



Review On Physico-Chemical Analysis Of Drinking Water

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ABSTRACT:

Drinking water is obtained from tube well & is free from contamination and fresh as compared to ground water. Drinking water has great effects on human health and welfare. The quality of drinking water has always been a major health concern, especially in developing countries, where 80 % of the disease cases are attributed to inadequate sanitation and use of polluted water. The inaccessibility of potable water to large segment of a population in the rural communities is the major health concern in most part of developing countries. This article highlights about the physico-chemical analysis of drinking water.

Keywords: Physico-chemical, Analysis, Drinking, Water.

INTRODUCTION:

Life is not assumed without water. Water is extremely essential for human life. It plays important role in managing climatic circumstances. Everything present in the water releases heat & assist to protect the atmospheric temperature. All living and trivial strength are ceased without water. Water utilized is supplementary to potable and individual safe water is required for agriculture, industrial and developed procedure, hydroelectric power making and creation of electricity implement & wild life, etc. All life cycles are ceased without water as it plays key role in the monitoring of climatic condition. Mostly man depends upon surface water. Earth depends mainly on rain to protect the quantity of fresh water randomly in rainfall to either drought or flood causing disaster. Potent clean water is an important issue for living beings and other organisms. When a reserve is used for so many diverse purposes it is important that it should be built-up & applied sensibly.

REVIEW OF LITERATURE:

Sonawane, Vilas. (2020) stated that the water is a vital resource for human survival. The availability of good quality water is an indispensable feature for prevents diseases and improving quality of life. It is necessary to know details about different physical parameters like color, temperature, Total hardness, pH, sulphate, chloride, DO, BOD, COD, and alkalinity

used to test water quality. This paper aims to analyze water quality using the Physico-chemical parameters of water samples collected from the Vishnupuri dam in Nanded district, Maharashtra, India. [1]

Bansal AK et. al. (2019) stated that the water is the basic unit of life and it is essential element for all living forms and the environment health. Water is the basic unit of life and it is essential element for all living forms and the environment health. Rivers are essential for all living organism on earth. [2]

Shalini, Sharma PK, Naithani P et. al. (2018) stated that a study was conducted in Haridwar to evaluate the effect of industrial effluent on groundwater. A total number of seven water samples were considered, five samples were collected from State Industrial Development Corporation of Uttarakhand Limited (SIDCUL) and two ground water samples were collected from Salempur, a village situated nearby SIDCUL, Haridwar. Samples were analyzed for parameters such as pH, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Total Solids (TS), total hardness, electrical conductivity, salinity, Lead (Pb), Chromium (Cr), Arsenic (As), Iron (Fe), Aluminium (Al), Manganese (Mn) and Nickel (Ni). The results were compared with limits prescribed by Bureau of Indian Standards. It was observed that ground water near the industrial area has been polluted. It can be concluded from the study that waste water of industry is affecting the ground water quality and thus posing a major threat to health of the people living in Salempur. [3]

Skinder BM et. al. (2013) stated that the Water quality assessment was carried out on the Tawa River for the period of January 2006 to May 2006. The study revealed that the river (stream) exhibit slight temporal and spatial variation in physico-chemical characters of water. [4]

Bheshdadia, B.M. et. al. (2012), studied Physico-chemical analysis such as temperature, salinity, alkalinity, total hardness, phosphate, sulphate, nitrate, pH, electrical conductivity, T.D.S., turbidity, dissolved oxygen, fluoride, chloride of bore well water was carried out from twenty five sampling stations of morbid-malaria territory during may-2010 (before monsoon) and Oct.- 2010 (after monsoon) in order to assess water quality. In the present study temp in may- 2010 ranged from 29.6°C to 32.6°C and Oct 2010 ranged from 29.1°C to 31.8°C. Dissolved oxygen ranged in both season out of range i.e. minimum tolerance range 4.0 ppm for drinking water. In this study pH in May-2010 ranged 7.10 to 8.90 and Oct 2010 ranged 7.62 to 9.02 i.e. some sampling stations shows pH higher than the prescribed range. Turbidity of all sampling stations have shown lower NTU values than the prescribed range. TDS also shows in some sampling stations higher than prescribed limit. Phosphate in May-2010 ranged from 13-41 mg/l .and in Oct. 2010, 10-39 mg/l. this is higher than the prescribed value. Total hardness in May-2010 ranged 110 to 960 ppm and in Oct 2010, 85 to 920 ppm i.e. higher in some sampling stations than tolerance limit. Chloride also in this study

is higher than the prescribed limit of chloride. The study has shown that the essential elements in water like TDS, salinity, phosphate, nitrate, pH, total hardness, chloride are higher than tolerance range. Therefore bore well water in this territory is not suitable for drinking purpose. [5]

Boral, S.B. et. al. (2012), The study of Physico-chemical analysis of ground water for. In drinking from selected sample points around the Banmeru science college, Lonar Buldhana district of Maharashtra the present study, the ground water samples were collected from selected sampling stations around the late Ku. Durga K. Banmeru science college, Lonar dist. Buldhana and analyzed for its various analytical parameters related to quality of drinking water prescribed by WHO, ICMR, ISI etc. In this study Mg, dissolved oxygen, chloride, nitrate, phosphate, copper, iron was analyzed. [6] From the results selected points are of poor quality and they require higher degree of treatment before consumption and hence some following treatment methods are suggested in this study:

- An adequate filter system before the use which will remove suspended solids and colloidal particles.
- Proper aeration by keeping the water in atmosphere and addition of $KMnO_4$ after pumping the water from bore well.
- Addition of coagulant like alum to water.
- Hot soda-lime solution should be used for the precipitation of metallic salts.

