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## Public water supply quality management in Nigeria

*Othniel N. Habila<sup>1</sup> and Michael O. Kehinde<sup>2</sup>, Nigeria*

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### Introduction

IN NIGERIA, WATER supply for public consumption and use is the constitutional responsibility of the Federal, State and Local Governments. At the Federal level three ministries share responsibility for public water supply quality (PWSQ) management. The Federal Ministry of Water Resources (FMWR) is responsible for formulating policies, regulating the water sector and providing technical and financial support to State Governments in the planning, implementation and monitoring of water supply projects. The ministry has, in 2000, formulated and issued a National Water Supply and Sanitation policy and is working on an overall Water Resources Management Policy. The Federal Ministry of Environment (FME) also has the mandate for the protection, restoration and preservation of the ecosystem of the Nigerian environment including its water resources. In 1999, it established the National Guidelines and Standards for Water Quality in Nigeria for various uses. The Federal Ministry of Health (FMOH) lays claim to the mandate of guarding water quality as it affects public health. The National Agency for Food and Drug Administration and Control (NAFDAC), a parastatal of the FMOH, has statutory responsibility for monitoring and regulating the quality of packaged commercial water. Standards Organisation of Nigeria (SON) is also involved.

At the State level, most States have both an urban water supply and a rural water supply and sanitation agency for the delivery of public water supplies. There is also a State Ministry in charge of water resources in many States that often also oversees the water supply agencies. The Local Government Areas engage in limited water supply activities, mainly for rural communities, as well as in related environmental health issues.

The overall responsibility for public water supply quality management is shared between these agencies at the three levels of government. This paper examines the management of public water supply quality in Nigeria, reviews the major outcomes of a nation-wide study on this, outlines the main challenges and makes recommendations on the water forward.

### Review of Public Water Supply Quality Management in Nigeria

#### Observations on Policies, Guidelines and Standards

The National Water Supply and Sanitation Policy issued by the FMWR and the National Guidelines and Standards for Water Quality in Nigeria issued by the FME are the main policy and regulatory instruments for the management of water quality in Nigeria. Both were, incidentally, established during the current democratic dispensation, which, as noted by Habila (2002)<sup>4</sup>, has appreciably enhanced the overall sector development. In addition, the instruments establishing NAFDAC mandates it to regulate the production and sale of packaged drinking water.

The central objective of the National Water Supply and Sanitation Policy<sup>1</sup> is the provision of sufficient potable water and adequate sanitation to all Nigerians in an affordable and sustainable way through participatory investment by the three tiers of government, the private sector and the beneficiary. There are nine main elements of this policy objective, among which is one on water quality that “ensure good water quality standards are maintained by water supply undertakings”. The policy provides six strategies for achieving this element of the central objective. These include:

- The WHO drinking water quality standards (note: this should not be “standards” but “guidelines”) shall be the baseline for the national drinking water quality standard.
- All water works serving 5,000 citizens and above to be equipped with a functional water quality laboratory of appropriate capacity.
- Maintain a national water quality reference laboratory network
- Monitor and protect the quality of raw water sources for drinking
- Monitor the output of water supply undertakings for conformity with drinking water quality standards.
- Traditional water supply sources shall be protected and traditional water quality practices promoted.

The FME used the WHO guidelines, the guidelines and standards of other countries and data on Nigeria’s water quality to generate the National Guidelines and Standards

<sup>1</sup>Water and Environmental Sanitation, WES, UNICEF, Ikoyi, Lagos ([ohabila@unicef.org](mailto:ohabila@unicef.org))

<sup>2</sup>Dept. of Civil Engineering, University of Lagos, Lagos, Nigeria ([mokehinde@yahoo.com](mailto:mokehinde@yahoo.com))

for Water Quality in Nigeria<sup>2</sup>. The Guidelines and Standards are to regulate availability of good quality water for multi-purpose uses including for drinking, recreational, fresh aquatic life, agricultural (irrigation and livestock watering) and industrial uses. The standards for drinking water quality stipulate permissible limits for 99 physical, chemical and biological parameters.

Dar Al-Handasah of Egypt, consultants to the FMWR on a study on Water Quality Laboratories and Monitoring Network<sup>6</sup>, provided extensive review of the National Guidelines and Standards for Water Quality in Nigeria. It recommended the relaxation of the permissible limit of some parameters as well as a reduction in the limits of some heavy metals. It notes that permissible limits of certain heavy metals, for example Boron, Lead, Antimony and Arsenic are much higher in the National Guidelines and Standards than WHO guidelines.

