Study of fluoride in drinking water of district Kasur

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"IN THE NAME OF ALLAH, THE BENEFICENT, THE MERCIFUL."

Praise be to Allah the cherisher and sustainer of the worlds...

Most gracious, most Merciful...

Master of the Day of Judgment...

Thee do we worship, and thine aid we seek...

Show us the straightway...

The way of those on whom thou has bestowed thy grace, those

Whose (portion) is not wrath. And who go not astray...

RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis titled, "study of fluoride in drinking water of district Kasur" has been carried out and completed by ***IMRAN ALI*, ID: 14003140012**. The quantum and the quality of the work contained in this thesis are adequate for the award of Degree of MS/M.Phil.

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DECLARATION

I IMRAN ALI S/O GHULAM SHABBIR ID: 14003140012 Session 2014-2016 hereby declare that the matter printed in the thesis titled "study of fluoride in drinking water of district kasur" 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: 23/4/17

(Imran Ali)

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DEDICATED

TO

ALLAH ALMIGHTY

&

HIS BELOVED PROPHET

GREAT & IDEAL PERSONALITY

HAZRAT MUHAMMAD (P.B.U.H)

ACKNOWLEDGEMENT

*All praises are for greatest and **ALLAH ALMIGHTY** who guides us in darkness and helps in difficulties. Infinite thanks to him who enabled me to complete this task. I am all the tribute to **HOLLY PROPHET MUHAMMAD (P.B.U.H),** the city of knowledge, torch of guidance who has guided his ummah to the knowledge from cradle to grave. I would pay bundle of Darood-o-salam to the Holly Prophet (salla-laho-alaihy-wa-alyhe-wasallum).This was possible only due to grace of Almighty **ALLAH,** Whose blessings are cherished fruit of our modest efforts to overcome the problems and difficulties.*

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May ***ALLAH*** *give them His blessings along happy life?*

IMRAN ALI

ABSTRACT

This study was carried out to investigate fluoride concentration in the 23 drinking water schemes of District Kasur, Punjab Pakistan. The recommended legal level of fluoride by the World Health Organization (WHO) and Pakistan Standard and Quality Control Authority (PSQCA) is 1.5 ppm in drinking water. Fluoride pollution in drinking water causes many negative effects on the development of the natural body. APHA analyzing standards were observed completely. Study was conducted by the cooperation of PCRWR Lahore divisional water quality labs. Colorimeter DR2800 was used for fluoride analysis. It was found that 20 samples of the targeted area were fit for drinking purpose with permissible limits i.e. less than 1.5 ppm, while three samples from areas (Bhilla face, Khudian and Rasoolpur village) were found with higher concentrations of fluoride and rendered unfit for drinking purpose.

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Chapter 1

INTRODUCTION

1.1 Introduction

Pakistan, currently a population of 141 million, is expected to increase to approximately 221 million in 2025. This increase in population would have direct impact on water to meet the needs of residential, agricultural and mechanical requirements. Currently general population of Pakistan faces substantial lack of accessible water in remote areas. The water per head has been reduced from 5600 m^3 to 1000 m^3 in recent years . The quality of ground and surface water is heavily compromised, due to mixing of untreated wastewater from industry, fertilizers and water Pesticides. Quality control system is extremely poor, quality checking and administrative data has been lost, making it extremely difficult to keep tract of quality of water in use. This situation imposes serious threat to health of general public, given the fact, water is essential for life. Impurities found in water for domestic use range from microbes to hazardous chemicals. The harmful chemicals reported in drinking water include nitrate, fluoride, Arsenic and Iron etc. Generally the sources of high fluoride levels in drinking water are calcium-poor aquifers and fluoride-bearing minerals. Another source of high fluoride is industrial waste. Industries that use chemicals such as hydrofluoric acid produce waste high in fluoride levels. If this industrial waste is not treated properly, it contaminates the water in the area with high fluoride levels. High fluoride intake is extremely dangerous to human health. In 1993, the world health organization (WHO) recommended that fluoride levels in drinking levels should not exceed 1.5 ppm. Pakistan standard quality control authority (PSQCA) also adopted this standard. Fluoride level, higher than recommended, is reported to be associated with bone diseases, neurotic changes in the body and dental fluorosis and other health issues.