseases caused by benzene or its homologues
1.1.13. Diseases caused by nitro- and amino-derivatives of benzene or its homologues
1.1.14. Diseases caused by nitroglycerine or other nitric acid esters
1.1.15. Diseases caused by alcohols, glycols or ketones
1.1.16. Diseases caused by asphyxiants like carbon monoxide, hydrogen sulfide, hydrogen cyanide or its derivatives
1.1.17. Diseases caused by acrylonitrile
1.1.18. Diseases caused by oxides of nitrogen
1.1.19. Diseases caused by vanadium or its compounds
1.1.20. Diseases caused by antimony or its compounds
1.1.21. Diseases caused by hexane
1.1.22. Diseases caused by mineral acids
1.1.23. Diseases caused by pharmaceutical agents
1.1.24. Diseases caused by nickel or its compounds
1.1.25. Diseases caused by thallium or its compounds
1.1.26. Diseases caused by osmium or its compounds
1.1.27. Diseases caused by selenium or its compounds
1.1.28. Diseases caused by copper or its compounds
1.1.29. Diseases caused by platinum or its compounds
1.1.30. Diseases caused by tin or its compounds
1.1.31. Diseases caused by zinc or its compounds
1.1.32. Diseases caused by phosgene
1.1.33. Diseases caused by corneal irritants like benzoquinone
1.1.34. Diseases caused by ammonia
1.1.35. Diseases caused by isocyanates
1.1.36. Diseases caused by pesticides

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[1] **In the application of this list the degree and type of exposure and the work or occupation involving a particular risk of exposure should be taken into account when appropriate.**

1.1.37. Diseases caused by sulphur oxides
1.1.38. Diseases caused by organic solvents
1.1.39. Diseases caused by latex or latex-containing products
1.1.40. Diseases caused by chlorine
1.1.41. Diseases caused by other chemical agents at work not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to these chemical agents arising from work activities and the disease(s) contracted by the worker

1.2. Diseases caused by physical agents

1.2.1. Hearing impairment caused by noise
1.2.2. Diseases caused by vibration (disorders of muscles, tendons, bones, joints, peripheral blood vessels or peripheral nerves)
1.2.3. Diseases caused by compressed or decompressed air
1.2.4. Diseases caused by ionizing radiations
1.2.5. Diseases caused by optical (ultraviolet, visible light, infrared) radiations including laser
1.2.6. Diseases caused by exposure to extreme temperatures
1.2.7. Diseases caused by other physical agents at work not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to these physical agents arising from work activities and the disease(s) contracted by the worker

1.3. Biological agents and infectious or parasitic diseases

1.3.1. Brucellosis
1.3.2. Hepatitis viruses
1.3.3. Human immunodeficiency virus (HIV)
1.3.4. Tetanus
1.3.5. Tuberculosis
1.3.6. Toxic or inflammatory syndromes associated with bacterial or fungal contaminants
1.3.7. Anthrax
1.3.8. Leptospirosis
1.3.9. Diseases caused by other biological agents at work not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to these biological agents arising from work activities and the disease(s) contracted by the worker

2. Occupational diseases by target organ systems

2.1. Respiratory diseases

2.1.1. Pneumoconioses caused by fibrogenic mineral dust (silicosis, anthraco-silicosis, asbestosis)
2.1.2. Silicotuberculosis
2.1.3. Pneumoconioses caused by non-fibrogenic mineral dust
2.1.4. Siderosis
2.1.5. Bronchopulmonary diseases caused by hard-metal dust
2.1.6. Bronchopulmonary diseases caused by dust of cotton (byssinosis), flax, hemp, sisal or sugar cane (bagassosis)

2.1.7. Asthma caused by recognized sensitizing agents or irritants inherent to the work process

2.1.8. Extrinsic allergic alveolitis caused by the inhalation of organic dusts or microbially contaminated aerosols, arising from work activities

2.1.9. Chronic obstructive pulmonary diseases caused by inhalation of coal dust, dust from stone quarries, wood dust, dust from cereals and agricultural work, dust in animal stables, dust from textiles, and paper dust, arising from work activities

2.1.10. Diseases of the lung caused by aluminium

2.1.11. Upper airways disorders caused by recognized sensitizing agents or irritants inherent to the work process

2.1.12. Other respiratory diseases not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to risk factors arising from work activities and the disease(s) contracted by the worker

2.2. Skin diseases

2.2.1. Allergic contact dermatoses and contact urticaria caused by other recognized allergy-provoking agents arising from work activities not included in other items

