

## Monitoring of Water Quality Using Wireless Sensor Network: Case Study of Benue State of Nigeria

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**Abstract :** Availability of portable water has been a global challenge especially to the developing continents/nations such as Africa/Nigeria. The World Health Organization WHO has produced the guideline for drinking water quality GDWQ which aims at ensuring water safety from source to consumer. Portable water parameters test include physical (colour, odour, temperature, turbidity), chemical (PH, dissolved solids) biological (algae, plytoplankton). This paper discusses the use of wireless sensor networks to monitor water quality using efficient and effective sensors that have the ability to sense, process and transmit sensed data. The integration of wireless sensor network to a portable sensing device offers the feasibility of sensing distribution capability, on site data measurements and remote sensing abilities. The current water quality tests that are performed in government water quality institutions in Benue State Nigeria are carried out in problematic locations that require taking manual water samples to the institution laboratory for examination, to automate the entire process based on wireless sensor network, a system was designed. The system consists of sensor node containing one PH sensor, one temperature sensor, a microcontroller, a zigbee radio and a base station composed by a zigbee radio and a PC. Due to the advancement of wireless sensor network technology, unexpected contamination events in water environments can be observed continuously. local area network (LAN) wireless local area network (WLAN) and internet web-based also commonly used as a gateway unit for data communication via local base computer using standard global system for mobile communication (GSM). The improvement made on this development show a water quality monitoring system and prospect for more robust and reliable system in the future.

**Keywords :** local area network, Ph measurement, wireless sensor network, zigbee

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