



Problems on water quality standards and monitoring in Nigeria

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Introduction

STATUTORILY, POTABLE WATER supply in Nigeria had been by the government-owned public water utilities (GPWU) in the past. The GPWUs provide their supply from conventional water treatment plants that uses water from impounded reservoir, flowing perennial streams, lakes and deep boreholes. As the country population grows and industries increase, the supply of water by the GPWUs becomes inadequate in quality and quantity. This led to the emergence of some privately owned water enterprises, (POWE) that operated side by side with the GPWUs within the water sector.

The POWEs mainly collect their water as the end-product of initially treated water supplied by the GPWUs and do little treatment such as the removal of the suspended solids to make the GPWU water more potable. They also do some minor treatment on water from natural springs, open wells and deep boreholes. In some cases, these POWEs only improved the supply from these GPWUs by use of booster pumps and erection of storage tanks to serve as private water kiosks. Some also collect water directly from the GPWUs' kiosks and later resells them at a higher price. Some POWEs also provide drinking water called 'packaged' water in bottles and sachets in most rural and urban areas of the country.

The services of the category of POWEs selling packaged water in bottles were initially adjudged satisfactory and reliable in the past years. They are however more expensive when compared to that provided by the GPWU and other category of POWEs who sells theirs in sachets. Hence, they are patronized by the few elites in the society. However, majority of the people in the country patronize and drink the water in sachets, popularly called 'pure water' because of its relative cheap price.

Historically, 'pure' water was introduced to the market around 1990. It is relatively affordable and available even at the remote areas of the entire country. Increasing number of private companies, registered and unregistered, are getting involved in the 'pure' water business on a daily bases. This recent involvement of every 'Tom, Dick and Harry' has brought a lot of concern and worry to most stakeholders in the water sector. Like never before, the general populace is now more quality conscious owing to the doubtful nature of the level of treatment given to the

water sachets they produce and sell. As often observed, some of these products contain visible suspended solids, colour, odour and even taste. This has made the services provided by this category of POWEs involved in packaged water and the GPWUs to be unacceptable and unreliable.

Review of Enabling laws setting up the GPWU and the Regulating Agencies

The National Agency for food and Drug Administration and Control (NAFDAC), the Federal Environmental Protection Agency (FEPA) and the Federal Ministry of Water Resources (FMWR) are mainly the monitoring and regulatory bodies that work hand in hand on quality issues in the water sector of Nigerian economy. NAFDAC was established by Decree 15, 1993 (as amended) to regulate and control the manufacture, importation, exportation, distribution, advertisement, sale and use of food, drugs, cosmetics, medical devices, chemicals and packaged water. Similarly, FEPA's mandate regulates the water and wastewater effluent from industries, which has indirect influence on some of the activities of the GPWUs. They also set standards on water and wastewater quality for the country. The FMWR on its part sets up a unit to monitor water supply quality across the entire country. This is to monitor the progress made in supply of potable water to the populace and to check the functionality and quality of facilities already provided. They are also mainly involved with the GPWUs who abstract raw water from their controlled dams and reservoirs.

The activities of NAFDAC regulate only the activities of the POWEs whereas both FEPA and FMWR & D indirectly regulate activities of GPWUs.

The GPWU's are mandated to:-

- Exercise care and diligence to protect water sources
- Provide and effectively operate and maintain treatment and distribution facilities
- Provide pure wholesome and potable water continuously to consumers,
- Provide water that continually meet stipulated national and international water standards,
- Perform adequate water quality monitoring, and
- Notify consumers and the general public of failure to comply with applicable quality or monitoring standard.

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Presently, the Government indirectly combines the roles of owner, regulator and operator of the GPWUs. This institutional structure also directly affects the level of performance of these GPWUs.

Problems with GPWU and POWES water quality

The initial water produced by the GPWUs at their on set was usually satisfactory, but over the years, their services have degenerated in terms of quantity, quality and reliability. In most of the cities, the distribution pipelines are old, corroded, with random cracks and in most cases clogged with sediments. Treated water flowing through such mains is continuously contaminated. Most GPWUs hardly embark on the required routine maintenance of their mains as recommended in standard practice. In some other cases, water supply pipelines introduce pathogenic substances to the customers. Since, Government subvention to most GPWUs in Nigeria had been on a progressive decline, water could be supplied to customers with little or no treatment as observed in most of the 25 GPWUs surveyed.

As the GPWUs are not allowed to charge commercial rate for their services, and government support in terms of subsidy is meager, their ability to meet their high cost of operation and maintenance (O & M) has diminished. Consequent to this lack of adequate fund and the notion of people that natural water is free from God and should not be sold, the GPWU has continued to find it difficult to buy treatment chemicals, pay wages, replace and repair faulty equipments and plan for future expansion. These factors have often hindered most GPWUs surveyed from producing good quality water. They have rather made the issue of attaining high water quality standard a less important issue than making available a high volume of water, over the years.

Similarly, as some cities grow faster and larger than the provided water infrastructures, the provision of portable water by the GPWUs, to these parts of the town and particularly the peri-urban and the slums within such areas suffers greatly and lead to several sanitation problems.

