IMPLEMENTATION OF OCCUPATIONAL HEALTH AND SAFETY POLICY IN ARTISANAL AND SMALL SCALE MINING IN CHUNYA DISTRICT

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IMPLEMENTATION OF OCCUPATIONAL HEALTH AND SAFETY POLICY IN ARTISANAL AND SMALL SCALE MINING INCHUNYA DISTRICT

By

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Health Policy and Management of Muhimbili University Health and Allied Sciences.

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October, 2013

CERTIFICATION

The undersigned certify that he has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled ***Implementation of Occupational health and safety policy in Artisanal and Small scale mining in Chunya District,*** in (Partial) fulfillment of the requirements for the degree of Master of Arts in Health Policy and Management of Muhimbili University of Health and Allied Sciences.

_____

Prof. A.D.Kiwara

(Supervisor)

Date: _____

DECLARATION AND COPYRIGHT

I, **Nzingana, Aggrey**, declare that this dissertation is my original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature …… Date …….……..

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Above all, I thank Jehovah, the Almighty, for His guidance. Without Him, this work could not have been a success.

DEDICATION

This work is dedicated to my wife, Furaha Mwendamseke and children's, Jesse, Joan and Twasha for their patience in my absence during study period. Also to my loving parents, Watson N. Mwanjoka and Tabia A. Mwanjoka who encouraged me all the time while in studies.

ABSTRACT

Introduction: Effective implementation of a policy is a challenging process, understanding why policies work or do not work is important and mostly is the result of, assessment of implementation process and the factors that contribute to policy success or failure; therefore the objective of the study is to explore the implementation of occupational health and safety policy in artisanal and small scale mining in Chunya district.

Methods: A cross sectional descriptive study was conducted in Chunya District Council among owners and workers in artisanal and small scale mining also Government officials through in depth interviews and focus group discussion using an interview guide. The participants were purposively selected and a total of 41 people were enrolled in the study**.** Data was analysed using Thematic analysis framework which include becoming familiar with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.

Results:

This study revealed that occupational health and safety policy is not implemented as expected as artisanal, small scale miners and mining officials are not aware of it. Results also indicated that artisan and small scale miners rely on knowledge passed down from their parents, and use outdated technology. The Government and other stakeholders have not done enough to educate miners especially artisan miners on OHS.

Conclusion:

Lack of communication between policy makers and implementers has been identified as the reason why stakeholders are not aware of OHS policy, but on the other hand there are ongoing activities trying to achieve the policy objective. Based on the findings, the study recommended that more effort be put into informing and educating all stake holders on Occupational health and safety Policy.

ABBREVIATIONS

AIDS	-	Acquired Immunodeficiency Syndrome
ARM	-	Alliance for Responsible Mining
ASGM	-	Artisanal and Small Scale Gold Mining
BAT's	-	Best Available Techniques
BEP's	-	Best Environmental Practices
DED	-	District Executive Director
EAGER	-	Equity and Growth through Economic Research
HIV	-	Human Immunodeficiency Virus
HMIS	-	Health Management Information system
HSE	-	Health and Safety Executive
ICMM	-	International Council on Mining and Metals
ILO	-	International Labour Organization
MoEM	-	Ministry of Energy and Mineral
MUHAS	-	Muhimbili University of Health and Allied Sciences
OHS	-	Occupational Health and Safety
PML	-	Primary Mining Licences
TOHSP	-	Tanzania Occupational Health and Safety Policy
URT	-	United Republic of Tanzania
SSM	-	Small Scale Mining
WB	-	World Bank
WHO	-	World Health Organization

Definition of Terms

1. The term ***'artisanal' miners*** mean small scale miners who are informally doing mining activities (Gunson and Yue Jian, *2002)*.
2. **Policy**: the term policy can be defined as a set of decisions or non-decision taken by those in-charges of a particular area such as an organization or institution. Health policy takes account of all actions or intended actions by private or voluntary organizations that have effect on health. Walt described health policy as

   "Health policy is about process and power … it is concerned with who influences whom in the making of policy, and how that happens" (EQUINET, 2009)

3. ***Occupational health and safety*** (OHS) is generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment (Benjamin,2008)
4. ***"Policy implementation*** is a sequence of events triggered off by a policy decision, involving the translation of policy into operational tasks to be carried out by a variety of actors and agencies, and substantial coordinating activity to ensure that resources are available and that things happen as intended" (Barrett and Fudge,1981)
5. ***Small scale miners*** are those who possess "primary mining license" and their capital investment is less than US$100,000 or its equivalent in Tanzanian shillings (Mining Act 2010)

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Tanzania is estimated to have 500,000 to 1.5 million artisanal and small-scale miners (Carstens *et al* 2009). Artisanal and Small Scale Gold Mining (ASGM) began to grow in the 1980s. The downturn in the performance of other productive industries, poor markets for agriculture, droughts, and other factors have been associated with the increase in the number of people working in ASGM in the 1980s and1990s.

Chunya district is one of the country's major gold fields (Kikula *et al* 2002). The most active mining sites are Saza, Makongolosi, Itumbi, Chunya, Lupa-Sira, and Sangambi.

Mining is considered by ILO as one of the most unsafe human activities. Most of the relevant causes of accidents among small scale miners are rock falls, use of poorly maintained equipments, and non-compliance on wearing proper protective equipments, and safety practices. Erosion, suffocation, poisoning, explosion, and being trapped or buried are among the most common accidents. In addition, small-scale miners are exposed to many accidents such as the collapse of mine shafts and underground flooding. Accidents may be caused by a number of factors including rock falls and subsidence, lack of ventilation, misuse of explosives, lack of knowledge and training, and obsolete and poorly maintained equipment (ILO, 1999).

ASGM is also often associated with negative health impacts, including substance abuse, alcoholism, increased HIV/AIDS and sexually transmitted disease prevalence due to large predominantly male squatter camps in the case of "influx" and occupational health impacts due to poor working conditions and limited resources.

Many small scale mining operations are said to be lacking in safety regulations, reinforcement of mine safety requirements, awareness of the risks in mining, and access to better equipments. According to Ragin (2007), health and safety is a universal element that needs to be taken into consideration especially in small and medium enterprises as it is becoming a major problem for employers in the world. Taylor (1998)

is of the view that health and safety of employees in small and medium enterprises has long being ignored in Africa and as a result there are increasing cases of accidents occurring in small and medium enterprises.

Previously, health and safety in Tanzania was governed under Factory ordinance Cap 297 of the 1950 the emphasis was occupational health and safety in factories alone. Current, there are various laws, rules and regulations on occupational health and safety in Tanzania formulated and implemented under difference Ministries, Departments and Agencies. These pieces of legislation do not adequately address needs of regional or international requirements (URT, 2009). A National OHS Policy is therefore needed to provide guidance to all key players with responsibility to implement occupational health and safety matters.

The main objective of OHS Policy is to reduce the number of work-related accidents and diseases in Tanzania and will accomplish the following specific objectives; (URT, 2009).

1. Appropriate Institutional arrangements for efficient and effective OHS services delivery developed.
2. A clear and comprehensive legal and regulatory framework in place
3. Reliable system for collection, recording, notification and reporting and dissemination of OHS information in place
4. Adequate funding arrangements to fund OHS activities established.
5. Existing research capacity most effectively used and in addition capacity developed.
6. Occupational health and safety skills and resources in public and private sector improved.
7. Education and training on occupational health and safety at all levels enhanced.
8. Cross– cutting and cross sectoral issues mainstreamed.

In the implementation of this policy, Government, Employers, Workers, and other stakeholders have the following roles to play. The Government shall create enabling environment for the implementation of occupation health and safety policy, put in place regulatory and legal framework and facilitate resource mobilization for provision of effective occupation health and safety services. Employers will ensure health and safety at work, establishment of health and safety committees at workplaces conduct training and report accidents, diseases and other dangerous occurrences to relevant authorities. Workers will form and participate in occupational health and safety committees at workplace, report any hazardous situation to respective authorities and comply with occupational health and safety requirements at work. Local Government and Regional Administration will complement efforts of central Government and other stakeholders in the promotion of occupational health and safety and Development partners will collaborate and compliment Government efforts of promotion of occupational health and safety (URT, 2009).

