



FACULTY OF ENGINEERING

DEPARTMENT OF MINING AND WATER RESOURCES

ENGINEERING

FINAL YEAR PROJECT REPORTS

DESIGN AND FABRICATION OF A GOLD AMALGAMATION

RETORT

CASE STUDY: TIIRA GOLD FIELD

BY

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A final year project report submitted to the Department of Mining and Water Resources Engineering in partial fulfilment of the requirements for the award of a Bachelor of Science in Mining Engineering.

ABSTRACT

Artisanal and small-scale gold mining sector is the single largest demand for mercury in the world. An estimated 1960 metric tons of mercury were discharged into the air, soil and water by ASGM globally in 2011(UNEP, 2013)

After thorough grinding of ore containing gold, mercury is added to the mixture to form a gold amalgam which is then heated to vaporize the mercury to obtain the gold. Mercury vapor can travel along distance for as far as 2500km in 72 hours (Glass et al. 1991), ultimately getting inhaled by the people around including women and children which is toxic to their health.(Risher, 2003).

This mercury ends up in the environment through open burning of the amalgam and spillage. The mercury released to the atmosphere has significant health risks to both the human beings and the environment including erethism, loss of memory, kidney failure, muscular tremors, madness and even death(Small-scale Handbook, 2002).

Therefore, this project was limited to the design and fabrication of a retort to reduce mercury vapor toxification and possibly recycle the mercury for re-use.

DECLARATION

I AYEBARE ARONE hereby declare to the best of my knowledge that this is my true and original piece of work and has never been submitted to any university or institution of higher learning for any academic award.

Signature:

Date:

APPROVAL

This report has been submitted to the Faculty of Engineering for examination with approval of my supervisor

Mr. EDSON NUWAREEBA

Signature:

Date:

DEDICATION

I dedicate this report to my beloved parents Mr. and Ms. Nyebaze for their generous support which have indeed made me what I am today. Am very humbled and equally grateful, may the Almighty God reward them abundantly.

ACKNOWLEDGEMENT

First and foremost, I thank the Almighty God for the gift of life, wisdom and good health.

I appreciate my parents for the support they extended to me especially financially. May the Almighty God bless the work of their hands.

I am greatly indebted to Mr. Edson Nuwareeba for the incredible help, knowledge and encouragement he gave me throughout the accomplishment of this final project proposal report.

I congratulate and appreciate all my fellow classmates for the mutual support I received from them during the project proposal preparation.

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LIST OF ACRONYMS

UNEP - United Nations Environment Programme

EPA - Environmental protection Agency

ASGM - Artisanal and Small-Scale Gold Miners

Hg-Mercury

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