There are indications that the published National Guidelines and Standards do not have the full support of some of the key stakeholders. For example, the FMWR policy does not seem to recognise these guidelines and standards as it preferred the use of the WHO guidelines as the baseline for the national drinking water quality standard. Furthermore, Dar Al-Handasah, which worked for the FMWR, alludes to some inter-ministry arguments as to whose responsibility it is to set water quality standards. The two authors have also noticed this in an inter-ministerial meeting on water quality involving the FMWR, FME and FMOH, the three key Federal agencies concerned with water quality issues. As the nation-wide survey on public water supply quality management shows, there are no clear records, either at Federal or State level, on monitoring of compliance to these national standards. Moreover, the consumers, being the primary stakeholders on water quality issues, opt for varying degrees of standards of water quality based on affordability of higher standards and/or knowledge of required standards. Some consumers are opting for higher standards (for example those that can afford bottled water) while others are content with even lower standards due mainly to either ignorance or inability to afford a higher standard. The National Water Supply and Sanitation Policy promises a guaranteed affordable access for the poor to basic human need level of potable water.<sup>1</sup>

### **Nation-wide Survey Of Public Water Supply Quality Management**

This survey<sup>5</sup>, which was commissioned by UNICEF in collaboration with the FMWR, was a precursor to designing and implementing a project for rapid assessment of water quality using field-based techniques. The rapid assessment project, is part of a global UNICEF/WHO initiative aimed at providing high quality data on safety of water supply based on a water quality rather than a technology type indicator. It also aims at providing support for building in-country capacity for water quality monitoring and community level water quality surveillance. It was initiated

after the global realisation that there is a lack of information on the safety of the water served to the population and that global and national figures of access to safe water are based mainly on technology (judged to deliver safe water) rather than actual water quality data. It hopes to identify the potential for rapid assessments of water quality using low cost, field-based techniques in providing reliable periodic assessments of water quality.

The nation-wide survey was carried out in 2002 and involved the Federal Capital Territory and 34 of the 36 states. An ad hoc Water Quality Working Group (WQWG) headed by the FMWR and involving FMOH, FME, NAFDAC, four states representing the urban and rural sub-sectors and UNICEF was set up to continually advise on the implementation of the project and review outcomes from it. A water quality consultant employed by UNICEF to provide technical support to the FMWR on the project drafted the questionnaire and approach, which was discussed and agreed at the WQWG meeting, and the survey was carried out using both the questionnaire and assessments in each locality.

The nation-wide survey exercise brought into focus a number of hindrances to proper management of water supply quality in Nigeria. Principal among these is that quality control and assurance has been grossly under-funded or not funded at all. Laboratories, where available, are very poorly equipped or not functional. Little or no attention is placed on capacity building and there is no provision for compliance monitoring of recommended standards. The study also showed the poor state of record keeping and a total absence of a water quality data bank. It then suggests probable solutions, among which, are the need to urgently review, ratify and publicise National Standards and Guidelines for Drinking Water Quality and establish mechanisms to monitor compliance with the standards by all water supply agencies. The report of the study also advises a decisive improvement in funding of water quality surveillance by ensuring that regional water laboratories and monitoring networks are given accelerated development.

### **Main Inferences from the Review of PWSQ Management**

From the above review, it may be inferred that:

- The National Standards and Guidelines for Water Quality, issued by the FME are grossly inadequate in terms of certain critical parameters essential for safety of water supplies, notably heavy metals.
- It appears that the existing water quality standards established by the FME does not enjoy wide acceptance among major stakeholders neither has it been well publicised nor compliance with it strictly monitored. This manifests in inadequacy in terms of both availability and awareness of policy and regulatory provisions for water supply quality management at the state level.

- There are indications that there is no clear agreement or understanding among the three relevant Federal agencies (the FMWR, FME and FMOH) on who has the responsibility for setting standards for drinking water quality.
- Water supply quality management is grossly under-funded and under-resourced reflecting the low priority attached to water quality issues.
- Ongoing water quality monitoring is not comprehensive enough in terms of monitored parameters and does not fully comply with either the National Water Supply and Sanitation Policy baseline (being the WHO guidelines) or the National Guidelines and Standards established by the FME. There is also no standardised format and database system in place to provide more consistent national picture of the water quality situation.

