ANALYSIS OF GROUND WATER QUALITY OF NAVNAGAPUR, DIST. AHMEDNAGAR (USING W.Q.I.).

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Abstract—Water is essential for all living organisms for their existence and metabolic process. Unethical human intervention in natural system and over exploitation of groundwater resources induces degradation of its quality. In many instances groundwater is used directly for drinking as well as for other purposes, hence the evaluation of groundwater quality is extremely important. The present study is aimed to analyze the underground water quality at Ahmednagar. In this study 30 water samples were collected from 15 places and analyzed for 7 water quality parameters for evening and morning. The study reveals that the area under study falls in moderately polluted category. The ground water of Ahmednagar city needs some treatment before consumption and it also needs to be protected from contamination.

Keywords—Ground Water Analysis, Quality Index, Waste Water Contaminants.

INTRODUCTION

Water is called matrix of life because it is an essential part of all living systems and is the medium from which life evolved and in which life exists. It is well known that human health and survival depends upon use of uncontaminated and clean water for drinking and other purposes. Groundwater is a good source of fresh water available on the earth, due to its relatively low susceptibility to pollution in comparison to surface water and its large storage capacity. It is estimated that approximately one third of the world’s population uses groundwater for drinking purposes and today more than half of the world’s population depends upon groundwater for survival. The anthropogenic disturbances’ induce degradation of ground water quality. Ground water quality degradation occurs when its quality parameters are changed beyond their natural variations by the introduction or removal of certain substances.

Increase in urbanization, industrialization, agriculture activity and various human activities has increase the pollution of surface water & ground water. As the safe & potable drinking water is needed, various treatment methods are adopted to raise the quality of drinking water. Water should be free from the various contaminations viz. Organic and Inorganic pollutants, Heavy metals, Pesticides etc. as well as all its parameter like pH, Electrical Conductivity, Total Hardness, Chloride, Total Dissolved Solid, Alkalinity, should be within a permissible limit.

Unsafe drinking water is one of the main concerns in developing countries. In order to deal with this problem, a cooperation project was set up by the ACRA Foundation in the Logone valley (Chad-Cameroon). Water supplies were sampled throughout the villages of this area mostly from boreholes, open wells, rivers and lakes as well as some piped waters. The samples were analysed for their physical-chemical and microbiological quality in order to identify the contamination problems and suggest appropriate solutions. Results of the assessment confirmed that in the studied area there are several parameters of health and aesthetic concern. Elevated lead levels were detected both in aquifers and in surface waters, confirming that further investigations of the occurrence of lead contamination in the Logone valley are warranted. In addition, many groundwater sources are negatively impacted by parameters of aesthetic concern, such as turbidity, iron and manganese. Even though they do not affect human health, elevated levels of these parameters cause consumers to abandon improved water supplies, often in favour of surface water sources that are microbiologically contaminated. The use of alternative sources, improvement of water supply structures and water treatment are possible solutions to improve the quality of drinking water in the Logon valley.

PROBLEM STATEMENT:-

Area which is being selected i.e. industrial area where lots of chemical plants are working. Due to this lots of chemicals is mixed into the water is coming out. Some companies of them do not have their own waste water treatment plant. So contaminated water directly poured into the ground also area which is residential do not have their own drainage system so the waste water coming from houses is also poured on surface. Overall this waste water percolated into the ground, it contaminates fresh ground water. Due to lack of fresh water supply the requirement of water is completed by taking bore-wells but because of contamination...
of ground water the contaminated water is again come on
ground. The cycle of all above create large waste water
problem to ground water & soil.

SCOPE OF WORK:-

1) Analysis and monitoring of water quality, water quality
standards and the analysis, monitoring and assessment of
water quality by chemical, physical and biological methods.
2) Water supply to domestic and industrial purposes.
3) Industrial wastewater treatment, disposal and reuse.
4) Domestic wastewater treatment, disposal and reuse.
5) Infrastructure development regarding waste water
collection and their treatment.

