

WATER QUALITY EVALUATION OF ALA RIVER AND SOME WELLS AND THE IMPACT ON AGRICULTURE IN AKURE ONDO STATE NIGERIA

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Abstract

This paper reports the estimation of some quality parameters of Ala River and some well in Akure. Ondo state Nigeria. Surface qualities of the river were studied in order to evaluate its uses. Water and soil samples were collected from the river and nearby small-irrigation farms at Alagbaka, Oyemekun, Oba Ile and Adesida quarters. The samples were analyzed using standard analytical techniques and were compared with recognized water quality standard. Quality parameters like Ph, Dissolved oxygen, Turbidity, Total alkalinity, Temperature, Chloride, Total hardness, calcium, magnesium, Total solid, Nitrate and colour were determined in water samples from selected well and Ala river. The guideline values for hardness at 500 mg/litre (CaCO₃) was based on taste and household consideration at Ph 7.0 and below, hydrogen sulphide predominates, dissociated into odourless ions in more alkaline. Coliform organism was not detectable in 95% of the routine samples examined.

Keywords: water quality, parameters, well, estimation

INTRODUCTION

Pollution can be described as the release of waste materials or toxic substances into the environment in quantities, which is dangerous to the environment where organisms are existing. Many environment issues are faced today that have to be dealt with, these ranges from the destruction of forest to the damage that is done to the ozone layer. The only way to prevent these types of problems is to basically prevent them from occurring.

Water pollution is a dilemma that can be very harmful to both the peoples and their environment. Human beings are becoming less and less cautious when it comes to hazardous materials that can be distributed in our living and breathing environment. Oil spills as well as other occurrences containing harmful substances are over the world Grifol T. (1975). Water supplies are constantly becoming contaminated, these water supplies are used for drinking and washing, which causes health hazards due to pollution existing in the water. After contamination, it is extremely difficult and costly to purify the ground water. We are rapidly losing one of our most precious resources, but in many ways we can help in preserving our underground water.

Water pollution is not a problem that only takes nature's beauty away but it also has effect on the living organisms and crops for instance fish as well as other living things in water such as shrimps, jelly-fish also die or even became extinct due to the extensive amount of water pollution that exist in the seas and oceans.

The poisonous substance that are found in these water cause a harsh lack of oxygen for these aquatic organisms causing them to eventually die out. This pollution would also severely infest water with different types of bacteria and disease causing agents, this being the water that we drink and wash with, therefore the disadvantages of water world gradually transfer to use causing horrible illness as well other miserable condition.

Figure 1. show the geographical area of western Nigeria cover in the study area

Objectives

1. To investigate the major water pollutants in Akure ondo state Nigeria

- To find out ways of minimizing water pollution



Figure 1. The geographical area of western Nigeria cover in the study

METHODOLOGY

Water quality evaluation of Ala, Alagbaka and Federal College of Agriculture, Akure. Surface water qualities of River Ala, Alagbaka and Federal College of Agriculture. Akure was studies in order to evaluate their quality and uses. The water samples were collected from the rivers, and were analysed using standard analytical techniques and were compared with recognized water quality standards.

Multiple bar charts were used to show the relationship between standards and some of the physicochemical parameters, the percentage of minerals present were compared with the standard, which show that the rivers are highly polluted, and hence unfit for domestic water use, stick watering aquaculture, and recreational activities unless appropriate treatment are employed. Hence, the water must be filtered if intended for sprinkler or trickle irrigation

F.E.C.A. River is still alright for domestic supply and irrigation work, that is why the figures are low.