1.2 Problem statement

In developing countries the risk of having work-related accidents and injury is 10 to 20 times higher than that of developed countries (Tadesse *et al* 2006), the incidence of accidents in small scale mining in Africa was found significantly higher than in large scale mines (Hentschel *et al* 2002).

Tanzania adopted occupational health and safety policy in 2009 which focuses on improving health and safety in working places in formal and informal sector. Factors facilitating implementation of the policy are awareness of the policy by managers of working places, workers awareness on the policy, Government official's awareness on the policy, measures taken by Government, Non-Governmental organization, owners and workers in improving health and safety in working areas.

But policy implementation is not linear and may change over time for a variety of reasons and has to be monitored and evaluated (Alesch *et al* 2001). Understanding why policies work or do not work is important and mostly is the result of assessment of

implementation process and the factors that contribute to policy success or failure. Although Tanzania adopted the policy, "international experience shows that policies, once adopted, are not always implemented as envisioned and do not necessarily achieve intended results (Love, 2004)". Little is known about the implementation of the policy in artisanal and small scale mining industries in Tanzania, therefore there is a need to explore the implementation of occupational health and safety policy in artisanal and small scale mining.

1.3 Significance of the study

The importance of this study can be seen in diverse ways. The study could provide basis for the formulation of effective occupational health and safety strategies for implementation of OHS in artisanal and small scale mining. This piece of work will also provide the opportunity for employees, employers in small scale mining to identify their specific respective roles in health and safety issues. The work will be used as reference material for policy makers in making decisions concerning health and safety practices.
Apart from being the basis for further studies, it is expected that the results will help the legal formulation and enforcement that will reduce the workplace injuries.

1.4 Research questions

Main question

To what extent is the occupational health and safety policy implemented in artisanal and small scale Gold mining in Chunya District?

Specific questions

i. To what extent are workers working in artisanal and small scale Gold mining in Chunya district aware of Occupational Health and Safety Policy and regulations?

ii. To what extent is management (owners) of small scale Gold mining in Chunya district aware of Occupational Health and Safety Policy and regulations?

iii. To what extent are Government officers (Chunya mining office and HMIS coordinator) aware of Occupational Health and Safety Policy?

iv. What measures are taken by owners and workers in artisanal and small scale mining to implement occupational health and safety policy?

v. What measures are taken by Government officers to promote occupational health and safety policy?

1.5 Research Objective

Broad Objective

To explore the implementation of occupational health and safety policy in artisanal and small scale Gold mining in Chunya district

Specific Objectives

i. To explore the awareness of workers in artisanal and small scale Gold mining on Occupational Health and Safety Policy and regulations

ii. To explore the awareness of owners of small scale Gold mining on Occupational Health and Safety Policy and regulations

iii. To explore the awareness of Government officers (Chunya mining office and HMIS coordinator) on Occupational Health and Safety Policy

iv. To assess measures taken by owners and workers in artisanal and small scale mining to implement occupational health and safety policy

v. To assess measures taken by Government officers to promote occupational health and safety policy

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Health and Safety in artisanal and small scale mining

(WHO,1948) defined health as a state of complete physical, mental and social well being of an individual, and not merely the absence of disease and infirmity. Health problems arise from a variety of man's activities including mining and others.

A focus on health and safety in the workplace is essential for ensuring that people are not harmed during work, and that pain, suffering and loss are avoided. Ensuring that people are not injured can extend the productive working lives of citizens and contribute to economic growth and prosperity. The benefits of promoting occupational health and safety include enabling people to lead happier and longer lives, enhancing economic activity, reducing demand on health and social services, and reducing the costs of illness and injury on both individuals and communities (Health and Safety Executive, 2000).

ASM works in dangerous and hazardous conditions. According to Nyambe et al (2009) number of deaths has been recorded in many SADC countries as a result of small scale mining; however, more deaths have been recorded in large scale mining in total. During the eleven year period between the years of 1984 and 1995, a total 312 large scale miners had been killed in comparison to 9 small scale miners in Zambia (Dreschler, 2001). The absence of machinery means work has to be done manually, thus resulting in fatalities.

Health problems of dust which causes silicosis, noise which causes tinnitus and chemical pollution which includes cyanide and mercury are evident in ASM. These chemicals cause diseases such as tremors, difficulty in walking, tunnel vision, psychological problems, cancer or even death. In addition to these health problems there is physical injury within the mines due to rock falls and mine collapse. Appel (2010) added to the list, accidents with machinery exposure, physical stress due to the exertion and difficulty of the work, fumes and gases causing respiratory problems, exposure to noise which damages hearing, working in poor light conditions which can damage sight. On top of

that there can be psychological stress as well as exposure to substance abuse which can cause mental and organ damage.

According to Stephens and Ahern (2001), mining remains one of the most perilous occupations in the world, both in terms of short term injuries and fatalities, but also due to long term impacts such as cancers and respiratory conditions such as silicosis, asbestosis and pneumoconiosis.

2.2 Awareness on OHS issues

Occupational diseases and injuries are, in principle, preventable. Among the approaches to prevent these include, developing awareness of occupational health and safety hazards among workers and employers (Tadesse *et al* 2006).

In KwaZulu-Natal in South Africa a study showed OHS problems identified included a lack of awareness regarding legislated OHS requirements. The level of safety and health awareness or consciousness among employers and workers is a critical factor in securing safe and healthy workplaces. Thus, creating and promoting safety culture as a corporate culture, family culture or community culture is important. OSH relates to many aspects of working life – from employment and skills training to trade and economics and to general public health, organizations are now interested in preventing work related accidents and diseases. It is also recognized that some workplaces and workers, notably women and children and those in the informal economy, are hard to reach and influence through traditional mechanisms, so wider partnerships for raising OSH awareness are important (Marriot, 2008).

2.3 Workers awareness on OHS issues

There are many benefits in consulting with workers over Occupational Health and Safety issues - chiefly since it is workers that are mainly affected by the issue.

To know that workers are aware of health and safety, workers should be able to: Describe why they are important to workplace health and safety and where they fit in the internal responsibility system by describing their roles, responsibilities and how these relate to the roles and responsibilities of supervisors and employers. Explain that they have the right to know about workplace hazards and how to work safely. Find

information on how to work safely by talking to their employer or supervisor and by being informed about the workplace health and safety policy and procedures (Canadian Ministry of labour, 2012).

A study done in Zimbabwe by Phiri, (2011) on impact of artisanal small scale gold mining in Umzingwane district indicates that most artisanal small scale miners are ignorant of long-term effects of their activities.

2.4 Employers awareness on OHS issues

Every employer has a duty of care to each employee to ensure so far as is reasonably practicable that the employee is, while at work, safe from injury and risks to health.

This is a wide-ranging responsibility that involves taking action to control risks associated with hazards in the workplace. In determining what is a reasonably practicable, employer must take into account the severity of the risk, knowledge about the hazard and ways to remove or reduce it, the availability and suitability of ways to remove or reduce the hazard, and the cost of taking action.

A study done in Taiwan by Hu (1998) shows the employers were better aware of their responsibility for posting safety warnings, personal protection and providing safety and health equipment. They were less aware of their responsibility in minimizing injuries and accidents in the workplace and in not hiring someone who was found unfit for a certain job from pre-employment physical examination. Level of education and size of the plant were highly associated with employers' awareness of OHS and the awareness was the most significant predictor in the five practices of OHS regulations in the study.

2.5 OHS improvement

According to ILO employers and government must ensure that worker's rights are protected and must strive to establish and maintain decent working conditions and a decent working environment. More specifically: Work should take place in a safe and healthy working environment, conditions of work should be consistent with workers' well-being and human dignity, work should offer real possibilities for personal achievement, self fulfillment and service to society (ILO, 1984).

Occupational safety and health policies must be established. Such policies must be implemented at both the national (governmental) and enterprise levels by all stake holders and effectively communicated to all parties concerned.

