WATER POLLUTION AND ITS CONTROL IN THE CONTEXT OF PHYSICAL PLANNING. A CASE STUDY OF SELECTED WATER BODIES IN OWERRI.

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ABSTRACT

Owerri has faced water pollution problems for many years. These have created many social, physical economic technological and political issues in Owerri city. The general feeling among Owerri inhabitants is that supply of water in Owerri could be a nuisance. The survey method using questionnaire was adopted in the study. The stratified, random and systemic sampling techniques were used in two rivers and 480 respondents from six zones of the city. The result shows that there are pollutants in the Rivers Nwaorie and Otamiri. The study therefore highlighted the control measures for effective curbing of water pollution resulting from pollutants seeping into rusted galvanized iron pipes, flood/underground seepage of human and material wastes into River Nwaorie and Otamiri, streams Okitankwo/Onumurukwa which form the major sources of water in Owerri. The leading of contaminants from industrial wastes, agricultural wastes, oil spills, hazardous wastes and natural water wastes and other refuses. The study therefore concludes that the contribution of the State Government and the Municipality improving on provision of adequate manpower and training of stakeholders in the water industry, provision of solid quality materials for general maintenance, regular treatment of water from its in-take point and also borehole water, extension of tap water (pipe born water) to all the cranies of Owerri in order to stop completely the direct-use of water from Otamiri and Nwaorie Rivers which is injurious to health, provision of suggestion box in which the inhabitants could suggest further remedies for the provision of quality water keywords: Water Pollution; Rivers; Streams; Owerri City.

INTRODUCTION

Water is a very important aspect of basic human needs. It is ranked second after air in hierarchical order of human physiological and basic needs (Unaegbu, 2004).

Duruzoechi and Ezirim (2003) Access to water is a basic human need which must be satisfied with adequate quantities and quality that comply with minimum health standards.

The basic purpose for which water which is required includes human development and industrial development. Berner and Berner (1987) water covers above 70 percent of the planet.

Water in its liquid form is the material that makes life possible on Earth. All living organisms are composes of cells that remain at least 60 percent water. Furthermore, their metabolic activities take place in a water solution (Eldon and Bradley, 2004).

Water pollution occurs when potentially harmful substances are released into water bodies. This could be through natural or artificial means. And when this happens, water is likely going to show change in colour;

hardness, acidity, alkalinity etc. It may come through improper control of domestic sewage and industrial wastes, (Uchegbu, 2002). Water pollution on its part could be defined as the contamination of water resources by harmful waste (Wood, 1976).

According to the United Nations Environment Programmes, 5million to 10million deaths occur each year from water-related diseases. The illnesses include cholera, malaria, dengue fever, and dysentery. The United Nation also reports that these illnesses have been increasing over the past decade and that without large economic investments in safe drinking water supplies, the rate of increase will continue.

The study identifies water pollution in Owerri which comprises of Owerri municipal, Owerri North and Owerri West Local Government Areas. The pollution is as a result of domestic activities such as washing clothes, car washing, bathing and defecation. Industrial activities such as the discharge of untreated effluent into the streams and Rivers by many industries in Owerri. There are also some recreational actives which contribute to the pollution of streams, Rivers and underground water such as swimming, boating etc. Agricultural activities such as planting of food crops all the banks of the river.