NEED OF STUDY:-

It is very essential that water we used for our daily
purposes or drinking purposes or any of. To study its
chemical, physical properties, to know its benefits for our life
cycle and also to know its toxicity, salinity etc. By this
unpolluted water many diseases spread out and this water is
also very harmful to our surrounding, so its a very need to
analyse the ground water from various parts. So in this project
we have studied the the analysis of ground water from
MIDC area of Ahmednagar where the water is chemically
polluted and to free the area from the polluted ground water
and make the water for irrigation purpose and find the solution
on it by giving treatment. So the need of study is very
essential.

LITERATURE REVIEW:-

Assessment of groundwater quality interms of water quality
index. (June 2017) “SUMAN K. DHAKA & NARENDRA
BHASKAR”.
Conclusion: Ground water is being severely affected by
industrial growth in study area.

Ground water quality assessment using water quality
index(WQI) in LiaquatabadTown,Karachi (22June2017)
(ADHAN KHAN).
Conclusion: Groundwater quality of Liquatabadtown is not
suitable for drinking purpose.

Analysis of GAUHAR MOHD ground water quality using
water quality index :A case study of greater Noida
(Region),Uttar Pradesh ,India.(20sep 2016) “MOHD
SALEEM, ATHAR HUSSAIN & GAUHAR MAHMOOD.”
Conclusion: In the present study 90% water samples were
found good quality and only 10% falls under moderately poor
category. The water quality index ranges from 16.49 to 64.65.
Therefore some treatment before usage and also required to
protect that area from contamination.

Analysis of ground water quality of Aliygarh city (india using
water quality index) (KHWAJA M.ANWAR & VANITA
AGRAWAL ) (Sep 2014).
Conclusion: The present study of the underground water
samples reveals that about 50% of the water under study comes
under moderately polluted category and there is marked
variation in ground water quality.

International journal of quality assessment of ground water at
Agra district, India (Aug-2014)
Conclusion: The ground water quality analysis of Agra city is
found to be fit for drinking purpose.
Assessment of ground water quality using water quality index
(8April 2013) “G.SHRINIVAS RAO AND G.NAGESHWAR
RAO”
Conclusion: To know the ground water quality of selected
areas in ‘GVMC’. We have identified 14 open wells and 32
borewells and 2 reservoir after analysis of various physico-
chemical parameters,we observe that the range of water
quality index (WQI) are observed at sampling 2,3.

Assessment of physical-chemical drinking water quality in
Logone valley (SABRINA SORLINI) (May 2013).
Conclusion: This paper describes a surveycarried out in
Logone valley to assess the physical-chemical quality of
different types of water sources used by village people for
human consumption.

Assessment of ground water quality parameters in & around
Jawahar Nagar, Hyderabad(International Journal of Scientific
& Research Publication) (10 oct 2012): “SARALA C &
RAVIBABU P.”
Conclusion: Ground water quality in & around Jawaharnagar
Hyderabad has been analysed in present work. The ground is
acidic in nature and total hardness observe in all samples fall
under hard to very hard water categories.

Analysis of drinking water of different places,(may-june 2012)
“S.P.BHALME &Dr.P.B.NAGARNAIK.”
Conclusion: From above papers we have concluded that due
to increase in industrialization water quality of drinking water
get decreases,hence there is a need of proper analysis of water
and prior treatment.

ASSESSMENT OF WATER QUALITY:-

General: Due to increasing urbanization, surface water is
getting over contaminated and more stringent treatments
would be required to make surface water potable. Therefore, it
is required to additional sources for fulfill the requirement of water. Because the ground water sources are safe and potable for drinking and other useful purposes of human being. Hence studies of physic-chemical characteristics of underground water to find out whether it is fit for drinking or some other beneficial uses.

**Parameters to be analyzed:** For the assessment of ground water quality of the bore well of the Navnagapur, Ahmednagar, Taking in view the following drinking water parameters are analyzed (1) pH (2)Turbidity (3) Total Dissolved Solids (4) Elec. Conductivity (5)Total hardness (6) Total alkalinity (7)Chloride (8) Sodium and (9) Potassium.

