



International University of Africa
Deanship of Graduate Studies



**Assessment of Quality of Groundwater Samples From
Abéché City and its suitability for potable use**

**A Thesis submitted in fulfillment of the requirement for the master degree
in industrial chemistry**

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DEDICATION

I dedicate this research to whom supported and encouraged me to complete this study,,,, especially to
my

Parents and my brothers and sisters

to my friends with my love

to my family in university of Adam Baraka- Abeche
city

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ABSTRACT

The aim of this study is assessment of quality of groundwater from abeche city and its suitability for potable use, samples were collected from five wells in two different seasons (summer and autumn), the quality of water assessed based on the physicochemical parameters (pH, TDS, EC, water hardness, Cl^- , NO_3^- , and NO_2^-) and the concentration of Ag, Al, As, B, Ba, Be, Cd, Cr, Co, Cu, Fe, Mn, Ni, Pb, Sr, Si, Sb, Mo, Ti, V, Zn, sodium, potassium, Magnesium, and calcium; the results obtained from the analysis compared with the world health organization standard for drinking water quality. The physiochemical parameters in the samples of two seasons were found less than the permissible limits of world health organization except in the sample from well no.1 in summer season showed slightly higher hardness than the WHO standard. The concentration of Lead, Cobalt and Antimony in autumn and summer season samples slightly exceed the permissible limits of World Health Organization standards for drinking water quality, so as: V, Sr, Si, Mo, Ni, Na, Mg, Fe, K and Ca in the well no. 1 in summer season also exceeded the permissible limits of World Health Organization standards for drinking water quality, while Al, As, Ag, B, Ba, Be, Cd, Cr, Cu, Mn, Ti, and Zn were less than the permissible limits.

ABSTRACT ARABIC

الهدف من هذه الدراسة هو تقييم جودة المياه الجوفية لمدينة أبشة وملاءمتها للمياه الصالحة للشرب. وقد تم جمع العينات من خمسة آبار خلال فصلي الصيف والخريف, وتقاس جودة هذه المياه بناء على خصائصها الفيزيوكيميائية: (الأس الهيدروجيني, المواد الذائبة الكلية, التوصيلية الكهربائية, عسر الماء الكلي, النترات, الكلوريد والنيتريت).

تركيز عناصر (الفضة, الألمونيوم, الزرنيخ, البورون, الباريوم, البريليوم, الكاديوم, الكروميوم, الكوبالت, النحاس, الحديد, المنجنيز, النيكل, الرصاص, الإسترانشيوم, السيليكون, الأنتيمون, الميلبيديوم, التيتانيوم, الفاناديوم, الزنك, الصوديوم, البوتاسيوم, المغنيسيوم والكالسيوم).

وتمت مقارنة نتائج هذا التحليل مع مواصفات منظمة الصحة العالمية للمياه الصالحة للشرب, وجد أن الخصائص الفيزيوكيميائية للعينات التي تم جمعها خلال الفصلين أقل من الحد المسموح به لدى منظمة الصحة العالمية, ماعدا العينة التي أخذت من البئر رقم (1) خلال فصل الصيف فقد كانت أعلى بقليل من الحد المقبول لمنظمة الصحة العالمية لعسر الماء.

تركيز عناصر الرصاص والكوبالت والأنتيمون في عينات فصلي الخريف والصيف تجاوزت بمقدار قليل من الحد المسموح به لمنظمة الصحة العالمية لجودة المياه الصالحة للشرب, بينما عناصر: (الألمونيوم, الزرنيخ, الفضة, البورون الباريوم, البريليوم, الكاديوم, الكروميوم, النحاس, المنجنيز, التيتانيوم والزنك) كانت تراكيها أقل من المدى المسموح به في منظمة الصحة العالمية.

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