Education and training are vital components of safe, healthy working environments because a comprehensive health and safety training programme in each workplace will, among other more obvious benefits, help workers to recognize any early signs/symptoms of potential occupational diseases before they become permanent conditions also recognize unsafe environment. For example the Tanzania government has a program of improving the small scale miner's working environment; the government mines offices offer extension services to SSM. A demonstration plant for gold processing has being installed in Matundasi, Chunya district as a training and technology transfer centre (Arnold, 2001)

2.6 Challenges in artisanal and small scale mining

Occupational Health, Safety and Hygiene

The underlying cause of these accidents may be lack of education, training and awareness for miners emphasizing the importance of occupational safety and health. The lack of knowledge and skills on safe mining and processing techniques contributes to the ever increasing cases of health and safety problems. Moreover, it results in environmental issues. Most rivers are polluted with mercury, sedimentation adds to the problem and thus water shortage and sanitation is a common problem in most mining communities. (ILO, 1999)

Environmental impact of small scale mining

The impacts of small scale mining on the environment varies according to geographical setting and methods of mining used. The risks involved include tree cutting and digging, destruction of vegetation and top soil exposure, soil erosion, river/water pollution through the use of mercury and discharge of particulate matter , acid mine drainage, mercury vapor and clouds of dust emissions and many others. Environmental

degradation is severe when thousands of miners are spread throughout the country. (Acquah, 1996)

2.7 Policy implementation

Policy can be successfully or unsuccessful implemented, and failure can result from *non-implementation* or from *unsuccessful implementation.* In the former case, a policy is not put into effect as intended. Unsuccessful implementation, on the other hand, occurs when a policy is carried out in full and external circumstances are not unfavorable but the policy stills fails to produce the intended results or outcomes. Dr. Ugwuanyi *et al* (2013) describes policy implementation as the hub of policy process, however the chances of fulfilling the objectives of the policy are not hundred percent.

Several studies have documented that there is often a gap between agreed plans and what is actually implemented (EQUINET, 2009). There are problems in many developing countries of weak policy implementation capacity; low level of policy decision making related knowledge, skills and expertise; gaps in information and repeated incidences of policy failure endorsed chiefly by ineffective or bad policy implementation (Jonsson *et al* 2010).

2.8 A framework for policy implementation

One of the most important issues that today almost all countries, both developed and developing countries are facing with is the issue of failed implementation of policies. So in this case, many efforts have been done to provide a framework and model for successful implementation of policies by the scientists of policy making and implementation namely as follows: "the approach Top-Down", "approach of Bottom-Up" and "a Synthesis approach" (Gholipour *et al* 2012).

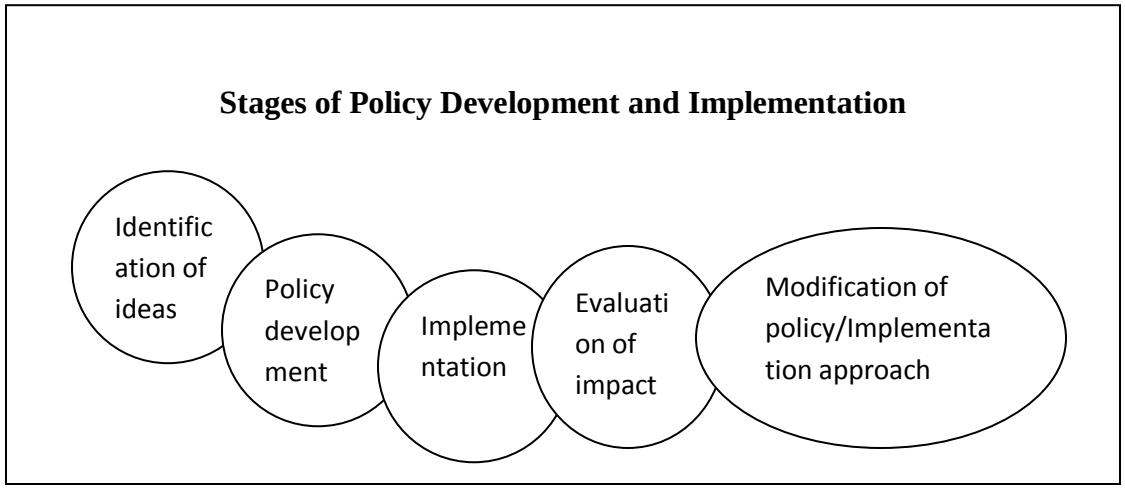
The 'top-down' approach does not involve the comments of other stakeholders but it adopts the perspective of central decisions. Synthesis (hybrid) Approach has hybrid outlook which concentrates on the complicities process of negotiation and bargaining between actors of policy in all the policy levels and planning process and on the other

hand the ‘bottom- up’ approach takes a different view of the implementing process (Gholipour *et al* 2012).

The implementation of OHS policy stresses the use of a Synthesis (hybrid) Approach as one of its statement states that: “The Government in collaboration with other stakeholders will put in place an Occupational Health and Safety Council with representative from the Government, Employers and Employees’’.

This study drew on Friedman’s conceptual framework for policy implementation which presents four dimensions: (a) the stages of policy development and implementation; (b) the levels at which policy is developed and the interrelationship between the levels; (c) the service sectors or systems affected by policy and the inter-relationship between policy in different sectors; and (d) the variables that are likely to affect the level of impact that policy has. This study mainly concentrated in one dimension of policy Implementation as the aim was to see if the policy is implemented or not, the figure below shows the stages of policy development and implementation:

Figure 1: Stages of Policy Development and Implementation

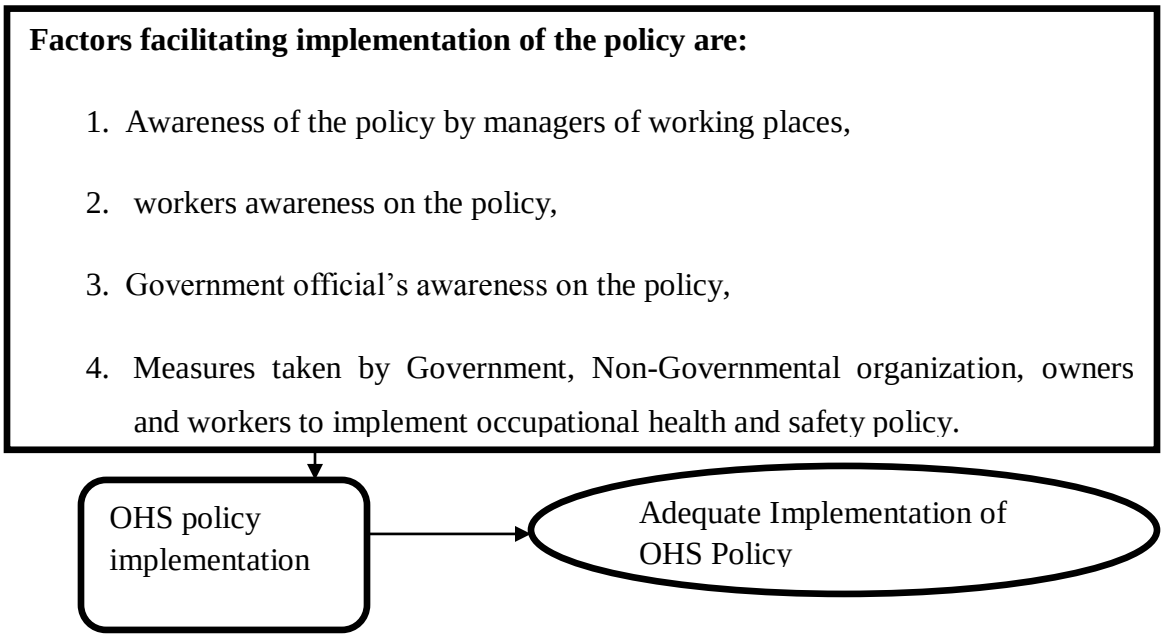


Source: Friedman R, 2001

The failure of implementation of OHS Policy might be a result of lack or inadequate communication between different stakeholders. It is important to promote communication among all stakeholders affected by occupational diseases and accidents as to improve collaboration, harmonization and exchange of information and ideas. The

framework for implementing OHS Policy is provided in figure 2 below, modified from Friedman's framework.

Figure 2: Framework for implementation of OHS Policy



Framework for implementation of OHS Policy (Modified from Friedman's framework, 2001.

According to this framework the factors that facilitate policy implementation are: Awareness of the policy by managers of working places, workers awareness on the policy, Government official's awareness on the policy, measures taken by Government, Non-Governmental organization, owners and workers to implement occupational health and safety policy.

