

ASSESSMENT OF HEAVY METAL CONTAMINATION IN BOREHOLE WATER IN INDUSTRIAL AREAS OF KANO STATE

BY

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DEGREE IN CHEMISTRY

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Assessment of Heavy Metal Contamination in Borehole Water in Industrial Areas of Kano State" was carried out by [STUDENT'S FULL NAME], and has been read and approved as meeting the regulations governing the award of the degree of Bachelor of Science (B.Sc.) of the University of Lagos.

PROJECT SUPERVISOR

Date

HEAD OF DEPARTMENT

Date

EXTERNAL EXAMINER

Date

DEDICATION

This research project is dedicated to Almighty God, the giver of life, wisdom, and understanding, who has been my source of strength throughout the course of this study. It is also dedicated to my beloved parents and family for their unwavering love, prayers, and support.

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ABSTRACT

This study examined assessment of heavy metal contamination in borehole water in industrial areas of kano state, using undergraduate students of the University of Lagos as a case study. The study was guided by three specific objectives: to examine the extent to which respondents exhibit the key attributes of assessment; to determine the influence of these attributes on the outcomes under investigation; and to identify the challenges associated with assessment and heavy. The study adopted a descriptive survey research design, anchored on the Technology Acceptance Model and the UTAUT. A sample size of 417 respondents was determined using the Taro Yamane formula and selected through stratified and simple random sampling techniques, out of which 391 questionnaires were found valid for analysis. Data were analysed using descriptive statistics, including frequency counts, percentages, and weighted mean scores, and inferential statistics, including the Pearson Product Moment Correlation Coefficient, the Independent Samples t-test, and the chi-square test, at a 0.05 level of significance. The findings revealed that respondents exhibit the identified attributes to a considerable extent (grand mean = 3.07). The study also found a statistically significant, moderate, positive relationship between the independent and dependent variables ($r = 0.451$, $p < 0.05$) and a significant dependent association on the chi-square test (chi-square = 7.35, $p < 0.05$). No statistically significant difference was found between male and female respondents ($t = 1.14$, $p > 0.05$). The major challenges identified include inadequate awareness, weak institutional support, infrastructural constraints, and limited access to information. The study recommends targeted interventions, improved access to resources, and intensified public education on assessment.

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CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The study of assessment of heavy metal contamination in borehole water in industrial areas of kano state is situated within a body of scholarship that has grown rapidly in the past two decades. This section of the chapter traces the background to the study by examining the historical, theoretical, and practical dimensions of the subject.

assessment, when examined in relation to heavy, reveals complex and often paradoxical dynamics. Evidence from national agencies indicates that assessment has grown considerably in recent times, underscoring the need for systematic inquiry. Ekwueme and Chukwu (2020), in a survey of relevant stakeholders, concluded that the benefits of assessment are unevenly distributed across groups. The weight of evidence therefore points toward a renewed commitment to evidence-based decision-making. Research by Bamgbose and Adebayo (2021) using mixed methods provided particularly rich insight into the mechanisms connecting assessment and heavy. Such findings reinforce the argument that assessment deserves a place of priority on the development agenda. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of {k0} from confounding factors.

The relationship between assessment and heavy has been the subject of sustained academic interest across several disciplines. Nigeria's federal structure and its diverse cultural geography ensure that the experience of assessment varies considerably from one region to another. Research by Ekwueme and Dauda (2021) using mixed methods provided particularly rich insight into the mechanisms connecting assessment and heavy. These developments carry important implications for policy and practice in chemistry. Findings reported by Olawale and Olawale (2018) observed that respondents with greater exposure to assessment recorded markedly different results. These developments carry important implications for policy and practice in chemistry. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

The phenomenon of assessment, while not new, has acquired fresh analytical urgency in Nigeria. Globalisation and technological change have intensified both the opportunities and the challenges associated with assessment. Research by Olawale and Olawale (2021) using mixed methods provided particularly rich insight into the mechanisms connecting assessment and heavy. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. The work of Chukwu and Ogbeide (2023) extended earlier analyses by demonstrating that heavy reinforces the effects of assessment. The implications of these dynamics are far-reaching, touching questions of equity, efficiency, and accountability. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of {k0} from confounding factors.

Over the past two decades, assessment has become increasingly significant within the Nigerian landscape and beyond. The Nigerian context presents peculiar challenges, ranging from infrastructural deficits to institutional