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E-Water Toxicity

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Abstract — **With the growth of economy in recent years, Water quality monitoring has become crucial question around the whole world. Till today Water quality monitoring by taking samples and its laboratorial analysis is costly and takes more time for it. So by using wireless Sensor networks we can make it easier and faster. So in the edge of digitization these things also will be turned into term called 'Atomicity'.**

Keywords— WSN, Water Quality, Water Monitoring, Toxicity.

I. INTRODUCTION

Water quality monitoring has become a crucial question around the whole world. As we know that the villagers are consuming the water which is harmful. Because of such circumstances they are suffering from many diseases. The toxicity of water causes hazardous diseases such as fatigue, headache, irritability, skin pigmentation, lethargy, joint diseases, and loss of body hair & liver cancer, heart diseases, arthritis. As the water toxicity is checked manually there may some problems arise like man made mistakes, Delays in work so by using this system the work will be done in desired time, the problem is drought. In India government had announced the condition of drought in many villages. The condition of drought is determined by identifying the certain level of water in wells. So we are developing a system that detects the actual water level of drought and gives alarm direct to the government sector, which particular area's wells are drought then this will be better for both government & villagers. We are also providing solution to this problem by proposing a system gives the result that Water is harmless to consume or not & this result of toxicity is given to government sector.

II. PROBLEM STATEMENT

Here we are focusing on the quality measure of water and also water level of the well. We are going to generate an alarm whenever the system will find that the purity level of water gets exceed and also when it will _find that the water level is very low and drought is going to take place. We will deliver this report to the government sector to take the particular action within desired period of time.

III. LITERATURE SURVEY

For the proposed system we have researched for the wireless sensor networks which consist of network topologies, network deployment, and network protocol and analyse the advantages and disadvantages of each network. [1]

We construct an integrated water system including Storage module, wireless module, data acquisition module, control module, and etc. Take a list of the specific indicators & parameters of water quality and investigate the specific requirements for this system, like response time, temperature, chemistry corrosion, dimension, accuracy. In accordance with different application environment, put forward one best water quality monitoring program for each application. [2]

There is a general framework in water quality monitoring system. At first, the real-time values of analytical instruments are sent to the wireless data acquisition terminal, the data are processed and packaged, and sent to the data centre through wireless network. After decrypting, the system will do the data analysis, storage, display and alarm automatically by management information system (MIS). Then publish data to the upper network control and management system Via TCP / IP protocol. At last, the centre sends the command to the respected government sector and summary the feedback through GSM/GPRS communication. [3]

Protection Agency (EPA) maintains and enforces several of these regulations in the United States. The World Health Organization (WHO) published a set of guidelines for drinking water contaminants. How-ever, exposure to contaminants is not limited to consumption. Other exposure routes include dermal con-tact through bathing, swimming, and washing, and breathing in contaminated water vapor. In addition, certain compounds volatilize easily in temperature ranges that are often present in shower water. Both the EPA and WHO advocate rigorous water quality knowledge in order to prevent risk associated with exposure to dangerous

compounds in the water people use to drink, cook with, and bathe with on a regular basis. [4]

Monitoring of well water plays a vital role in water protection. Human activities and industry development should be responsible for the well pollution. Many polluted wells are used for drinking water sources, and fish can accumulate heavy metals and toxic substances in well water, so good well water quality can guarantee the basic health of human beings. Because the water quality is related to regeneration, growth and survival of aquatic organisms, a good supply of well water is also essential to drinking water treatment and fish farming operation. Environmental Protection Agency addresses the problem of well water pollution. They formulate stringent regulatory standards, monitor well water on real-time, rapid identify pollution source, and remove pollution. The well water monitoring system is al-ways combined with GIS and GPS, it helps the sys-tem integrate spatial information and attributing in-formation of the drainage basin, and the Environ-mental Protection Agency can release intuitive information of well water indicators. [5]

IV. PROPOSED METHODOLOGY

A. WSN (wireless sensor network)

A wireless sensor network (WSN) (sometimes called a wireless sensor and actor network) are spatially distributed autonomous sensors to monitor physical or environmental conditions, such as temperature, sound, pressure, etc. and to cooperatively pass their data through the network to a main location. The more modern networks are bidirectional, also enabling control of sensor activity. The development of wireless sensor networks was motivated by military applications such as battened surveillance; today such networks are used in many industrial and consumer applications, such as industrial process monitoring and control, Machine health monitoring, and so on.

B. PH-Electrode

PH is a measure of the acidity or alkalinity of a water solution. The acidity or alkalinity of a water solution is determined by the relative number of hydrogen ions (H+) or hydroxyl ions (OH-) present. Acidic solutions have a higher relative number of hydrogen ions, while alkaline (also called basic) solutions have a higher relative number of hydroxyl ions. Acids are substances which either dissociates (split apart) to release hydrogen ions or react with water to form hydrogen ions. Bases are substances that dissociate to release hydroxyl ions or react with water to form hydroxyl ions.