CHAPTER THREE

3.0. METHODOLOGY

3.1. Study Area

The study was conducted in Chunya district in Mbeya region, which is located in the Northwest part of Mbeya Region, the Southwest part of Tanzania. The district is among the eight districts of Mbeya region and it lies between 7^0 and 9^0 latitudes south of the equator and between 32^0 and 34^0 Longitudes East of Greenwich. In the Northern part it borders Singida and Tabora regions, Iringa Region and Mbarali Districts to the East, Mbozi and Mbeya Districts to the South, Rukwa region and Lake Rukwa to the West.
Chunya is the largest district among eight districts of Mbeya region. It covers about (46%) of Mbeya region surface area. It has an area of 29,219km^2, which is divided into; 79% as arable land (from this 2% is under cultivation), 1% forest reserve 7% game reserve, 4% water body and 9% others.

There is a population of 290,478 people according to 2012 census. Of these 145,058 are female and 145,420 are male. Chunya District is divided into 4 divisions, with a total of 30 wards and 72 registered villages and 315 hamlets.

The area was chosen because has most active mining sites like Saza, Makongolosi, Matundasi, Itumbi, Chunya, Kiwanja, Lupa-Sira, Sangambi, Mabadaga and Iyai ((EAGER, 2001).

3.2. Study Design

Cross sectional study was employed to explore the occupational health and safety policy implementation in artisanal and small scale mining.

3.3. Study Population

The study involved managers (owners) and workers in artisanal and small scale Gold mining, HMIS coordinator Chunya Health Department and manager at Chunya mining office.

3.4. Sampling and Sample size

This study used purposive sampling technique. The purposive type of sampling allows the judgment of the researcher to be used in the selection of the study sample.The criteria for selecting the interviewees for this study was as follows:-

i. From the Chunya mining office the manager was purposively selected (1 study unit)

ii. Chunya Health Department the HIMS coordinator was purposively selected (1 study unit)

iii. Managers (owner's) of small scale mining were purposively selected (4 study units)

iv. 35 artisan miners and workers in small scale mining purposively selected.

3.5. Data Collection and Analysis

Method of Data collection:

The approach that was used for data collections was qualitative. This design was selected by researcher based on the type of information needed. The interview focused on particular themes and therefore a *semi-structured interview guide* was used. Barbara Di Cicco and Crabtree (2006) described semi-structured interview as ‘*'They are generally organised around a set of predetermined open-ended questions, with other questions emerging from the dialogue between interviewer and interviewee / s. Semi-structured in-depth interviews are the most widely used interviewing format for qualitative research and can occur either with an individual or in groups''.*

In depth interviews and FDG's were conducted by the researcher using an interview guide. The interview guide was developed based on objectives of the study and information gained from literature. This guidance allowed the researcher to continue asking questions in the specific area of study. A digital voice recorder and handwritten field notes were used to capture information during In-depth interviews and FDG's. The

interview guides were developed in English and translated into Kiswahili to facilitate communication during interview.

Data management and collection procedures

Prior to the beginning of each interview, the participants were asked for permission to be audio-recorded, all the participants agreed to be audio recorded. All targeted respondents were interviewed by the researcher between 20 and 30 minutes for in depth interviews and between 1 hour and 1.20hours for FDG's. After the interviews, the recordings were transcribed into computer files. Care was taken by the researcher to assure the respondents would not be identifiable in any subsequent report. Once the final research report was written, the audio files from the interviews were discarded.

Data processing and analysis:

Organization and preparation for data analysis: The recorded interviews were transcribed by the researcher in the English language. This started to be done at the field concurrently with data collection, transcription continued after data collection was completed. Each transcribed data had identification information which included the location. The transcripts were then typed into computer files using Microsoft word 2007. The computer files were named based on location. When all transcripts were typed the recorded interviews were deleted to protect the identity of interviewee.

Reading through all the data: the researcher read and reread the data several times to get a preliminary sense of the data and interact with it. It allowed the researcher to get general ideas regarding what the respondents were saying. The reading helps to set up ground for analysis.

Data analysis: Qualitative data analysis is an ongoing process that is carried out simultaneously with data collection, interpretation and writing reports. The researcher analyzes data for themes or perspectives (Creswell, 2009).

This study employed what is generally referred to as theme-centred or category-based analysis. Braun and Clarke (2006) describe a specific theme-centred called thematic analysis. One of the advantages of this type of analysis is its theoretical freedom (Braun & Clarke, 2006).

In this study the initial codes were both inductive and deductive, which means that they originated both from Researcher own theoretical understandings and from the respondent themselves.

All data were coded, and codes gathered into more and more abstract codes. After the initial coding, codes were merged into larger units organizing those that were similar in meaning content. This merging of codes into larger units persisted until they remained only a few codes which were then integrated into themes.

3.9. Ethical consideration

The ethical clearance was obtained from MUHAS Research Ethics Committee. The permission to proceed with the study was sought from District Executive Director (DED). The respondents were reassured about information confidentiality.

CHAPTER FOUR

4.0 RESULTS

The previous chapter presented the methodology used to obtain answers to the research questions, this chapter presents the findings and begins with a short description of the characteristics of respondents.

In this study a total of 41 respondents were interviewed comprising of Artisanal miners, small scale miners, HIMS Coordinator and Officer from Mining office in Chunya. The following table shows demographic data of respondents where majority of the participants were male.

Table 1: **Background characteristics of Respondents**

VARIABLE	**TOTAL**
Age 25-35	26
In 36-45	9
yrs 46+	6
Sex: Male	34
Female	7
Educ: Degree/Post grad	0
Diploma/Advan. Dipl	1
Form four/six	2
Standard seven	38

Key: Educ = Education, Post grad= post graduate, Advan Dipl= Advance Diploma

13 of the respondents were from Mbugani, 8 of the respondents were from Mapogoro, 12 of the respondents were from Matundasi, 6 of the respondents were from Itumbi, 1 from Chunya Health department and 1 respondent from Chunya Mining office.

4.1 Low awareness of OHS policy among Artisan, Small scale miners and Government officers

i. Low awareness of OHS policy among Artisans

One of the objectives of Tanzania occupational health and safety policy is to put in place programmes to raise OHS awareness and produce OHS technical guidance that will improve working conditions and at the same time increase workplace productivity in SMEs and informal sector. The artisanal and small scale miners seem to have no idea of the policy presence as illustrated by the respondent from Itumbi.

> ''*I know nothing about the policy on health and safety in working environment and I have never even seen it'' (participant from Itumbi village)*

Miner's work according to their experience and creativity, unaware of mining laws and regulations as contributed by this respondent:

> *'' we do not have any laws or procedures in our work, we mine as we are instructed by those who preceded us.'' (Participant from Matundasi Village)*

When asked about the meaning of health the respondents said that the meaning of health is to avoid using mercury in daily mining activities.

> ''w*hat I know about health in the mines is that we should not use mercury to purify Gold because it destroys water and the environment surrounding us'' (participant from Mapogoro)*

Safety at work is the availability and correct use of working tools like dust blockers, boots, helmets, also the following of rules, regulations, policies and various instructions

at work. This has been emphasized in procedures of acquiring the mining permits. When asked to give explanations of what is safety these were the responses from participants.

''Ensuring that the dug holes are filled after completing the finding of gold so as to avoid accident to man and animals'' (participant from Mbugani)

Another respondent contributed the following about safety:

''Wearing boots, helmet and masks when doing our daily jobs for me that is safety, although lack of capital is problem to many of us as it hinders us to buy safety tools'' (Respondent from Itumbi)

ii. Low awareness of OHS policy among Small scale miners

Small scale miners are not aware of occupational health and safety policy as explained by one respondent

'' We don't have documents which guide us in daily activities apart from permits and about the policy I know nothing'' (SSM 2)

When asked about the meaning of health, the respondent said health is to be free from diseases and injuries as the results of their daily mining activities.