Kalra, N. et.al. (2012), Physico -chemical analysis of ground water taken from five blocks (Udwanthnagar, Tarari, Charpokhar, Piro, Sahar) of southern Bhojpur (Bihar). The study area comprises of Bhojpur district of Bihar State. Bhojpur is one of the thirty eight district of Bihar state and their administrative head quarters are located in ara town. It is a part of Patna division. Bhojpur district (plate 1) falls within $25^{\circ} 00' N$ to $25^{\circ} 30' N$ and $84^{\circ} 15' E$ to $84^{\circ} 45' E$, the area is bounded by river son in the east, Darmawati -Gangi rivers in east and river Ganga in the North. Its area spread over a total geographical area of 3395 sq/km. The district has three subdivisions of Arasadar, Jagdishpur and Piro. The block of the district include Arasadar, Udwanthnagar, Jagdishpur, Koliwan, Sahar, Barhara, Sandesh, shahpur, Charpokhari, Piro, Tarari, Bihia, Ajiawon and Garhami. In the present research Physico-Chemical analysis was carried out for the five blocks of Southern Bhojpur. In the Physico-chemical analysis, various quality parameters are measured including pH, turbidity, electrical conductivity, total dissolved solids, total hardness, content of calcium, magnesium, chloride, sulphate, Iron, DO, COD, BOD, total alkalinity and Nitrate concentration present in ground water, Also all the parameters were compared with ICMR standards of water quality. Also, in the present research paper classification of water samples of five blocks was investigated on the basis of TDS and TH. The study shows that ground water is the only

source for people in the study area and the results of the chemical analyses of ground water indicate considerable variation. Most of the water samples do not comply with ICMR standards for drinking purposes. The water quality in the investigated area is found to be suitable for drinking only in few locations while as out prior treatment. It must be noted that a regular chemical analysis must be done to insure that the quality of water in this area is not contaminated, in addition to research for new wells in the area in order to get additional water for the resident people. [7]

Khan, R.M. et.al. (2012), physico chemical analysis of Triveni lake water of Amravati district in (M.S) India. In the present investigation involves the analysis of water quality in relation to physico-chemical parameters, Triveni lake of Amravati district of Maharashtra was selected for physico-chemical analysis of water. The lake is source of drinking and irrigation water for 15 villages under the canal irrigation. Now a days lake water was polluted due to domestic waste and agricultural discharge. physico-chemical parameters of Triveni lake water were studied and analyzed for the period of one year i.e December 2010 to Nov.2011. In order to understand the water quality of Triveni lake various physico-chemical parameters such as water temperature, air temp. pH, humidity conductivity total hardness CaCO_3 , Ca^{++} , Mg^{++} were studied. The result revealed there was significant seasonal variation in some physico-chemical parameters and most of the parameters were in normal range and indicate better quality of lake water, It has been found that the water is best for drinking purposes in winter and summer seasons. [8]

Khound, N.J. et.al. (2012), Physico-chemical studies on surface water quality in the Jia Bharali river basin, North Brahmaputra plain, India. The Jia Bharali river catchment area is bounded by longitudes $92^{\circ}00'$ - $93^{\circ}025'$ E and latitudes $26^{\circ}039'$ - $28^{\circ}00'$ N. The Jia Bharali, one of the major tributaries of the river Brahmaputra, flows down from the lower Himalayas in Arunachal Pradesh in the north eastern India and runs through the middle of Sonitpur district of Assam. This study presents a comprehensive assessment of surface water quality of the area based on analysed of six data sets representing thirty five points sources and three consecutive years (2008-2010). The physico-chemical parameters show variable spatial and temporal relationship. The major ion contents show the trend $\text{Ca} > \text{Na} > \text{Mg} > \text{K}$ while anion composition follows the trend $\text{HCO}_3 > \text{Cl} > \text{SO}_4 > \text{PO}_4 > \text{NO}_3$ in both the wet and the dry season. with respect to the physico-chemical parameters the surface water sources of the Jia- Bharali catchment and adjoining area are found to be suitable for domestic, agricultural and Industrial use. spatio - temporal variability of the physico - chemical parameters from this study may be used as future baseline data to monitor and manage any changes with changing land use. [9]

Mohabansi, N.P. et.al. (2011), stated that physico-chemical and microbiological analysis of textile industry effluent of Wardha region. Wardha is important and historical city of India. The present work is an attempt to examine the textile industrial effluents of Wardha district.

The paper is an attempt to analyze the water quality of the effluents from the textile mill. In this investigation Physico-chemical parameters such as colour, odour, temp. density, sulphate COD, BOD, Pathogen had been analyzed from the effluent collected from the textile industry of Wardha region, sodium and potassium elements were analyzed flame photometrically. BOD exceeds WHO acceptable limit. This high level of BOD is an indication of the contamination and improper drainage system of the dyeing units. The present investigation has let us to conclude that the quality of water samples subjected to study was acceptable from majority of Physico-chemical parameters while as per bacteriological standards the water needs to be treated before using it for domestic applications. Thus, as per as sample water is concerned the potential risk of getting infected by water borne diseases is always there if used without proper disinfections. [10]

CONCLUSION:

Water is important for the existence of humans, animals & plants. Fast consumption of drinking water is evolving as one of the most serious problems for humanity. Water is the spring of life. The human body contains 70% H₂O. Human existence is impossible without water. In future till 2025 about 45 countries are believed to fight with water scarcity related problem which makes round about 2.7 billion people 34 % of worlds estimated population. Ethiopia, India, Kenya, Nigeria are the main countries which can face the shortage of water in coming 25 years. There are few large nations like china nowadays suffers from ardent water problems.

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