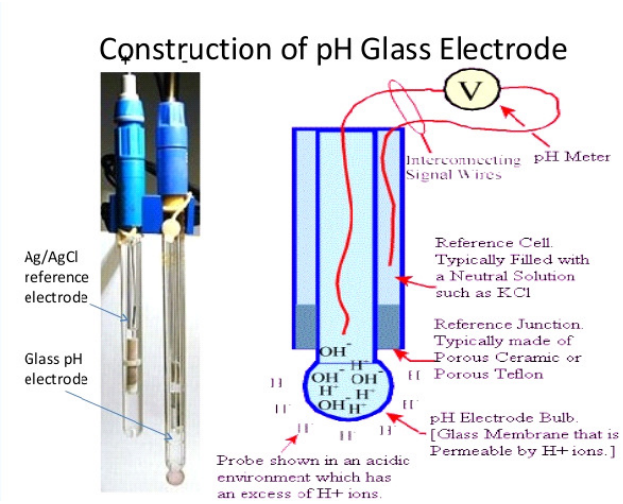

Fig. 1 pH-Electrode

pH measurement is based on the use of a pH sensitive Electrode (usually glass), a reference electrode and a temperature element to provide a temperature signal to the pH analyzer.

V. SYSTEM DESIGN

The motto of this system is to avoid the human diseases by monitoring the quality level of water regularly. So the system flow is as blow shown in the above figure shows the System architecture which shows the flow of proposed system. The first block shows the network simulator which will provide us an input, which will be then stored into database. The data will be analysed using blocks Information retrieval and Severity level Checker. Using this analysed data the report will be generated and if the severity level is high then alarm will be generated to respective government department.

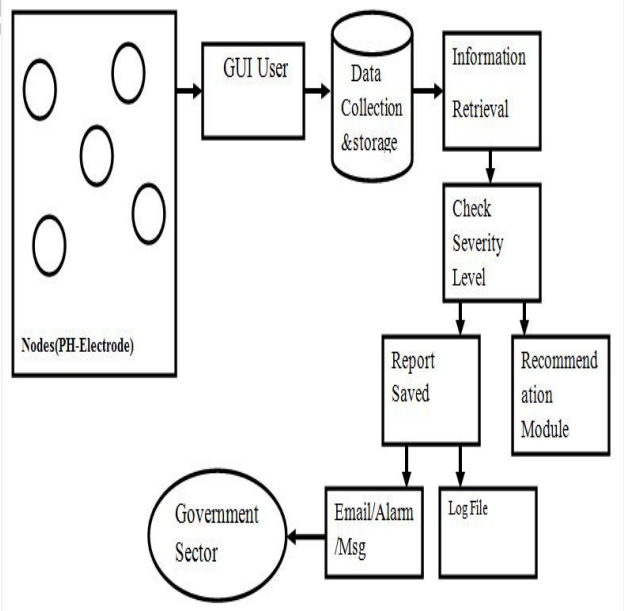

Fig. 1 System Architecture

VI. DESIGN AND SPECIFICATION

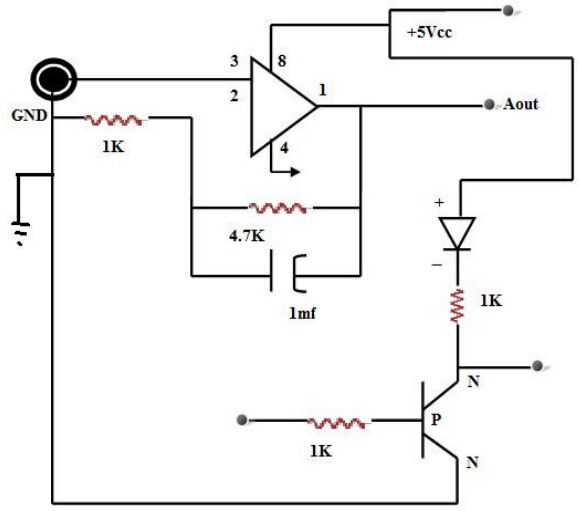

Fig. 2 Circuit diagram

Let S be a system that maintain water toxicity &give alert MSG (Email)/ alarm to the controller to take appropriate action.
The following figure2shows the Venn diagram with respect to our proposed system.

S= {U, D, I, C, R, L, E | Φ
s} Where,
Where,
U-Represents the set of

user U= {u0….un |Φ**U**}
Where u0= number of
user D-Represents

database D= {d0 |Φ**D**}
Where d0= Database
I -Represents the set of Information Retrieval
Module I= {i0 ….in |Φ**I**}
Where i0= verify the Retrieval Module

C-Represents the checked Severity
Level C= {c0 |Φ**C**}
Where c0= checked Severity

R-Represents Set of Recommendation
Module R= {r0 ….rn|Φ**R**}
Where r0 = number of files
L-Represents Log data
L= {l0 |Φ**L**}
Where l0=Log Data E-
Represents set of Email
E= {e0 |Φ**E**}

Where e0= Email/message

VII. CONCLUSION

The proposed system will check the quality level of the water and it will be maintained. Then it will be enable to help the government sector to take action by referring the report generated by system and the system will also recommend solutions regarding the problem of water toxicity. It will enhance the E-Governance System.

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