1 MATERIALS AND METHODS

1.1 Data Collection

The research covers Owerri City which was divided into six zones. Data were collected with the use of questionnaire which was administered using the combination of stratified sampling technique, random and systematic techniques. To carry out this study effectively, the Owerri city is divided into six zones using neighbourhood enclaves as the yardstick for stratifications. Each zone has its share of questionnaire. The sampling unit in the study is the six zones of Owerri city comprising of Old Owerri, New Owerri, Uratta/ Ihite Ogada/ Awaka/ Egbu, Emii/Emekuku/Agbala/Ulakwo,Nekede/Ihiagwa/Eziobodo/Obinze, Avu/Okuku/Irete/Orogwe/Oforola/Ndegwu. The sample size of 480 respondents was drawn from the six zones in this order; Old Owerri (Owerri Municipal) 190 respondents, New Owerri (Owerri Municipal) 90 respondents, Uratta/Ihite Ogada/Awaka/Egbu (Owerri North), 50 respondents, Emii/Emekuku/Agbala/Ulakwo (Owerri North), Nekede/Eziobodo, Ihiagwa/Obinze (Owerri West) 50 respondents, Avu/Okuku/Irete/Orogwe/Oforola/ Ndegwu (Owerri West) 50 respondents. The rational for the zoning is to ensure adequate coverage. For the purpose of data collection the streets were randomly sampled by numbering them and using the tables of random numbers. Along each street, the respondents were systematically sampled at interval of five.

1.2 Data Analysis

Descriptive statistics were used in analyzing the data.

2 RESULTS

Water in Owerri is polluted more especially when rain falls. Water pollution in Owerri is associated with pollutants seeping into rusted galvanized iron pipes, flood/underground seepage of human and material wastes into the rivers and streams, the leading of contaminants from industrial wastes, agricultural wastes etc. The respondents were asked to indicate their zones of residence in table 1

Table 1:
Place of Residence

Zone	**Frequency**	**Percentage Frequency**
Old Owerri/New Owerri	132	28
Aladinma/Ikenegbu	66	14
Owerri North/Owerri West	100	21
Wethral Road	70	14
Okigwe Road	60	12
Suburb Areas	52	11
Total	**480**	**100.0**

Table 1 reveals that most of the respondents live in Owerri Municipal that is Old/New Owerri, Aladinma/Ikenegbu, Owerri North/Owerri West, Wethral Road, Okigwe Road and Suburb Areas.

Table 2:
The Sources of Water Supply in Owerri

Variable	**Frequency**	**Percentage Frequency**
Rivers	80	17
Boreholes	62	13
Tap water	250	52
Streams	48	10
Rain water	40	8
Total	**480**	**100.0**

A study of table 2 shows that 80 (17%) inhabitants get their water supply from Rivers, 62 (13%) from Boreholes, 250 (52%) from tap water, 48 (10%) from the Streams and 40 (80%) from Rain water. From the table, it shows Tap water is the greatest water supply in Owerri followed by the Rivers and Boreholes, then Streams and Rain water.

Table 3:
Water Supply in Owerri had Colour

Variable	**Frequency**	**Percentage Frequency**
Had colour	95	20
Had no colour	355	74
None	30	6
Total	**480**	**100.0**

Table 3 reveals that out of 480 inhabitants of Owerri, 30 (6%) people interviewed use borehole water and therefore do not witness the stated problems. On the other hand, out of the remaining 450 people that get either Stream, Rain, River or Tap water is 95 (20%) indicated that they saw colour in their water supply sometimes while 355 (74%) stated that they do not notice colour in their water supply.

Table 4:
Water Supply in Owerri had Taste/Odour

Variable	**Frequency**	**Percentage Frequency**
Had taste/odour	162	34
Had no taste/odour	288	60
None	30	6
Total	**480**	**100.0**

Table 4 reveals that 30 (6%) people use borehole water and therefore do not witness the stated problem. 162 (34%) said that their water supply sometimes had taste/odour while 288 (60%) stated that their water supply had no taste/odour.

Table 5:
Sources of Water Pollution in Owerri

Variable	**Frequency**	**Percentage Frequency**
Industrial sources	130	27
Agricultural sources	96	20
Domestic sources	80	17
Oil spills	40	8
Hazardous wastes	70	15
Natural water pollution	64	13
Total	**480**	**100.0**

In table 5, according to the 480 respondents, 130 (27%) revealed that the highest source of water pollution in Owerri comes from Industrial sources. Followed by Agricultural sources 96 (20%), Domestic sources 80 (17%), Oil spills is 40 (8%), Hazardous wastes is 70 (15%) and Natural water pollution is 64 (13%).