Figure 2 . and figure 3 show the

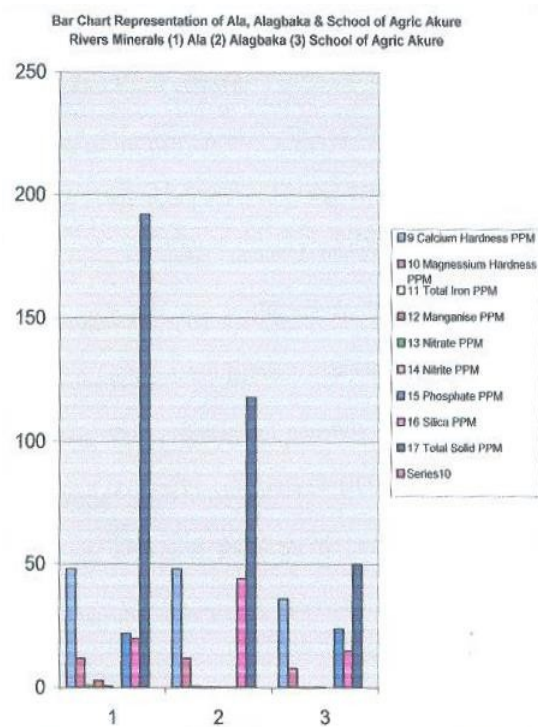


Figure 2 chart representation of Ala, Alagbaka and school of agriculture

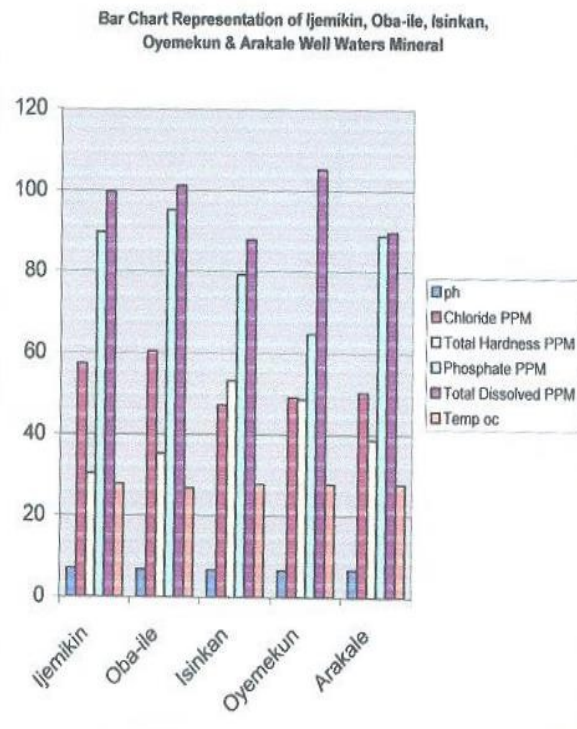


figure 3. Bar chart of the ijemikin ,obaile, isinkan,oyemekun,arakale wells

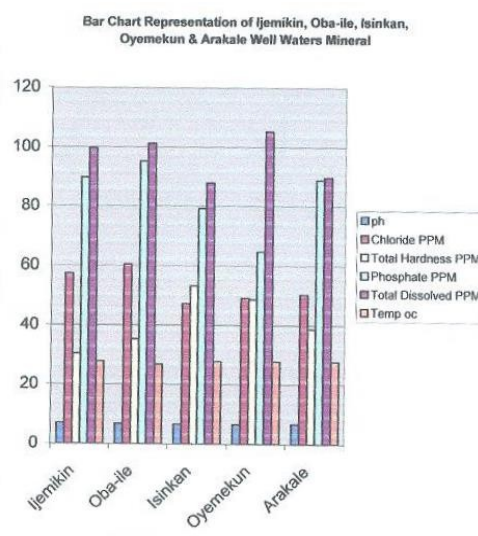


Figure4. Bar chart representative of well in Ijemikin, Oba-Ile, Isinkan, Oyemekun and Arakale

Result and analysis

The results taken by this study show that drainage system affects the proportions of water leaving the field via surface and subsurface flow. The most vital component in designing and implementing a telemetric system for monitoring the quality and quantity of water, is incorporating a central processing system for receiving the data from the different and various meteorological sensors, hydrometric and synoptic stations, control systems of water and waste water treatment plants, pumping stations, water and sewage pipelines; that finally analyzes and processes the relevant data and delivers them.

A number of barriers to the uptake of integrated urban water management were identified during the review, including the lack of adequate guidelines, standards and regulations, the lack of understanding about appropriate risk management regimes, the lack of appropriate economic frameworks, the limited number of appropriate design and analysis tools, and the absence of a robust framework for the assessment of the many integrated urban water management options which could be implemented at any given site.

Effectively managing water to meet food and environmental objectives will require the concerted action of individuals from across several professions and disciplines – farmers, fisherfolk, water managers, economists, hydrologists, irrigation specialists, agronomists and social scientists.