''Health is to make sure that my area of work is clean in the sense that it is not attractive to bacteria's which causes diseases'' (SSM 1)

However, others viewed health as avoiding using chemicals like mercury when processing Gold:

''Not using mercury to purify Gold near water or its sources, food and other things which we eat and drink to me that is health'' (SSM 4)

iii. Low awareness of OHS policy among Government officers

Government officers from mining and other sector are obliged to implement the policy as it state that '' The Government in collaboration with stakeholders shall initiate and implement awareness raising programmes to increase interest dealing with OHS problems in SMEs and informal sector, but when asked about the policy the mining officer in Chunya mining office said:

'' We use Mining Act of 2010 as our guideline to give permits and to supervise mining activities in our jurisdiction area but about the occupational health and safety we do conduct seminars to small scale miners in collaboration with medical team from Mbeya referral hospital that is all I know''(Mining officer)

4.2 What the artisans, small scale miners and Government officers do to improve Occupational health and safety

i. What the artisans and small scale miners do to improve Occupational health and safety

Miners have been prevent themselves from diseases and accidents in their daily work, other come from the mining experts and other health experts as expressed by respondents:

> *''blocking rocks from collapsing we tie up woods but about preventing from dust we do not use anything. (Respondent from Mbugani)*

Gold mining is accompanied by digging of deep shafts that can cause accidents that result in death and casualties, artisan and small scale miners have a different understanding on the ways to create safety working environment as contributed by the respondent:

> *''To be safe when working in a deep shaft we have to tie up timbers to surround it (Participant from Matundasi)*



Woods are tied to prevent rocks and soil from collapsing at Itumbi ***(Source:-Researcher 2013)***

The mining areas are mostly far from the people's residents so there is a lack of various services like shops, latrines, water and other things so it is the duty of the miners to make sure that every camp has a latrine and safe drinking water is available so as to protect them from diseases:

> *''Our Camp has no latrines although the owner often come and supervise the area '' (Participant from Matundasi)*

When asked about the availability of latrine in his site, he responded as follows:

> *''I go to my site almost every day to supervise, I have to admit that nothing have been done to build the toilets but the situation will be rectified'' (SSM 3)*

To be protected from abdominal diseases that affect most miners due to use of unclean water, some of them boil the water and others use herbs in treating water.

> *'' We use local herbs to treat water to prevent ourselves from abnominal diseases which are common among small scale miners'' (Respondent from Mapogoro)*

But not all people engaged in mining activities take care of what they are drinking or eating as one of them responded:

"Boiling water so as to prevent abdominal diseases like typhoid but in reality very few people do that because most of us drink water straight from the water tributaries and holes filled after rainfall without boiling". (Respondent from Matundasi)

Mercury is used in collecting gold and purifying it and it has an effect on the human body and animals, to prevent the harm from mercury the respondent contributed the following.

''when burning gold you are supposed to stay far from the smoke, that smoke is similar to that of local beer that its effect is seen later, for instance the children born after that are disabled and on the side of typhoid we are required to boil water so as to prevent ourselves from the disease'' (Respondent from Mapogoro)

To be ensured on medication once faced with diseases or any health problem, the artisan miners have formed small groups that among other things they help in setting health strategies for the members when they fall sick and one of them is joining the Community Health Fund.

''So as to enable treatment when we fall sick we have joined the Community Health Insurance Fund and each has paid 10,000/= (Respondent from Matundasi)

Capital inadequacy and life hardships have contributed in the failure of having protective tools that will prevent them from accidents while at work which results to lack of tools in many camps like helmets, air filters, and ventilation machines as contributed by the respondent:

''The problem is that we do lack adequate capital to buy modern machines which would increase the production of Gold and improve safety in our working areas'' (SSM 2)

Inadequate capital results into lack of safety tools and capacity to improve health in mining areas as one of the respondent said:

> *''the place we work is not safe because we do not have the working tools like helmets, dust filters and ear plugs, insufficient latrines, congestion of people and the water we use is not safe… (Participant from Mbugani)*

ii. What the Government officers do to improve Occupational health and safety

Also miners with permits and those who have leased shafts from those with permits have the responsibility of making sure that the areas are safe for their workers. The giving of permits to the small scale miners is through regulations and the miners are advised to conserve the environment as elaborated by mining officer.

> *''We provide permits by following the Mineral law of 2010, we advise them on environmental conservation meaning not cutting trees randomly and filing the shaft holes after the mining process''. (Mining officer)*

When the researcher asked the mining officer about the supervision as the way to monitor activities in mining areas and make sure that miners do follow their advices he responded as follows:

> *''We do regular inspection because it is a part of our everyday job''. (Mining officer)*

On ways to raise awareness to miners the mining officer said.

> *''We provide training to the miners about the use of dynamite and mercury, we usually cooperate with health experts to train and we do that in intervals, those with permits come by themselves or their representatives who are good ambassadors in mining areas'' (Mineral officer)*.

4.3 Inadequate education on preventing diseases and accidents in mines

Artisan and Small-scale miners need more information, awareness, and education on the technical, economic, health, safety and environmental aspects of their activities. Small-scale miners can also improve their health, safety and productivity by sharing their knowledge and technologies with each other. But there is often a lack of information about the health and safety of small-scale miners and their communities as elaborated by one of the participants:

> *''Mineral officers insist on acquiring mining permits but they do not teach us on how to protect ourselves from accidents, they only insist on filling holes after finding gold but they do not make a follow up. (Respondent from Mbugani)*

Most of the trainings are provided to the miners with permits and they leave behind those without permits who are many without any training that involves safety at work and health.

> *''The seminars have been segregative, only those with permits participate, we have no education that can enable us to improve our work safety'' (Respondent from Matundasi)*

Another respondent said;

> *''Education is provided to those with permits identified by the Mineral office in Chunya town but not for us who work under them or for those miners with poor working tools'' (Respondent from Itumbi)*

On top of that there are no procedures in providing education to the miners without permits on protecting themselves from accidents in the mining work as contributed by one of the respondents:

> *'' we have not been provided with any education on improving our safety at work, we work in the same way as our fathers and fore fathers'' (Respondent from Matundasi)*

Health experts have tried to provide education on the venereal diseases and protective measures in the mining community, the problem is the availability of medicine and tools like condoms that have become rare in the camps and when available they are very expensive.

> *''Training was provided to all villagers, miners and non miners about AIDS but the problem is the scarcity of protective gears like condoms, they are not easily available especially when we are in camps and when available they are sold at a high price. (Respondent from Mapogoro)*

Technology Demonstration Centre at Matundasi, Chunya, which was established under the support of the World Bank so as to provide education to the artisan miners, does not do so as it was expected as explained by the respondent:

> *''we have a station here to provide education to the miners but we have never been trained, there is no one among the miners in this ward that has ever been trained and we are told that it is a government station, this is very disappointing'' (Respondent from Matundasi).*

4.4 Diseases and the effects of mining

Miners live in compromising environments and they use poor tools in mining gold due to the lack of adequate capital that would help them in buying quality tools that would help in improving the income, health and safety at work, hence they find themselves working in poor environments that endanger their safety.

> *''we stay in camps where many people sleep in a single area, there are no latrines, clean water,nets to prevent mosquitoes and condoms are not available sometimes, there are many communicable diseases''. (Respondent from Mbugani)*

Artisan miners suffer diseases like typhoid, malaria, tuberculosis, skin and venereal diseases as contributed by the respondent.

‘’*We are faced with many abdominal infections due to drinking unclean water and we don’t have latrines. (Respondent from Itumbi)*

Mining is considered one of the most unsafe human activities as elaborated by one of the respondents:

‘’We use poor instruments which sometimes make shafts to fall and results into injuries, disabilities and deaths’’ (Respondent from Mbugani)

Exposure to mercury can be particularly hazardous for pregnant women and small children. During the first several years of life, a child's brain is still developing and rapidly absorbing nutrients. Even in low doses, mercury may affect a child's development, delaying walking and talking, shortening attention span and causing learning disabilities. Less frequent, high dose prenatal and infant exposures to mercury can cause mental retardation, cerebral palsy, deafness and blindness. In adults, mercury poisoning can adversely affect fertility and blood pressure regulation and can cause memory loss, tremors, vision loss and numbness of the fingers and toes as explained by participant:

‘’The use of mercury in this area is high and we all use water from holes and seasonal rivers’’ (Respondent from Matundasi)

Most mining areas are on the highland zone which results to water draining to the lowlands where there are many rivers that drain water towards the Lake Rukwa, due to the use of mercury there is a possibility that the crops and fish found around and in the Lake Rukwa are infected by mercury as explained by the respondents:

‘’we have heard that mercury collects itself in water courses underground and it’s transported to the lake where it harms the fish’’ (Respondent from Mbugani.)

