PURIFICATION AND QUALITY OF DRINKING WATER: ISSUES AND CONCERNS

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Water, the most abundant compound on earth, is essential for life. Unfortunately, it is becoming more difficult to provide potable water to the rapidly expanding human population due to depletion of water sources and increasing pollution. Nevertheless, the Philippines is committed to achieve the United Nations Millennium Development Goal Number 7 to halve by 2015 the proportion of population without sustainable access to safe drinking water and safe sanitation. According to the National Statistical Information Center, 84.1% of the country's population as of 2008 or about 77 million had attained sustainable access to safe drinking water and improved sanitation and the target is to reach 86.5% by 2015.

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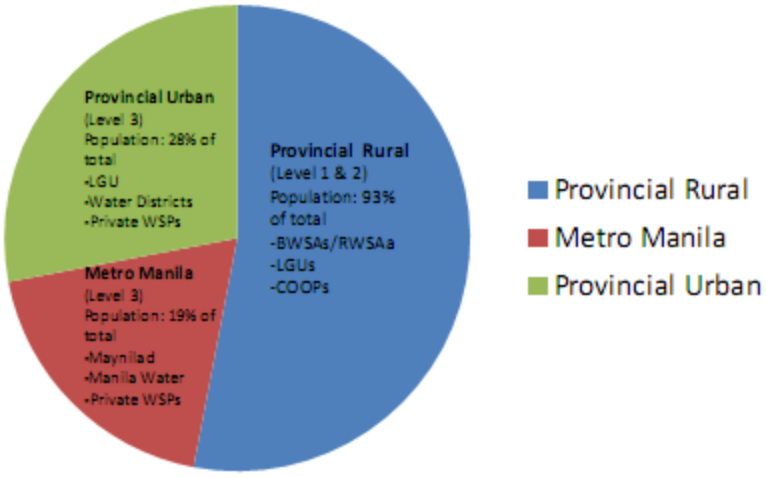
The relevant issues/gaps and corresponding recommendations are discussed below and need to be addressed in order to achieve the above-mentioned goal of providing safe drinking water to most Filipinos in the near future.

Figure 1. Profile of Water Service Providers (WSPs) in the Philippines.

Total population: 88 Million (as of 2007); Total WSPs: 6,280 (as of 2005)
BWSA - Barangay Water and Sanitation Association
RWSA - Rural Waterworks and Sanitation Association
LGUs – Local Government Units
COOP - cooperatives



Water Quality at Source

The sources of drinking water are ground and surface and the major issues confronting the sources of water are:

- For ground water — over extraction; saltwater intrusion; iron, manganese, sulfate issue
- For surface water —contamination from agricultural/industrial run-offs and from household/municipal wastes

Sources of water for households are categorized into three levels: Level 1, or point source which may be a well or a developed spring with an outlet but without a distribution system, and serves only 15 to 25 households; Level 2, a communal faucet system, which consists of source, a reservoir, and piped distribution network which can serve an average of 100 households; and Level 3, a waterworks system with individual house connections, which requires a minimum treatment of disinfection.

According to the Local Water Utilities Administration (LWUA), more than 6,280 water service providers (WSPs) provide potable water to the country's total population (Figure 1). These WSPs, such as Manila Water Inc. (large scale) and Laguna Water District (medium scale), rely mainly on conventional water purification methods that include coagulation and flocculation, sedimentation and filtration (Figure 2). They are required to purify water for distribution to consumers in compliance with specific water quality standards based on physico-chemical and microbiological parameters.
In 2007, slightly more than half (53%) of all WSPs in the country were provincial-rural with levels 2 and 3 water sources, 28% of the total WSPs were provincial-urban and 19% of the WSPs were in Metro Manila; the latter two had level 3 water sources.