Table 1.2, figure 2,3,4 provides a synopsis of more detailed evidence of water quality of the groundwater of Ala, Alagbaka and federal college of agriculture well water showing values for Ph, Dissolved oxygen, Turbidity, Total alkalinity, Temperature. Chloride, Total hardness, calcium, magnesium, Total solid, Nitrate and colour. This indicates the Ala river and Alagbaka were most polluted. This pattern of groundwater development has brought much succour to the rural economy of the region. Without groundwater development, agriculture would have stagnated or declined in Akure, Ondo State, Nigeria.

Food security would of course be endangered; but a more critical problem would be supporting rural livelihood during the decades these regions would take to transfer a sufficient proportion of their agrarian populations to off-farm livelihood systems.

Table 1: Result of water quantity of Ijemikin, Oba-Ile, Isinkan, Oyemekun and Arakale.

	Ijemikin	Oba-Ile	Isinkan	Oyemekun	Arakale
pH	6.9	6.7	6.6	6.5	6.7
Chloride (ppm)	57.3	60.4	47.2	49.2	50.3
Total hardness					
As CaCO ₃ (ppm)	30.4	35.3	53.2	48.7	38.7
Phosphate (ppm)	89.7	95.2	79.2	64.7	88.9
Total dissolved					
Solid (ppm)	99.7	101.2	87.9	105.2	89.8

Regarding the future environment, water security today is a first and necessary step toward climate adaptation tomorrow, and an investment that will deliver important growth and poverty gains independent of climate change outcomes. In the future, climate change could greatly increase the already considerable complexity and cost of achieving African water security. It is clear that adaptive capacity, both social and physical, will need to be enhanced across Africa to achieve and sustain water security, and to protect the poorest and most vulnerable populations.

Representative monitoring stations were selected for each sub-basin covering the diversity of elevation, vegetation cover and others. For each sub-basin were found at least two air temperature stations, on

RESULT OBTAINED

Table 2. Total result of water quality of Ala, Alagbaka and School of Agric. Akure.

S/NO	PARTICULAR	ALA	ALAGBAKA	SCHOOL OF AGRIC
1	Ph	6.0	7.0	6.4
2	Dissolved Oxygen (ppm)	4.8	2.6	1.0
3	Turbidity	35	25	20
4	Total alkalinity	52	66	19
5	Chloride (ppm)	0.2	6.5	20
6	Colour	70	7.5	30
7	Fluoride (ppm)	0	6.5	Nil
8	Total hardness (ppm)	6.0	56	44
9	Ca hardness (ppm)	48	48	36
10	Mg hardness (ppm)	12	12	8
11	Total Iron (ppm)	0.96	0.4	0.1
12	Manganese (ppm)	3.0	0.2	0.1
13	Nitrate (ppm)	0.70	0.16	0.20
14	Nitrite (ppm)	0.004	0.15	0.003
15	Phosphate (ppm)	22	0.14	24

All parameters tested for in the sample surface water are within the World Health Organization (WHO) standards for drinking water except that of dry season Ala river where the colour is beyond limit. as see in Table 1

Conclusion

Since water plays a vital role on the earth, good quality water is a precious resource. Often water quality is more important than water quantity. The quality of the water affects the use we make of it, but the reverse is also true. Once we use the water, it affects its quality. The explosion in human population and industrial activities and the rate at which new chemical and products are being developed and used – pose a global environment threat. The natural decay processes water in bodies can no longer cope with these loads.

For irrigation, the underground water quality is accepted for all the parameters for in the samples collected are within the limits of the study area

Water pollution has affected many people in many ways, more than they think. Contamination is very dangerous not to only animals but also to human being. Many things are constantly been tried to stop serious water pollution such as oil spills etc. but more needs to be done.

There are many causes for water pollution, this is why each one has to be thoroughly considered in order to stop more critical things to occur, wars, conflicts and inferior industries have already done more than enough in regards to harming our living and breathing environment. On the whole, it is strictly to all organisms drawback if water we use daily becomes dangerous in drinking.

Development partners to meet existing commitments to African water and sanitation, through bilateral mechanisms that are adapted to national modalities and that see an increasing proportion of multilateral finance directed into infrastructure should be put in place

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