

# Real Time Water Quality Management System

## Literature Survey:

Ensuring the safety of water is a challenge due the excessive sources of pollutants, most of which are man-made. The main causes for water quality problems are over-exploitation of natural resources. The rapid pace of industrialization and greater emphasis on agricultural growth combined with latest advancements, agricultural fertilizers and non-enforcement of laws have led to water pollution to a large extent. The problem is sometimes aggravated due to the non-uniform distribution of rainfall. Individual practices also play an important role in determining the quality of water (Central Ground Water Board, [2017](#)) .

Water quality is affected by both point and non-point sources of pollution, which include sewage discharge, discharge from industries, run-off from agricultural fields and urban run-off. Other sources of water contamination include floods and droughts and due to lack of awareness and education among users. The need for user involvement in maintaining water quality and looking at other aspects like hygiene, environment sanitation, storage and disposal are critical elements to maintain the quality of water resources.

Poor water quality spreads disease, causes death and hampers socio-economic progress. Around 5 million people die due to waterborne diseases around the world (Water Resource Information System of India, [2017](#)).

Fertilizers and pesticides used by farmers can be washed through the soil by rain, to end up in rivers. Industrial waste products are also washed into rivers and lakes. Such contaminations enter the food chain and accumulate until they reach toxic levels, eventually killing birds, fish and mammals. Chemical factories also dispose wastes in the water. Factories use water from rivers to power machinery or to cool down machinery. Raising the temperature of the water lowers the level of dissolved oxygen and upsets the balance of life in the water (Central Ground Water Board, [2017](#)). All the above factors make water quality monitoring essential.

Water quality monitoring is defined as the collection of information at set locations and at regular intervals in order to provide data which may be used to define current conditions, establish trends, etc. Main objectives of online water quality monitoring include measurement of critical water quality parameters such as microbial, physical and chemical properties, to identify deviations in parameters and provide early warning identification of hazards. Also, the monitoring system provides real time analysis of data collected and suggest suitable remedial measures.

The aim of this paper is twofold. One is to provide a detailed survey of recent work carried out in the area of smart water quality monitoring in terms of application, communication technology used, types of sensors employed etc. Second, is to present a low cost, less complex smart water quality monitoring system using a controller with inbuilt Wi-Fi module to monitor parameters such as pH, turbidity and conductivity. The system also

includes an alert facility, to inform the user on deviation of water quality parameters.