**Parameters included in water quality assessment:** Monitoring of bore wells at Navnagapur, Ahmednagar requires many different parameters to be sampled. The parameters analyzed in this assessment include:-

**pH:** pH of solution is taken as –ive logarithm of H2 ions for many practical practices. Value range of pH from 7 to 14 is alkaline, from 0 to 7 is acidic and 7 is neutral. Mainly drinking water pH lies from 4.4 to 8.5. The pH scale commonly ranges from 0 to 14

**Turbidity:** Suspension of particles in water interfering with passage of light is called turbidity. Turbidity is caused by wide variety of Suspended particles. Turbidity can be measured either by its effect on the transmission of light which is termed as Turbidimetry or by its effect on the scattering of light which is termed as Nephelometry. As per IS: 10500-2012 the acceptable and permissible limits are 1 and 5 NTU respectively.

**T.D.S:** Difference of total solids and suspended solids is used to determine the filterable solids by the help of filtrate and following the procedure as above. In water sample it can also be estimated from conductivity measurement. The acceptable and permissible limits As per IS: 10500-2012 is 500 and 2000 mg/l respectively.

**Elec.Conductivity:** Conductivity is the capacity of water to carry an electrical current and varies both with number and types of ions the solution contains. In contrast, the conductivity of distilled water is less than 1umhos/cm. This conductivity depends on the presence of ions their total concentration, mobility, valence and relative concentration and on the temperature of the liquid. Solutions of most inorganic acids, bases, and salts are relatively good conductors.

**Total Hardness:** As per IS: 10500-2012 Desirable limit and Permissible limit for hardness is lies between 200 to 600 mg/l respectively. The effect of hardness is Scale in utensils and hot water system in boilers etc. soap scum’s Sources are Dissolved calcium and magnesium from soil and aquifer minerals containing limestone or dolomite. The Treatment of hard Water is Softener Ion Exchanger and Reverse Osmosis process. The degree of hardness of drinking water has been classified in terms of the equivalent CaCO3 concentration as follows: Soft - 0-60mg/l, Medium - 60-120 mg/l, Hard - 120-180 mg/l, Very hard - >180 mg/l.

**Chloride:** All type of natural and raw water contains chlorides. It comes from activities carried out in agricultural area, Industrial activities and from chloride stones. Its concentration is high because of human activities. As per IS: 10500-2012 Desirable limit for chloride is 250 and 1000 mg/l in Permissible limit.

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<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>Unit</th>
<th>Accept. Limit</th>
<th>Permi. Limit</th>
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<td>3</td>
<td>pH</td>
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<td>6.5-8.5</td>
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<td>4</td>
<td>Turbidity</td>
<td>NTU</td>
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<td>5</td>
<td>TDS</td>
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<td>2000</td>
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<tr>
<td>6</td>
<td>Total Alkalinity</td>
<td>mg/l</td>
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<td>600</td>
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<tr>
<td>7</td>
<td>Total Hardness</td>
<td>mg/l</td>
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<td>8</td>
<td>Temperature</td>
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<tr>
<td>9</td>
<td>Sodium</td>
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<td>10</td>
<td>Potassium</td>
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**Conclusion:** Water quality is dependent on the type of the pollutant added and the nature of mineral found at particular zone of bore well. Monitoring of the water quality of ground water is done by collecting representative water samples and analysis of physicochemical characteristics of water samples at different locations of Navnagapur, Ahmednagar. Estimation of water quality index through formulation of appropriate using method and evaluate the quality of and evening. Result of water quality assessment showed that most of the water quality parameters slightly higher in the morning sample than in the evening sample. Correlations the physico-chemical characteristics water pollutants by appropriate statistical method.tube well water by statistical analysis for morning

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<td>Analysis Of Drinking Water Of Different Places A Review, India</td>
<td>Jun 2012</td>
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