4.5 Information on people harmed in accidents in the mines

Accidents causing injuries and death of artisan and small scale miners occur as explained by the following respondents:

> *''There is no one among us that has not witnessed a person hurt or die in the mines, previously many people died due to mining but deaths have been reduced after starting the use of measurement tools to determine the location of gold although we don't have the statistics''. (Respondent from Mbugani)*

Another respondent said:

> *'' I have witnessed our colleague dying after a collapse of soil, I was on top of the box, two of us survived, that was in 2000 around Matundasi'' (Respondent from Mapogoro)*

Statistics is important in knowing the extent of the problem and mechanisms in tackling the problem, the mining sector, especially the miners without permits in Tanzania, there isn't sufficient information involving the number of death and casualties as explained by the respondent.

> *''We give information of death to the authorities but it is difficult to get information in areas that are not permitted because people are afraid that they could be jailed or punished'' (Respondent from Mapogoro)*

The researcher looked for information on deaths in the Chunya district hospital and the Chunya mining offices.

> *'' Tools for collection of clients and patients information does not show in particular if one suffering has been caused by mining accident or other things'' (HMIS coordinator)*

Contributing to the issue of information concerning people who dead in mining the mining officer said:

''If one dies, the police, the health department and the mining department must be involved, but we cannot provide you the data for now''. (Mining officer)

4.6 Emerging views

In order to improve health and safety in small scale and artisan mining areas it was suggested by participants that expertise in those areas should sensitize miners to work in safe environment and improve their health. Education will help in improving health and safety of the miners in working areas.

''Experts should teach us how to improve and maintain our health and safety at work. (Respondent from Matundasi)

Another respondent contributing on educating the miners said:

''Education to the miners will help them in protecting themselves from diseases and improve health of the miners" (Respondent from Mapogoro)

On the use of protective gears and obeying laws and regulations respondents had the following recommendations;

'' my advice to the miners that we should see the importance of using protective tools and to protect ourselves from accidents and all things that can harm us and also to insure our own health'' (Respondent from Matundasi)

There is an importance in following the set regulations in the implementation of daily mining activities so as to improve safety at work as contributed by the respondents:

'' Ensuring that we follow all directions from the experts then we can be safe in our work places (participant from Itumbi)

Follow up on health and safety issues at work especially to the miners without permits is an issue that needs to be given extra motivation so as to secure their health, in fulfilling this there is a need to form follow up groups in the areas, this will help in improving health and safety at work:

‘’there should be formed teams in each ward that gold is available. These teams should be financed and should visit miners everywhere to motivate health and safety at work. (Respondent from Matundasi)

CHAPTER FIVE

5.0 DISCUSSION

The purpose of this study was to explore the implementation of occupational health and safety policy in artisanal and small scale Gold mining in Chunya district. This chapter highlights two issues emerged from this study: Awareness on Occupational Health and Safety Policy and regulations and measures taken to improve occupational health and safety

5.1. Awareness on Policy

Findings from this study show that artisan and small scale miner's are not aware of the policy, similar arguments have been made by Mwakaje (2002) who revealed that many operators under ASM are not conversant with the policies, laws and institutions governing the mining sector. Results indicated that less than 2% and 16% of artisanal and small scale miners, respectively, were aware of these institutions. In the majority of cases the lack of awareness may be due to lack or inadequate communication between policy makers and other stakeholders which also has been observed by EQUINET (2008) that communicating with the people implementing policies is equally necessary to build their support for implementation and to deal with their concerns.

This study revealed that the Government officer's in the district are not aware of the policy. This is because the policy documents was not communicated to them as the same explained by NAOT (2013), that although the government of Tanzania has made a lot of efforts related to the improvement and protection of rights of workers such as the formulation of OHS policy but it is not yet circulated.

5.2 Ways to improve occupational health and safety

This study found that miner's especially Artisan miners in Chunya work in the same way as their fathers and fore fathers as also commented by Stephen J. M (2012) that miners rely on knowledge passed down from their parents, and use outdated technology. This was associated by miner's lack of training and adequate education which limits

their understanding and opportunities, the same has been explained by Mwakaje, (2002) in the study done in Geita, Tanzania that most of the respondents had a primary education (70%) but only 30% had secondary education and post secondary training. Such low level of education does not only limit livelihood opportunities, but it also exposes them to risks.

Inspections must be done on a regular basis, but it was revealed during the study that the inspections are irregularly conducted by the mining officers therefore to minimize chances of increasing understanding of occupational health and safety, similarly it was revealed in MMSD report 2002 that governments do not attempt or lack the capacity to monitor or control mining activities which often occur in remote and inaccessible locations.

The study revealed that the Government train miner's especially small scale miner's on procedures and laws governing the mining sector including occupational health and safety which is important strategy as the objective of training is to ease the implementation of health and safety guidelines and regulations, Hilson (2002) argued that the international community could do much more to improve sustainability in the ASM industry by providing training and educational assistance, similar argument has been made by M Biffi (2000) that the development of training guidelines, criteria and materials specifically aimed at the small-scale mining sector would be beneficial in increasing awareness of legislated health and safety requirements among employers and hazard awareness among their employees

5.3 Policy implication

From the study it was observed that there are activities like educating small scale miners and supervising mining sites going on to fulfill the policy objective of raising awareness on occupation health and safety, although the implementers like mining officers and owners of small scale miners are unaware that they are implementing the policy.

5.4 Study limitations

Due to the type of methodology used i.e. qualitative with selection of one division out of two where mining activities takes place. The purposively selected sample may not accurately be representative of the target population. The researcher should have conducted a study in all two divisions so as to clarify information. This could have provided a broader picture of issues related to occupational health and safety. However time and financial resources allocated to the study could not allow for this to happen. Nevertheless these findings do provide important insights into the status of implementation of occupational health and safety policy in small scale enterprises and informal sector.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This report can conclude on the following note: The observed gap from the study is between established policy and its implementation that the policy was not communicated to the stakeholders including Government officers. This need to be adequately addressed to ensure better health implementation of policy

6.2 Recommendation

Specifically the following recommendations are made:-

i. More effective coordination of activities is needed from the central government to the district levels in order to facilitate the districts to have better implementation of the policy.
ii. There is a need to improve the capacity of Government officers especially mining so that they become conversant with the policy. This will make them participate effectively in the implementation process.
iii. Regular supervision should be conducted to all miner's including those who don't posses permits

REFERENCE

A J Gunson and Yue Jian (2002), *Artisanal Mining in the People's Republic of China,* Journal of Mining, mineral and sustainable development

Agnes G. Mwakaje. Institute of Resource Assessment, University of Dar es Salaam, Tanzania, and *Environmental Degradation under Artisanal and Small-Scale Mining in Tanzania: Can Innovations in Institutional Framework Help?* International Journal of Environmental Protection Sept. 2012, Vol. 2 Iss. 9, PP. 7-16

Acquah, Peter Claver. *Natural Resources Management and Sustainable Development: The Case of the Gold Sector in Ghana (1996).* Ghana: Environmental Protection Council. United Nations Conference on Trade Development http://www.mineralresourcesforum.org/docs/pdfs/G9552829.PDF.

Anna Marriot (2008), *Extending health and safety protection to informal workers*: an analysis of small scale mining in KwaZulu-Natal,Report No 76: p.24

Appel, P. W. U (2010). Environmental impacts of small-scale mining. (online) available from www.Evinrontotal.com

Arnold Granville (2001), Baseline survey of the mining and Minerals sector, Journal of Mining, mineral and sustainable development, South Africa, p. 68

Barbara Di Cicco-Bloom & Benjamin F Crabtree, (2006). *The qualitative research interview*, Blackwell Publishing Ltd.

Barret, S., & Fudge, C. (1981). *Examining the policy-action relationship*. In S.Barret, & C. Fudge (Eds.), Policy *and action* (pp 3-35). London: Methuen.

Benjamin O. Alli *(2008), Fundamental principles of occupational health and safety*; International Labour Office – Geneva: ILO

Braun, V. and Clarke, V. (2006). *Using thematic analysis in psychology*. Qualitative Research in Psychology, 3: 77-101.

Canadian Ministry of labour (2000), Health and safety at work, Queen's Printer of Ontario

Carstens, J., Carrett, N., Lintzer, M., Priester, M., Hetschel, T. (2009). *Implementing Transparency in the Artisanal and Small-Scale Mining Sector*. Project Consult with Resources Consulting Services.