### The Main Challenges

There are several challenges to public water supply quality management in Nigeria, notable among which are the following:

- The state of public water supply quality management is a reflection of the state of the water resources sector as a whole. PWSQ management should take place within the context of overall water resources management. There is yet to be a water resources policy to lend focus to and ensure co-ordination in water resources management nation-wide including the issue of PWSQ management. The key federal level agencies have established individual policies and some standards/guidelines to regulate water quality management, but there remains the challenge to develop workable mechanisms to ensure that these are effectively implemented in a well co-ordinated manner.
- The development of water quality standards and guidelines acceptable to all stakeholders and based on appropriate water quality criteria as well as the rationalisation of existing regulatory instruments to remove duplications, all within the context of a stronger collaborative relationship devoid of “territorial” conflicts, is a challenge for the sector.
- Data management is a key problem in most sectors of development in the country and the water resources sector is not left out. This is a problem attributable to inadequate capacity, wrong attitudes, lack of co-ordination at all levels and lack of prioritisation of water quality data. The overall focus of decision-makers is provision of water supply services with little focus on data requirements for planning and for ongoing assessment of the state of the services. Thus there is a challenge to prioritise on maintenance of up to date water quality data which is regularly and consistently analysed to bring out trends and deviations from acceptable limits of the key parameters.

### Key Recommendations

Given the conditions revealed by the nation-wide survey of public water supply quality management, it is of utmost importance and necessity that steps are taken to redress the situation if the safety of public water supplies is to be guaranteed. In this regard several key issues need to be addressed. These include:

- There should be a clear definition and delineation of the roles and responsibilities of the key stakeholders concerned with water quality issues namely the communities/consumers (being the primary stakeholders), the local and State governments and the three federal government agencies, Federal Ministry of Health, Federal Ministry of Environment and Federal Ministry of Water Resources;
- Water quality management should be implemented within the context of overall water resources management (for which a national policy is being formulated) and development and not be a stand-alone thing. Pending the formulation of this policy and the implementation of water resources management based on it, ongoing water supply quality management should be reinforced through establishment of and compliance with acceptable national water quality guidelines and standards.
- The planning and implementation of a nation-wide rapid assessment of water quality using simple, field-based techniques (i.e. techniques based on use of potable water quality kits to measure the most important parameters and accompanied by appropriate sanitary inspection). This will provide a basis for periodic assessments of water quality and to establish the process and a clearer set of water quality criteria for a more realistic drinking water quality guidelines and standards. It will also support the establishment of a system for regular water quality surveillance of the existing water supply schemes;
- The ad hoc National Water Quality Working Group (WQWG) should be expanded and sustained for specified period as an expert group to secure a better understanding among stakeholders on the water quality management issues. The main issues are review of guidelines and standards, delineation of roles and responsibilities, development and implementation of a pilot, water quality assessment project and, establishment of water quality monitoring and surveillance system. It should also be a forum for periodic review of these and emerging water quality issues, developing solutions for mitigating water quality problems and creation of public awareness on the water quality issues. This group should be made up of the relevant federal ministries/agencies, the National Water Resources Institute, Universities, relevant professional associations, selected States Water Agencies and relevant external support agencies.

- It is evident that, to support the process of setting up systems for effective water supply quality management, donors and international development organisations active in the sector need to make strategic inputs. One area is for them to fund and provide technical support for the planning and implementation of the nation-wide rapid water quality assessment and the review and refinement of national water quality guidelines and standards.

### **Conclusions**

An assessment of public water supply quality management in Nigeria reveals major inadequacies, notable among which are ineffective and uncoordinated regulation, inadequate resources, low prioritisation of water quality issues and poor data management. It shows that, although there exists national guidelines and standards on water quality, compliance with these is poorly implemented and monitored. Thus to deal with this situation, there is a need to: establish mechanisms for better co-ordination; carry out water supply quality management within the context of water resources management; implement a nation-wide rapid water quality assessment as a precursor to developing more acceptable water quality surveillance criteria as well as appropriate protocol for periodic water quality assessment and; establish a national expert group on water quality for regular review of water quality issues and development of solutions for mitigating water quality problems. Thus water supply quality management will be more adequately handled and the safety of public water supplies assured.

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OTHNIEL N. HABILA and MICHAEL O. KEHINDE.

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