Table 6:
The Extend of Water Pollution in Owerri

Variable	**Frequency**	**Percentage Frequency**
Highly polluted	283	59
Polluted	197	41
Not polluted	0	0
Total	**480**	**100.0**

Table 6 shows that out of 480 respondents, 283 (59%) stated that water in Owerri is highly polluted. Again 197 (41%) reveals that water in Owerri is polluted. They clearly drew their conclusion from the observation that there are particles, odour, taste and colour in the water.

Table 7:
The Effects of Water Pollution in Owerri

Variable	**Frequency**	**Percentage Frequency**
Typhoid fever	196	41
Cholera	80	17
Dysentery	74	15
Other diseases	62	14
Affects fishery	68	14
Total	**480**	**100.0**

Table 7 indicates that out of 480 respondents 196 (41%) reveals Typhoid fever, cholera is 80 (17%), Dysentery is 74 (15%), Other diseases is 62 (13%) and Affects fishery is 68 (14%). Typhoid fever is the highest effect of water pollution in Owerri followed by Cholera.

Table 8:
Results of Sanitary Condition in Owerri

Variable	**Frequency**	**Percentage Frequency**
Dirty	344	72
Very dirty	24	5
Clean	102	21
Very clean	10	2
Total	**480**	**100.0**

Table 8 shows that 344 (72%) reveals that Owerri is dirty while 24 (5%) said Owerri is very dirty, 102 (21%) stated that Owerri is clean while 10 (2%) said Owerri is very clean comparing it with the other Nigerian cities.

Table 9:
Sufficiency in Resource and Effective Control of Water Pollution in Owerri

Variable	**Frequency**	**Percentage Frequency**
Yes	283	59
No	197	41
Total	**480**	**100.0**

Table 9 reveals that out of 480 respondents, 283 (59%) clearly indicate that there is sufficiency resource and effective control of water pollution, judging that the water supply in Owerri contains pollutants at minutes levels, while 197 (41%) disagreed because of the particles and germs in the water.

Table 10:
The Effects of These Water Pollutants could be Curbed.

Variable	**Frequency**	**Percentage Frequency**
Agreed	330	69
Strongly Agreed	144	30
Disagreed	6	1
Strongly disagreed	0	0
Total	**480**	**100.0**

Table 10 reveals that 330 (69%) agreed that the effects of water pollutants could be ameliorated, 144 (30%) strongly disagreed, while 6 (1%) disagreed that effects of water pollutant could be curbed and ameliorated.

CONCLUSION

Concluding what was said, the researcher has attempted to assess and highlighted the problems of water pollution in Owerri. The study defines firstly the problem inefficiency in the present system of water pollution control in Owerri.

After these years, not just in Owerri but the nation as a whole, efforts to control water pollution have failed due to many reasons already identified in this study. Some of the causes of the failure of previous programmes-unpatriotic and non-chalant attitude of Nigerians. This is so on both the part of the public and the officials who are responsible for the maintenance of a good and safe water supply.

The backbone of the proposals in this study is for pubic enlightenment on the quality of water and control of water pollution in Owerri. Also suggested the establishment of an efficient Water Board Co-operation that is privatization. The new Board will carry out intense and proper investigations in Owerri as regard water pollution. It will also formulate based on this study, standards for water quality. Strict measures will subsequently be adopted to enforce these set standards.

Other suggestions are: physical town planners to be involved in the water system and control in Imo State, the Imo State Government should enact an edict prohibiting anybody from dumping waste into the Rivers and the Streams or on the road, a monitoring group should be constituted to oversee that no domestic activities, defecation, slaughtering of animals around the Rivers and Streams take place, the Federal Government of Nigeria should as a matter of urgency develop an ecological land use planning which will control and regulate all coastal development.

Moreover, due to the indispensability of portable water to the socio-economic development of any nation, its water resource ought to be given priority attention. Based on the above premise, the authorities concerned in water resources management in Imo State and Nigeria as a whole should not leave any stone unturned to ensure that both underground and surface water remain unpolluted because if water pollution control is effected in Nigeria, the life span of an average Nigerian maybe lengthened by an extra twenty years.

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