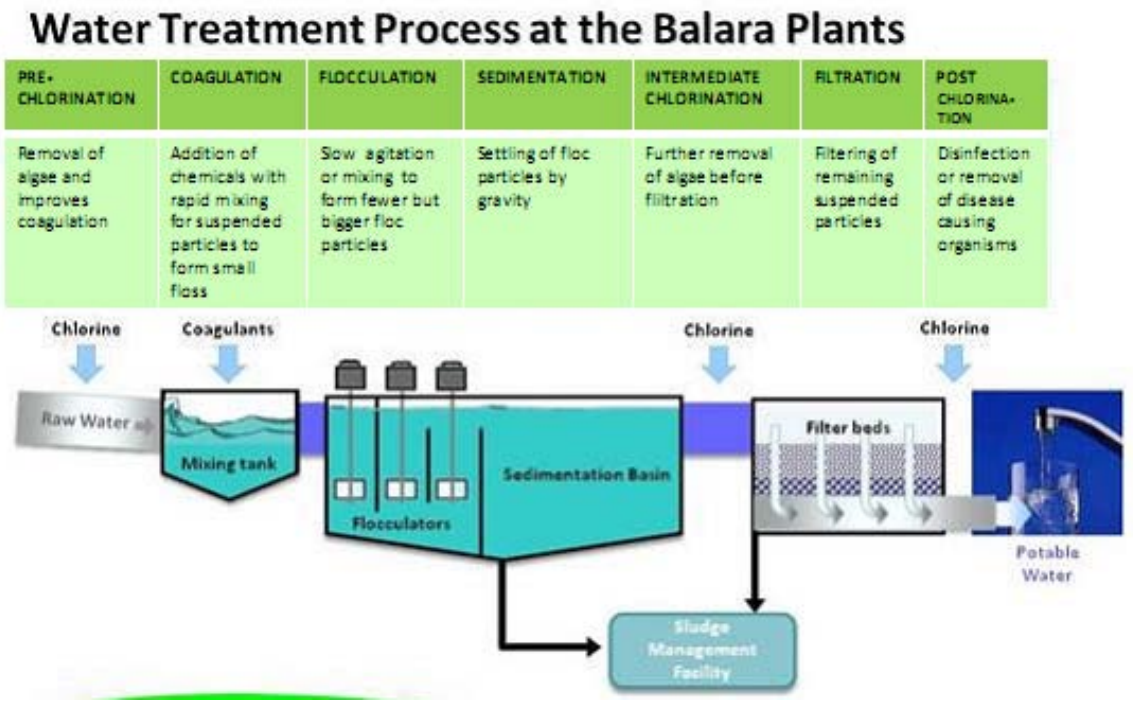


Figure 2. Process flow diagram for a large-scale MDW system.
(From Manila Water)

Water Quality Standards — Issues and Concerns

The standards for drinking water quality are defined in the Philippine National Standards for Drinking Water (PNSDW) 2007. Bottled drinking water manufacturers must also comply with Good Manufacturing Practices since bottled water is considered a food product and is directly regulated by the Department of Health (DOH) Food and Drug Administration.

The standards of water quality are classified into: (a) microbiological characteristics, (b) chemical and physical properties and (c) radiological quality.

However, there is disparity in standards in terms of parameter values and frequency of monitoring for MWD, refilling stations and bottled water. Thus, there is a need to harmonize existing policies on water quality. Furthermore, the PNSDW should revise and harmonize requirements such that there is a uniform set of water quality criteria for all kinds of water providers

Present policies are unclear on bottled water parameters and monitoring because bottled water is under FDA regulation. WSPs outside of Metro Manila are in poor compliance with PNSDW. There are few certified laboratories and there is low operator imperative to comply. Furthermore, sanctions for non-compliance are not standardized

According to PD 198 (1973) which created LWUA, one of the functions of the LWUA is to "monitor and evaluate local water standards." Thus, the LWUA regulates the quality of water produced only by water districts. As of 2005, there were 6,280 WSPs serving 88 million people. The LWUA undertakes its regulatory functions through the following: (a) issuance of memorandum circulars to all water districts; (b) submission of monthly reports from water districts; (c) sanctions for non compliance; and (d) water district performance evaluation through fixed indicators.

Testing Capability—issues and concerns:

Monitoring results may be questionable because of:

- Sample integrity (self-monitoring or third party monitoring) must be assured through proper sampling methods;
- During testing: standard methods should be used; certified laboratories must be relied upon and laboratory proficiency tests must be accomplished for microbiological and physico-chemical parameters.
- Testing laboratories are few, not adequately equipped, and not certified.

Conclusion and Recommendations

Existing policies on the quality of drinking water and monitoring procedures must be reviewed and harmonized for all WSPs including water districts, bottled drinking water manufacturers, refilling stations and small bottlers. DOH should be empowered, in terms of budget, structure and equipment, to effectively monitor and enforce compliance with quality guidelines, including monitoring of refilling stations and all bottled water manufacturers.

Policies for recognition (more accurate term than accreditation) of water testing laboratories by DOH should be updated and should include laboratory space requirement and qualifications of persons certifying reports of analyses and evaluating laboratories. In addition to providing safe drinking water to its increasing population, the Philippine government should strive to strengthen the regulation of water service providers to ensure that the standards for good quality drinking water are met and sustained.

For bottled water the National Reference Laboratory (East Avenue Medical Center) should include proficiency testing for physico-chemical parameters. Currently, proficiency tests are done only for microbiological analysis, being the critical parameter for water potability. Strict monitoring by the DOH must be enforced especially of refilling stations which do “bottling” of water.

All bottled water products for distribution and sale should be registered and a certificate of product registration should be secured from FDA. Furthermore, all bottled water intended for commercial distribution should conform with labeling rules and regulations for pre-packed food — including name and address of manufacturer, type of water, brand name AND EXPIRY DATE.

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Figure 1 from Local Water Utilities Administration; Figure 2 from Manila Water Company Inc.