24

Health Risk Appraisal of Fluoride and Nitrate Contamination in Groundwater: A Case Study from Limestone Terrain in South India

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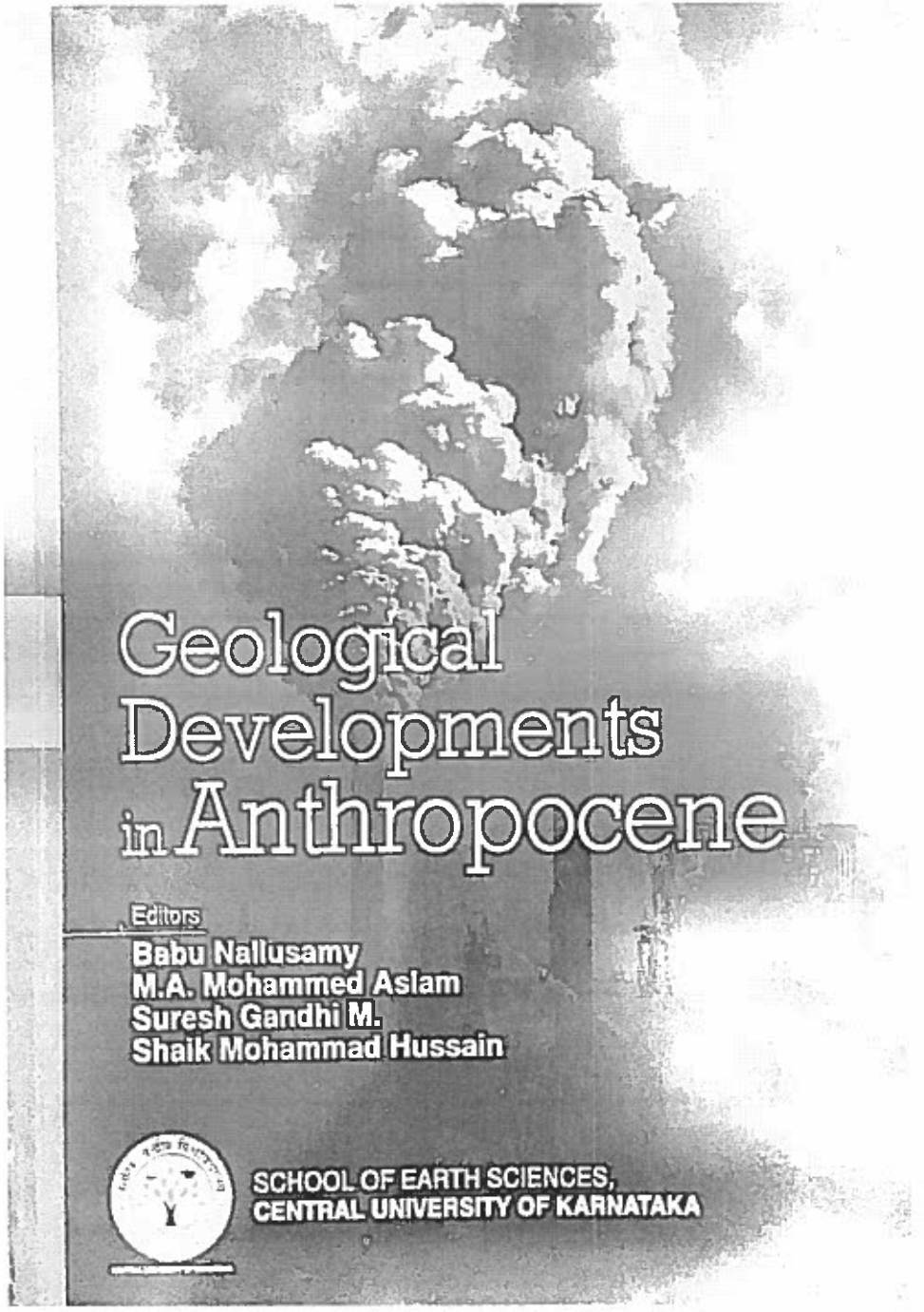
ABSTRACT

The contaminant, fluoride and nitrate in groundwater is considered as public health issue of the community. This present study site is a typical cement industry site in Kadapa, A.P. In this present study, groundwater samples (n=24) has been used for analyzing F^- and NO_3^- ions. In the present area, fluoride ranges from 0.9 to 6 mg/L, and the southern part of the study area contains more F^-. According to WHO recommendations, 54% of groundwater samples have fluoride concentrations exceeding the allowable threshold, seriously affecting people's health. Basic intrusion and clay minerals are considered as causes for the high fluoride content in the southern part of the study. NO_3^- concentrations in groundwater range from 7 to 210 mg/L, and the northeastern part of this region has higher NO_3^- concentrations. About 50% of the samples exceeded the NO_3^- allowable threshold, making them unfit for consumption. The reason for the high amount of NO_3^- in the water in this area is due to the application of fertilizers to promote crop productivity and the treatment of industrial waste from poultry. Data from the Global Danger Index values show that children pose a greater threat than other age groups in the region.

Keywords: Health Risk, Fluoride, Nitrate, Yerraguntla

INTRODUCTION

Human beings rely heavily on natural resources. Next to air, the other essential requirement for human life to exist is water. Environmental risk factors such as physical, chemical and biological health are directly affected by human health. These variables depend on contaminated drinking water, adequate sanitation, and poor hygiene, all of which contribute to spreading diseases such as diarrhoea, cholera, dysentery, hepatitis, and typhoid. Underprivileged people, particularly children, are more sensitive to insufficient water and sanitation health consequences. Due to water bronchial disease, about 37.7 million people in India get it each year, with more than



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FUNDAMENTALS OF MACHINE LEARNING & DEEP LEARNING

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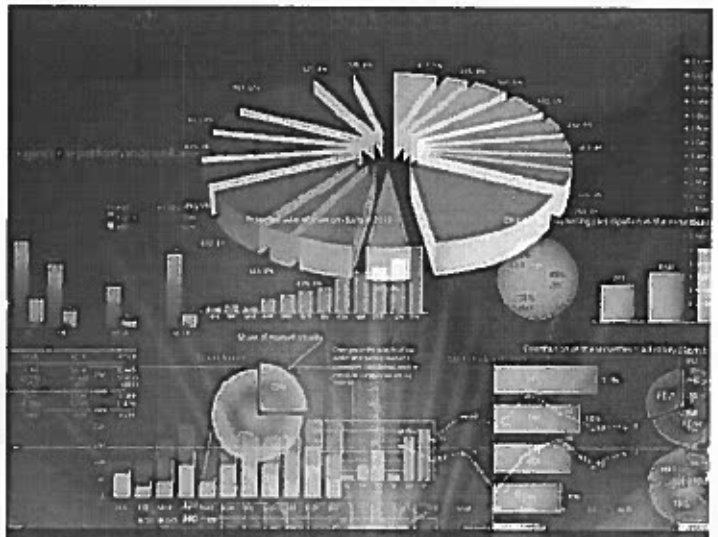

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