However, with the introduction of packaged water, there were signs of relief. However, it was short-lived because this all-comer category of POWEs could package water from any source: open well, flowing stream, borehole and even the discredited end product of the GPWUs. Their products are simply characterized with noticeable odor, moving particles or organism and presence of gas- bubbles. NAFDAC has been clamping down on such POWEs that are producing packaged water under unhygienic conditions. The situation is similar with the packaged bottled water where a lot of POWEs are also producing sub-standard water. There are also roadside hawkers who simply seal and bottle water for sale. Some even fill already used plastic bottles and seal for sale to unsuspecting customers. In communities where GPWUs services are not available, the POWEs have taken over the business of selling water

collected from either protected or unprotected sources to customers at exorbitant price. These POWEs in some community will do any thing including vandalizing GPWU's infrastructures so as to prevent their (GPWU) activity from succeeding.

Issues on monitoring water standard

As generally observed, the GPWUs do not conform to the WHO minimum water quality standards, yet to date, their activities with respect to quality standards are not being monitored. As a corporation, they are supposed to be completely autonomous and properly regulated, yet, as generally observed with all the GPWUs, they are not. The state governments have been observed in the recent years to politically interfere in their statutory roles. Ironically, government is shielding all the GPWUs. The stipulated autonomy of these corporatised utilities as seen today is only on paper and not in practice. FEPA and FMWR, as another government agency, feel shy to challenge the wrong of its fellow government agency.

NAFDAC enabling law, if properly interpreted, does not enable them to deal and possibly shut down these GPWUs, as they don't produce the so-called packaged water. As we see NAFDAC positively making waves in ensuring that the POWEs produce good quality water for the consumption of the ordinary citizen of Nigeria, one wonders who will help to regulate the activities of these GPWUs. Peradventure, the inadequate fund by government that has brought about the inadequacies experienced by these GPWUs is preventing the setting up of a regulatory agency for these GPWUs from coming up, thus putting the health and safety of the masses of Nigeria into risk. A stitch in time saves nine. The GPWUs should be made to comply with drinking water quality standards and regulations.

The outright demand for all POWEs to meet the regulations set by NAFDAC has in the past years compelled them to struggle to meet the certification demands of NAFDAC. In an attempt to perform their statutory duties, NAFDAC in the recent times have confirmed that some unregistered POWEs have faked their (NAFDAC) registration numbers and in some cases used named of already certified POWEs to operate in different areas. As also recently observed by Olayeni (1999) and Are (2001) with regards to the products of some of the registered POWEs, the quality of their produced water in terms of turbidity and coliform counts have varied greatly over time over 62% of the randomly sampled products from each of the 5-10 POWEs randomly sampled. There are indications that the variation must either be due to expired products contrary to the specifications on them or the varying quality of their product. The statistical T-test confirms the latter, that at 95% level of significance, the significance difference shows a variance from the means of the samples.

These varying qualities of the product of some of these NAFDAC registered POWEs are of concern since the trend could be negatively skewed. It further shows that the

NAFDAC registered POWEs are becoming smart and sneaky in their business activities. They are cutting corners to beat the increasing high cost of treatment chemicals and labour. The static nature of the NAFDAC monitoring schedule gave room for such. Constant monitoring of water quality must be carried out at all GPWUs and POWEs production units or plants. Their end product from taps, sachets or bottles should be tested regularly to ensure the integrity of products. Therefore, NAFDAC should be strengthened and increased in capacity to cope with this unbecoming attitude of these registered POWEs.

Strengthening and increasing the capacity of NAFDAC

Along with recent moves by NAFDAC to organize task force to frequently monitor the activities of unregistered POWEs, they should also do the following as a way of strengthening and increasing their capacity in the future.

- Provision to specifically include the regulation of the POWEs by NAFDAC by amending their edict.
- NAFDAC should mobilize its monitoring team with adequate mobile micro-water testing laboratory to facilitate on the spot assessment of the POWEs water quality during their regular monitoring in all areas of the country.
- The frequency of product certification should be increased to about three times a year
- List of approved NAFDAC registered POWEs and Products should be published regularly with the result of the quality of water samples obtained from them. This will help to educate the consumers and create competition when the customers use the information to make their choices and reject the ones with lower standards.
- The POWEs should be made to pay appropriate monitoring fees to sustain the required quarterly monitoring.

Conclusion

The immunity so far enjoyed by all the GPWUs owing to combined roles by Government as their owner, regulator and operator has made their services in terms of quantity, quality and reliability ineffective. Similarly, It has made the regulation of their products difficult. With the success so far recorded by NAFDAC, effort should be made to harmonize their laws to include regulation of both the GPWUs and POWEs since the standard expected of their products are the same. Similarly, the enabling law should also try to improve the regulation of the activities of the already registered POWEs. The duplication in the regulatory roles of FMWR and FEPA should be avoided.

References

1. Are A.T. (2001), Water Quality Assessment of some packaged (pure water brands) consumed in Zaria Metropolis, Bachelor of Engineering Unpublished thesis, Ahmadu Bello University, Zaria.
2. AWWA (1986), Guidelines for Bacteriological Sampling, Maintaining Distribution Water Quality, American Water Works Association (AWWA).
3. LSWC(1994), Lagos State Water Corporation Law, Cap 108, Law of Lagos State, Nigeria.
4. NAFDAC (2003), <http://www.nafdacnigeria.org/guidelines.htm>, NAFDAC Guidelines on Package Water Production, and NAFDAC Consumers Safety Bulletin.
5. Olayeni F. O. (1999), Water Quality Analysis of Selected Sealed Polythene Water, NWRI, Higher Diploma Project.
6. Water Works Law, Cap 137, Laws of Northern Nigeria, 1963.

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