Creswell J.W (2009) *Research design: Qualitative, Quantitative and Mixed methods approaches*. Third Edition ed, California: Sage Publications.

Daniel J. Alesch and William J. Petak (2001) *Overcoming Obstacles to Implementing Earthquake Hazard Mitigation Policies*, Presented at First Annual IIASA-DPRI4 Meeting Integrated Disaster Risk Management Reducing Socio-Economic Vulnerability IIASA Laxenburg.

Dreschler, B. (2001).Small-Scale Mining and Sustainable Development within the SADC Region:MMSD Research Topic1:Harare.Available from: http://iiedtest.merfa.co.uk/pubs/pdfs/G00735.pdf

Dr. Ugwuanyi B.I, Chukwuemeka E (2013). The obstacles to effective policy implementation by the public bureaucracy in developing nations: the case of Nigeria. Singaporean journal of business economics and management studies vol.1, no.8.

Equity and Growth through Economic Research (EAGER,2001), *Tanzania's Precious Minerals Boom: Issues In Mining and Marketing.p.6*

EQUINET (2008**).**Tackling implementation gaps through health policy analysis, Policy series No. 21

EQUINET (2009) *"Policy Analysis Workshop" EQUINET Workshop Report*, 22 Sept 2009, Munyonyo, Kampala, Uganda. EQUINET: Harare

Friedman R.M (2001) *A conceptual framework for developing and implementing effective policy in children's mental hospital.* Journal of Emotional and Behavioral Disorders.

Gholipour R, Jandaghi G, Fallah M.R. Introducing a Model for Implementation of Industrial Policies : A Case Study in Qom Province, Iran. American Journal of Economics June 2012, Special Issue: 1-5 DOI: 10.5923/j.economics.20120001.01

Hentschel, T (2002) Global *Report on Artisanal & Small-Scale Mining*. Journal of Minerals, Mining and Sustainable Development [MMSD]. P.51

Hilson G. Small-scale mining and its socio-economic impact in developing countries. Natural Resources Forum 2002; 26(1):3e13.

Hu SC, Lee CC, Shiao JS, Guo YL, *Employers' awareness and compliance with occupational health and safety regulations*. Department of Public Health, College of Medicine, National Cheng-Kung University, Tainan, Taiwan. Occup Med (Lond). 1998 Jan; 48(1):17-22.

ILO, 1984. *Conclusions concerning future action in the field of working conditions and environment*, adopted by the 70th Session of the International Labour Conference, 26 June, section I, para. 2.

ILO, (1999) *Social and Labour Issues in Small-scale Mines*, Report for discussion at the Tripartite Meeting on Social and Labour Issues in Small-scale Mines, Geneva, 17-22 May 1999, ILO, Geneva.

Kikula IS, Kiangi A. *The natural resource domain in Tanzania*. In: Semboya J, Mwapachu J, Jansen E, editors. Local perspectives on globalisation. Dar es Salaam: Mkuki & Nyota Publishers; 2002. p. 138e54

Love, A.J. 2004. *Implementation Evaluation*. *The Handbook of Practical Program Evaluation, 2nd Edition* edited by J.S. Wholey, H.P. Hatry, and K.E. Newcomer. San Francisco, CA: Jossey-Bass, Inc.

M Biffi (2000). A baseline survey to assess risk-based health and safety research needs of smaller previously uncontrolled mines other than gold, coal and platinum mines having fewer than 300 employees. Simoth 605.

MMSD, (2002). Chapter 13 Artisanal and Small-Scale Mining: Part III: Challenges: Draft Report for Comment:
http://www.artisanalmining.org/UserFiles/file/AMS_finalreport_13.pdf

Nyambe, M. J.and Amunkete. T.(2009). *Small Scale Mining and its impact on poverty in Namibia*. A. case study of Miners in the Erongo Region: NEPRU: Windhoek, Namibia

Ragin D (2007). *Physical health (Exploring positive relationships at work and building a theoretical and research foundation*, New Jersey (USA): Lawrence Erlbaum Associates

Stephens, C. and Ahern, M. (2001), *Worker and Community Health Impacts Related to Mining Operations:* A Rapid Review of the Literature, http://www.natural - resources.org/minerals/CD/docs/mmsd/topics/worker_community_health.pdf

Stephen J. Mallo (2012).*Mitigating the Activities of Artisanal and Small-Scale Miners in Africa: Challenges for Engineering and Technological Institutions, Department of Geology and Mining, University of Jos, PMB 2084 Jos, Nigeria*. International Journal of Modern Engineering Research (IJMER) Vol.2, Issue.6, Nov-Dec. 2012 pp-4714-4725

Sundewall J,Jonsson K,Cheelo C and Tomson G: *Stakeholder perceptions of aid coordination implementation in the Zambian health sector.* Health Policy, 2010. **95**: p. 122-128.

Siduduziwe Phiri (2011). Impact of Artisanal Small Scale Gold Mining in Umzingwane District (Zimbabwe). A Potential for Ecological Disaster.

Takele Tadesse and Mengesha Admassu, Occupational Health and safety, August 2006, *Ethiop.J.Health Dev.* 2007; 21(1):25-34.

Taylor S (1998). *Employee Resourcing*, Wiltshire (UK): The Crown well Press
University of Cape Town, Centre for Health Policy.

URT, Mining Act 2010, Dar-Es-Salaam, Tanzania

URT, NAOT (2013). *A Performance Audit Report on the Management of Occupational Health and Safety in Tanzania*

URT, Occupational Health and Safety Policy 2009, Dar-Es-Salaam, Tanzania.

WHO (1948). Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

APPENDICES

Appendix 1: Informed consent form (English version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCIES (MUHAS)

INFORMED CONSENT FORM

Hello, my name is **Aggrey Nzingana**, I am coming from Muhimbili University of Health and Allied Sciences (MUHAS). I would like to inform you that we are conducting a study titled "*Implementation of Occupational Health and Safety Policy in Artisanal and Small scale mining in Chunya District*". The aim is to explore the implementation of occupational health and safety policy in artisanal and small scale Gold mining in Chunya district; your participation is voluntary and will be extremely valued. Please be true and honest so as to enable us provide effective recommendation in the future on ways to improve health and safety in mining sector especially in Artisanal and small scale mining. There is no penalty for refusing to participate on the study. We will protect your confidentiality to the best of our knowledge.

If you accept to participate on the study, the information that will be collected will help to inform policy makers regarding implementation of Occupational Health and Safety Policy in Artisanal and Small scale mining in your district, and they may use the information to find ways to improve these processes. This would probably have a positive impact on the health status of your people.

If you have any question regarding your right to participate on this study, you can contact, Prof. M. Moshi, director of the research and publication at MUHAS, Postal Box 65001 Dar es Salaam, and phone 0222150302.

DECLARATION

The above document describing rights for participation in the study titled "*Implementation of Occupational Health and Safety Policy in Artisanal and Small scale mining in Chunya District*", have been explained to me and I have agreed to participate.

Signatures of the respondent..... DATE .....

Signature of Research Assistant.....…… DATE.....

Appendix 2: Informed Consent form, Swahili Version

CHUO KIKUU CHA SAYANSI YA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

FOMU YA RIDHAA

Consent Form -Swahili Version

Salaam, jina langu ni **Aggrey Nzingana** natokea Chuo Kikuu cha Sayansi za Afya Muhimbili. Ndugu mshiriki ninapenda kukujulisha kuwa tunafanya utafiti wenye kichwa cha habari " Utekelezaji wa Sera ya afya na usalama mahali pa kazi kwa wachimbaji wadogo wilayani Chunya". Utafiti huu unalenga kupata hali ya utekelezaji wa afya na usalama kazini kwa wachimbaji wadogo. Ushiriki wako katika utafiti huu ni wa hiari na tutauthamini mno. Tafadhali nakuomba uwe mkweli na muwazi ili kutuwezesha kutoa mapendekezo sahihi hapo baadae kuhusu uboreshaji wa upangaji na utekelezaji wa mipango ya afya ya halmashauri. Uamuzi wako wa kushiri ama kutoshiriki katika utafiti huu hauambatani na adhabu yeyote. Tunakuhakikishia usiri wa hali ya juu kwa kadri ya uelewa wetu.