2.2.2. Irritant contact dermatoses caused by other recognized irritant agents arising from work activities not included in other items

2.2.3. Vitiligo caused by other recognized agents arising from work activities not included in other items

2.2.4. Other skin diseases caused by physical, chemical or biological agents at work not included under other items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to risk factors arising from work activities and the skin disease(s) contracted by the worker

2.3. Musculoskeletal disorders

2.3.1. Radial styloid tenosynovitis due to repetitive movements, forceful exertions and extreme postures of the wrist

2.3.2. Chronic tenosynovitis of hand and wrist due to repetitive movements, forceful exertions and extreme postures of the wrist

2.3.3. Olecranon bursitis due to prolonged pressure of the elbow region

2.3.4. Prepatellar bursitis due to prolonged stay in kneeling position

2.3.5. Epicondylitis due to repetitive forceful work

2.3.6. Meniscus lesions following extended periods of work in a kneeling or squatting position

2.3.7. Carpal tunnel syndrome due to extended periods of repetitive forceful work, work involving vibration, extreme postures of the wrist, or a combination of the three

2.3.8. Other musculoskeletal disorders not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to risk factors arising from work activities and the musculoskeletal disorder(s) contracted by the worker

2.4. Mental and behavioural disorders

2.4.1. Post-traumatic stress disorder

2.4.2. Other mental or behavioural disorders not mentioned in the preceding item where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to risk factors arising from work activities and the mental and behavioural disorder(s) contracted by the worker

3. Occupational cancer

3.1. Cancer caused by the following agents

3.1.1. Asbestos

3.1.2. Benzidine and its salts

3.1.3. Bis-chloromethyl ether (BCME)

3.1.4. Chromium VI compounds

3.1.5. Coal tars, coal tar pitches or soots

3.1.6. Beta-naphthylamine

3.1.7. Vinyl chloride

3.1.8. Benzene

3.1.9. Toxic nitro- and amino-derivatives of benzene or its homologues

3.1.10. Ionizing radiations

3.1.11. Tar, pitch, bitumen, mineral oil, anthracene, or the compounds, products or residues of these substances

3.1.12. Coke oven emissions

3.1.13. Nickel compounds

3.1.14. Wood dust

3.1.15. Arsenic and its compounds

3.1.16. Beryllium and its compounds

3.1.17. Cadmium and its compounds

3.1.18. Erionite

3.1.19. Ethylene oxide

3.1.20. Hepatitis B virus (HBV) and hepatitis C virus (HCV)

3.1.21. Cancers caused by other agents at work not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to these agents arising from work activities and the cancer(s) contracted by the worker

4. Other diseases

4.1. Miners' nystagmus

4.2. Other specific diseases caused by occupations or processes not mentioned in this list where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure arising from work activities and the disease(s) contracted by the worker

ILO list of occupational diseases (revised 2010)

The List of Occupational Diseases Recommendation, 2002 (No. 194) requires the national lists of occupational diseases to comprise, to the extent possible, the diseases contained in the list of occupational diseases as annexed to it.

Based on the work of two meetings of experts, the ILO Governing Body approved a new list of occupational diseases on 25 March 2010 during its 307th Session. This new list replaces the preceding one in the annex of Recommendation No. 194 which was adopted in 2002.

The new list includes a range of internationally recognized occupational diseases, from illnesses caused by chemical, physical and biological agents to respiratory and skin diseases, musculo-skeletal disorders and occupational cancer. Mental and behavioural disorders have for the first time been specifically included in the ILO list. This list also has open items in all the sections dealing with the afore-mentioned diseases. The open items allow the recognition of the occupational origin of diseases not specified in the list if a link is established between exposure to risk factors arising from work activities and the disorders contracted by the worker.

The criteria used by the tripartite experts for deciding what specific diseases be considered in the updated list include that: there is a causal relationship with a specific agent, exposure or work process; they occur in connection with a specific work environment and/or in specific occupations; they occur among the groups of workers concerned with a frequency which exceeds the average incidence within the rest of the population; and there is scientific evidence of a clearly defined pattern of disease following exposure and plausibility of cause.

This new list of occupational diseases reflects the state-of-the-art development in the identification and recognition of occupational diseases in the world of today. It indicates clearly where prevention and protection should take place. This ILO list represents the latest worldwide consensus on diseases which are internationally accepted as caused by work. This list can serve as a model for the establishment, review and revision of national lists of occupational diseases. The world's working population and their families will benefit from this new list.

