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Short Review Paper

Analysis of ground water quality: a review

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Abstract

Water is a vital resource for human survival. The availability of good quality water is an indispensable feature for preventing diseases and improving quality of life. It is necessary to know details about different physico-chemical parameters such as colour, temperature, Total hardness, pH, sulphate, chloride, DO, BOD, COD, alkalinity used for testing of water quality. The objective of this paper is to various pollutants available in underground by literature review.

Keywords: Groundwater quality, water quality standard, Physico-chemical Parameter.

Introduction

Water is the most important in shaping the land and regulating the climate. It is one of the most important compounds that profoundly influence life[1]. Water is one of the most important and abundant compounds of the ecosystem. All living organisms on the earth need water for their survival and growth. Groundwater is used for domestic and industrial water supply and also for irrigation purposes in all over the world. In the last few decades, there has been a tremendous increases in the demand for fresh water due to rapid growth of population and the accelerated pace of industrialization. According to WHO organization, about 80% of all the diseases in human beings are caused by water[2]. Once the groundwater is contaminated, its quality cannot be restored back easily and to device ways and means to protect it. Groundwater plays an important role in supplying water to much of the global population for use in agriculture, drinking water, and industrial purposes.

Review of Literature

The various technical research papers on the assessment of ground water quality for bore wells and tube wells of different cities and countries, which are presented in Dessertation. Reported work on assessment of ground water quality index is summarized below.

Devendra Dohare, Shriram Dexhpande and Atul Kotiya[3] worked on ground water quality of Indore, MP, India. The study of due to human and industrial activities the ground water is contaminated. This is the serious problem now a days. Thus the analysis of the water quality is very important to preserve and perfect the natural eco system. The assessment of the ground water quality was carried out in the different wards of Indore City. The present work is aimed at assessing the water quality index for the ground water of Indore City and its industrial area. The ground water samples of all the selected stations from the wards were collected for a physiochemical analysis. For calculating present water quality satus by statistical evaluation and water quality index, following 27 parameters have been considered viz. pH, color, total dissolved solids, electrical conductivity, total alkalinity, total hardness, calcium, chromium, zinc, manganese, nickel.

Neelima Bagde[4] studied on ground water quality assessment and its impact with special reference to Chhindwara district of Madhya Pradesh, India. The study was carried out for the ground water quality assessment of 9 Tahsil/Blocks of Chhindwara district. Water is the basic resource for sustaining all human activities, so its provision in desired quantity and quality is most important. Samples of ground water were collected from 5 blocks of the affected area and analyzed for physic-chemical parameters like pH, Electrical conductivity, alkalinity, total hardness and fluoride ion were analyzed. Some water sample show higher fluoride ion concentration, higher turbidity. Over all some part of bore well/tube well water and hand pump water needed treatment for drinking purpose due to hardness and fluoride which are present in desirable limit.

Mohiuddin[5] worked on analysis of ground water quality in Gokunda Taluka Kinwat of Nanded District, Maharashtra (India), this water may be used for drinking water in villages. All parameters were assessed with the standards suggested by the APHA. In the present investigation, parameters assessed like temperature, PH, Total dissolved solids, Dissolved Oxygen Chlorides, Salinity, Alkalinity.

Sathisha et al.[6] deals with the physico-chemical quality of groundwater in and around Chikmanglur Taluk, Karnataka state. The result shows that the values of several parameters were above the permissible range, therefore proper monitoring of water quality is needed.

Adeyemi et al.[7] have done their work on the biochemical effect of leachate on the quality of surrounding groundwater in Nigeria. The study revealed that the BOD and COD of the leachate-contaminated groundwater samples were higher in the dry season than in the rainy season; however, total bacteria were more in the rainy season than in the dry season. The evidences from this study, therefore, suggest that consumption of leachate-contaminated groundwater is hazardous and therefore, should be discouraged.

Mishra, Arunabh and Vaisishta Bhatt[8] have done their research work on physico-chemical and microbiological quality of underground water of VV Nagar, Gujarat. They concluded that quality of water sample subjected to study was acceptable from majority of physico-chemical parameters while microbiological investigation rendered the values (280-540) of MPN coliforms per 100 ml of water, which have exceeded the prescribed limit. It is recommended that water drawn from such sources should be properly disinfected before being used for domestic use.

Shweta Tyagi, Bhavtosh Sharma, Prashant Singh, Rajendra Dobhal[9] carried out Water quality assessment in terms of Water Quality Index at Uttarakhand, India. The study states that Water quality index (WQI) is valuable and unique rating to depict the overall water quality status in a single term that is helpful for the selection of appropriate treatment technique to meet the concerned issues.

Manjesh Kumar and Ramesh Kumar[10] carried out experimental work on Physico-Chemical Properties of Ground Water of UP, India. The study deals with evaluation of granite miners situated in Jhansi (Goramachia) for their status about physicochemical contamination of ground water. Six different sites are selected for sample testing collected from mines and urban area.

Sriniwas Kushtagi and Padaki Sriniwas[11] carried out studies on water quality index of Groundwater of Aland taluka, Gulbarga (India) states that main aim of the current work is to evaluate the quality of well water for rural and urban population based on WQI results, groundwater characteristics and quality assessment. Ten villages of Aland taluka are selected and at each village water samples at three places were collected using standard procedural methods and analyzed for pH, TH, Ca, Mg, Cl, TDS, Fe, F, NO_3, SO_4.

Amaliya N.K. and Surirtha P. Kumar[12] carried out ground water quality status by water quality index method at Kanyaakumari (India), that the Quality Index assessment method is used to monitor the pollution status of water samples by integrating the water quality variables. The aim of this work is to monitor the pollution level of ground water samples from different places of Kanyakumari district.

Rajankar P.N. et. al[13] carried out evaluation of tube well water quality using WQI in Wardha, India. Using WQI some tehsile of district Wardha were evaluated. It is calculated by parameters, such as pH, turbidity, Temp, DO, BOD, in the residential, commercial and agricultural area. Some other physic-chemical parameters are EC, Total hardness, calcium, chlorides, sulphate, potassium etc.

K. Elangovan[14] carried out characteristics of tube well water for district Erode, India states that ground water quality of 60 locations in Erode district during pre-monsoon and post-monsoon seasons. Ground water samples were tested for 11 physico-chemical parameters following the standard methods and procedure.

Conclusion

The seasonal groundwater quality monitoring by various physico-chemical parameters and by integrating them is very much necessary in order to determine and maintain the groundwater quality. The present review paper undertaken to account to bring an acute awareness among the people about the quality of water. The individual and the community can help minimize water pollution by simple housekeeping and management practices the amount of waste generated can be minimized.

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