Iwapo utakubali kushiriki katika utafiti huu, taarifa zitakazopatikana kutokana na utafiti huu zitasaidia kuwataarifu waandaaji wa sera za afya kuhusu utekelezaji wa sera ya afya na usalama mahali pa kazi na vitu vinavyochangia ama kuzuia utekelezaji wa sera. Hii itaweza kusaidia kuboresha afya za wachimbaji wadogo.

Ikiwa una maswali yeyote kuhusiana na haki zako kama mshiriki katika utafiti huu, unaweza kuwasiliana na Prof.M.Moshi, mwenyekiti wa kamati ya utafiti na uchapaji ya Chuo Kikuu cha Sayansi ya afya na sayansi shirikishi Muhimbili, P.O.Box 65001 Dar es Salaam, Simu 022- 21503026

UKUBALI

Maelezo yaliyopo hapo juu yanayoelezea haki ya kushiriki katika utafiti unaoitwa " Utekelezaji wa Sera ya afya na usalama mahali pa kazi kwa wachimbaji wadogo wilayani Chunya " yamesomwa kwangu na ninakubali kushiriki katika utafiti huu.

Sahii ya mshiriki ……. Tarehe …….

Sahihi ya mtafiti ……. Tarehe……..

Appendix 3: Key informant Interview Guide English Version

Part I: Introduction of research to interviewee and socio demographic data

(a Key informant interview guide Number:.....

(b Age ……

(c Sex: Female/ Male……..

(d Education level …….

(e Occupation ……

(f Position……

Part II: Workers in artisanal and small scale mining understanding of occupational health and safety policy and regulations

a) What do you know about occupational health and safety policy and laws? What is your comment on health and safety in your work place?

b) What types of diseases do you suffer mostly?
c) What ways do you use to protect yourself from diseases?
d) What ways do you use to protect yourself from accidents?
e) Have you undertaken any course on prevention and mitigation of diseases in your area?
f) Have you undertaken any course on prevention and mitigation of accidents in your area?
g) How many people do you know have been injured or died in your area?
h) What should be done to improve occupational health and safety?

Part III: Small scale miners understanding of occupational health and safety policy and regulations

a) What do you know about occupational health and safety policy and laws? What is your comment on health and safety in your work place?
b) What do you do in supervising your working area?
c) What types of diseases do happen mostly in your mining?
d) What ways do you use to protect your workers from diseases and accidents?
e) Have you undertaken any course on prevention and mitigation of accidents and diseases in your area?
f) What should be done to improve occupational health and safety?

Part IV: Government officers understanding of occupational health and safety policy and laws

a) What do you know about occupational health and safety policy?

b) What is your plan in supervising and monitoring of artisanal and small scale mining in your area?

c) What are the measures undertaken in prevention of accidents and diseases in your area?
d) What is your plan in training miner's on occupational health and safety?
e) What should be done to improve occupational health and safety?

Part V: Accidents information from mining sites- HMIS Coordinator

a) How do you capture accidents information from artisan and small scale mining?

b) What is the number of people injured or died from mining activities in past five years?

THANK YOU FOR YOUR COOPERTATION

Appendix 4: Key informant Interview Guide (Kiswahili Version)

Kipengele I: Utambulisho wa mshiriki katika utafiti na taarifa binafsi

a) Namba ya mahojiano ……..
b) Umri …….....
c) Jinsia: Mwanamke/ Mwanaume.....
d) Kiwango cha elimu ……
e) Cheo.....

Kipengele II: Uelewa wa wachimbaji wadogo kuhusu sera,sheria na taratibu za afya na usalama kazini.

a) Unafahamu nini kuhusu Sera,taratibu na sheria za afya na usalama kazini? Nini maoni yako kuhusu afya na usalama kazini? Elezea
b) Ni magonjwa gani yanayowapata wachimbaji wadogo?
c) Ajali aina gani huwapata wachimbaji wadogo?
d) Njia zipi hutumika kujikinga na magonjwa pamoja na ajali?
e) Njia zipi hutumika kujikinga na ajali?
f) Umepata mafunzo yeyote kuhusu kujikinga na magonjwa?
g) Umepata mafunzo yeyote kuhusu kujikinga na ajali kazini?
h) Ni watu wangapi unaowafahamu wameumia au kufariki katika eneo lako la uchimbaji?
i) Ni nini kifanyike kuboresha afya na usalama mahali pa kazi?

Kipengele III: Uelewa wa wamiliki wa migodi midogo kuhusu sera,sheria na taratibu za afya na usalama kazini.

a) Unafahamu nini kuhusu Sera,taratibu na sheria za afya na usalama kazini? Nini maoni yako kuhusu afya na usalama kazini? Elezea.
b) Una utaratibu gani wa kusimamia afya na usalama katika eneo lako la kazi?
c) Ni magonjwa gani yanayowapata wachimbaji wadogo?

d) Njia zipi hutumika kuwakinga wafanyakazi wako wasipatwe magonjwa na ajali?
e) Umepata mafunzo yeyote kuhusu kuboresha afya na usalama mahali pa kazi?
f) Ni nini kifanyike kuboresha afya na usalama mahali pa kazi?

Kipengele IV: Uelewa wa maofisa wa serikali kuhusu sera,sheria na taratibu za afya na usalama kazini.

a) Unafahamu nini kuhusu Sera ya afya na usalama kazini?
b) Kuna utaratibu gani wa kusimamia usalama na afya kwa wachimbaji wadogo?
c) Ni njia zipi hutumika katika kuzuia magonjwa na ajali katika machimbo?
d) Utaratibu wa kutoa elimu kuhusu usalama sehemu za kazi kwa wachimbaji wadogo ukoje?
e) What should be done to improve occupational health and safety?

Kipengele V: Takwimu za ajali sehemu za machimbo – Mratibu wa MTUHA

a) Unapataje takwimu za ajali kutoka kwa wachimbaji wadogo?
b) Katika miaka mitano iliyopita ni watu wangapi wameumia au kufa katika machimbo?

ASANTE KWA USHIRIKIANO WAKO

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Ref. No. MU/PGS/SAEC/Vol. VI/

22nd May, 2013

Mr. Aggrey Nzingana
MA-Health Policy and Management,
MUHAS.

RE: APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED "IMPLEMENTATION OF OCCUPATIONAL HEALTH AND SAFETY POLICY IN ARTISANAL AND SMALL SCALE MINING IN CHUNYA DISTRICT"

Reference is made to the above heading.

I am pleased to inform you that, the Chairman has on behalf of the Senate approved ethical clearance for the above-mentioned study.

Thus ethical clearance is granted and you may proceed with the planned study.

Please liaise with bursar's office to get your research fund.

Prof. O. Ngassapa
DIRECTOR, POSTGRADUATE STUDIES

/emm

cc Vice Chancellor, MUHAS
cc Deputy Vice Chancellor – ARC, MUHAS
cc Dean, School of Public Health and Social Sciences, MUHAS

HALMASHAURI YA WILAYA YA CHUNYA

(Barua zote zitumwe kwa Mkurugenzi Mtendaji Wilaya)

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Kumb. Na. CDC/T.30/12/VOLL.XIV/106

S.L.P. 73,
CHUNYA

Tarehe: 07/06/2013.

Afisa Mtendaji wa Kata,
Mbugani, Saza, Sangambi,
CHUNYA.

Afisa Mtendaji wa Kijiji,
Soweto, Itumbi, Mapogoro
CHUNYA.

YAH: KUMTAMBULISHA NDUGU AGGREY NZIGANA

Tafadhali husikeni na somo tajwa hapo juu.

Mtajwa hapo juu ni mwanafunzi wa Chuo Kikuu Muhimbili ambaye kwa lengo la kukamilisha masomo yake anahitaji kukusanya takwimu (data) mbalimbali zinazohusiana na "**usalama mahali pa kazi kwa wachimbaji wadogo wadogo waliopo katika maeneo yenu".**

Tafadhali mpatieni ushirikiano wa kutosha ili aweze kufanikisha azma yake.

Asante,

S. Kimilike
Kny MKURUGENZI MTENDAJI WILAYA
CHUNYA.

KNY.MKURUGENZI MTENDAJI (W)
CHUNYA

Nakala kwa:- Mkurugenzi Mtendaji (W)
CHUNYA. – Aione kwenye jalada.

" " Aggrey Nzingana
Mwanafunzi Chuo cha Afya Muhimbili