Analysis of arsenic in Lahore drinking water and its impacts on public health

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BY

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RESEARCH COMPLETION CERTIFCATE

Certified that the research work contained in the thesis titled, "**Analysis of Arsenic in Lahore Drinking Water and its Impacts on Public Health"** has been carried out and completed by Saba Saleem. ID: 15001255004. The quantum and quality of work contained in the thesis is adequate for the award of Degree of MS.

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DECLARATION

SABA SALEEM D/O MUHAMMAD SALEEM AKHTAR, ID: 15001255004 session 2015-2017 hereby declare that the matter printed in the thesis titled "**Analysis of Arsenic in Lahore Drinking Water and its Impacts on Public Health"** is my own work and has not been printed, published and submitted as research work, thesis or publication in any form in any university, research institution etc. in Pakistan or abroad.

Dated: …… ……

Saba Saleem

DEDICATION

To

My Family

For their Abundant Support,

Patience, Understanding

&

Love

ACKNOWLDGMENT

Firstly, I would like to express my sincere gratitude's to ALLAH ALMIGHTY for his help and blessings. I am indebted to the impeccable love of my beloved Holy Prophet Hazrat Muhammad (PBUH), spiritual mentor my father Muhammad Haleemand my kind mother that consistently kept me intact during the hectic work on this project. I extend deep gratitude to Dr. Muhammad Sohail Afzal (Supervisor) for his friendly guidance, valuable suggestions and kind supervision. His guidance helped me in all the time of research and writing of the thesis. I could not have imagined having better advisor for my MS study.

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Abstract

In the time of global climate change, industrial activities and urbanization across developing nations, unavailability of safe and healthy water is increasingly noticed with possibly more terrible future environmental consequences. Lahore is among few Asian cities which are dependent on groundwater for its drinking water needs. Groundwater over-extraction, improper waste management, dumping of industrial effluents, natural disasters that leads to worse water quality and widespread decline of groundwater-tables. Arsenic is a metalize that is highly toxic and if concentration exceeds from its permissible limit then it poses serious damage to health. Graphite Furnace Atomic Absorption Spectrophotometer (GFAAS) is used for the analysis of arsenic in water samples. In all samples, arsenic level was more than its recommended limit of WHO. However, health reports on arsenic related health problems are very limited and people do not have any knowledge regarding arsenicosis.

Keywords: Contamination, GFAAS, Metalloid, Arsenicosis

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Chapter 1

INTRODUCTION

1: Introduction

Water is considered as one of the most important component that is essential for human life and environmental health. Being a treasured natural resource it include groundwater, freshwater and water for marine life. Water is present in the form of liquid, ice, glaciers, streams, lakes, groundwater and fresh water. Earth contain about 70% of water from which 97.5% is saline water and only 2.5% is freshwater and total amount of water that is available for human use is only 0.01% (Ahmed *et al*., 2014**).** More than half of world's population depend on freshwater to fulfill their drinking requirements. Great amount of rural communities are based on groundwater to meet almost all of their needs (Patil and Patil, 2010). To access safe and clean water is major concern of whole world as it involves in major purposes like drinking, food preparation, agriculture practices and personal use.