Implementation of Chlorine Monitoring and Supply System for Drinking Water Tanks

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Abstract : Healthy and clean water should not contain disease-causing micro-organisms and toxic chemicals and must contain the necessary minerals in a balanced manner. Today, water resources have a limited and strategic importance, necessitating the management of water reserves. Water tanks meet the water needs of people and should be regularly chlorinated to prevent waterborne diseases. For this purpose, automatic chlorination systems placed in water tanks for killing bacteria. However, the regular operation of automatic chlorination systems depends on refilling the chlorine tank when it is empty. For this reason, there is a need for a stock control system, in which chlorine levels are regularly monitored and supplied. It has become imperative to take urgent measures against epidemics caused by the fact that most of our country is not aware of the end of chlorine. The aim of this work is to rehabilitate existing water tanks and to provide a method for a modern water storage system in which chlorination is digitally monitored by turning the newly established water tanks into a closed system. A sensor network structure using GSM/GPRS communication infrastructure has been developed in the study. The system consists of two basic units: hardware and software. The hardware includes a chlorine level sensor, an RFID interlock system for authorized personnel entry into water tank, a motion sensor for animals and other elements, and a camera system to ensure process safety. It transmits the data from the hardware sensors to the host server software via the TCP/IP protocol. The main server software processes the incoming data through the security algorithm and informs the relevant unit responsible (Security forces, Chlorine supply unit, Public health, Local Administrator) by e-mail and SMS. Since the software is developed base on the web, authorized personnel are also able to monitor drinking water tank and report data on the internet. When the findings and user feedback obtained as a result of the study are evaluated, it is shown that closed drinking water tanks are built with GRP type material, and continuous monitoring in digital environment is vital for sustainable health water supply for people.

Keywords : wireless sensor networks (WSN), monitoring, chlorine, water tank, security

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