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SafeWork

WCC-2A

INITIAL MEDICAL REPORT

(Made under regulation 21(1))

(This form shall be filled by medical practitioner in triplicate)

A. EMPLOYEE'S PARTICULARS

First Name……. Middle Name ……. Last Name …….

Date of birth……. Medical File no……. Job Title…….

Employer's Name. ……. Employee's ID No…….

B. **PARTICULARS OF HEALTH CARE PROVIDER**

Name of health care provider ……..……...

Contact address ……...…… Region/District …….……...

C. PARTICULARS OF OCCUPATIONAL ACCIDENT OR DISEASE

i. Date of accident or diagnosis of occupational disease……...

ii. Date of first consultation at this facility…….……

iii. Description of injuries/condition of the employee at the time of examination

……

……

……

iv. Diagnosis……

D. MEDICAL PRACTITIONER'S ASSESSMENT

i. Does the employee require hospitalization? (Yes/No). ***Circle appropriately***

If Yes, which unit? ……..…

ii. Does the employee require follow up visit? (Yes/No). ***Circle appropriately***

If Yes, when is the next visit? ……./……/……..

iii. Is employee able to resume his duties? (Yes/No). ***Circle appropriately***

If No, exempted duty days……..…; From: ……. To: …….

Reason: ……...

light duty days……...; From: …….. To: ……

Reason: ……...

iv. Practitioner's remarks

……

……

DECLARATION

I declare that what I have stated herein above is true to the best of my knowledge.

Name of medical practitioner……. Designation ……

Registration No……... Cell phone…… E-mail……...

Signature……..... Date…….....

Official stamp

WCP-3

WORKERS COMPENSATION FUND
MEDICAL PROGRESS REPORT FORM

(This form shall be filled by a medical practitioner)

A. Name and address of health care provider

……
……

B. Type of medical progress (Mark (√) appropriately)

In the ward		Scheduled visit		Others (specify)	

C. Employee/Patient identification

Med treatment file No.	Name of the patient	Sex	Date of Birth

D. Medical care services details

Date of care	Diagnosis	Condition of the patient (major clinical findings from history, physical examination and tests)	Summary description of health care services rendered (type of consultation, medications, medical tests, procedures etc.)	Date of next visit	Additional Duty Exemption Days Given

Medical practitioner's remarks

……
……

DECLARATION

I declare that what I have stated herein above is true to the best of my knowledge.

Name of medical practitioner……. Designation ……

Registration No……... Cell phone…… E-mail……...

Signature……..... Date…….....

Official stamp

WCC-2B

MEDICAL PRACTITIONER'S REPORT

(Made under regulation 21(2))

(This form shall be filled by a medical practitioner in triplicate)

A. EMPLOYEE'S PARTICULARS

First Name……. Middle Name ……. Last Name …….

Medical File no…… Employer's Name. ……...……

B. DETAILS OF SERVICES RENDERED

i. Hospitalisation (fill appropriately)

Date of Admission	Date of Discharge	Reason

ii. Medical investigations, procedures and surgeries done

a) Investigations……

b) Procedures…….

c) Surgeries

Date of surgery	Type	Indication (s)	Anaesthesia	Surgeon's name and qualification

C. CURRENT STATE OF EMPLOYEE (PATIENT) (MARK (√) IN THE APPROPRIATE BOX)

i. Employee status

Fully recovered (Resumed duties without permanent loss of body part/function)	**Recovered with permanent loss of body part/function (Go to table (ii) below)**	**Need medical follow up** (Outcome not yet fully decided)	**Death** (Cause of death)

ii. For permanent loss of body part (s) or function (s) (complete table below)

Body part or function(s) impacted/affected	Manner of loss	Degree of Functions impaired or Level of loss of body part	Rehabilitation recommended

iii. Date when declared fit returning to work with /without restrictions……/……/……

D. FINAL DIAGNOSIS

i. What is the final diagnosis? ……..……...

ii. Do you think this condition is occupational? (Yes/No). ***Circle appropriately***.
Why?

……

iii. Medical practitioner's opinions and recommendations

……

……

DECLARATION

I declare that what I have stated herein above is true to the best of my knowledge.

Name of medical practitioner……. Designation ……

Registration No……... Cell phone…… E-mail……...

Signature……..... Date…….....

Official Stamp


MUHAS


UNIVERSITAS
BERGENSIS