GROUND WATER QUALITY & POLLUTION STATUS AT RAIPALLE VILLAGE, RAJAPUR MANDAL

(Measuring Water Salinity and Ph level of Water Bodies)

Final semester project submission to zoology department in **DR.BRR GOVT DEGREE COLLEGE, JADCHERLA** for accomplishing bachelors in science

Procedures

BY

R. TEJASHWINI - (20033006445065)
S. SHIVANI - (20033006445075)
A. BHAVYASRI - (20033006445507)
J. KRISHNAVENI - (20033006445538)
K. SWATHI - (20033006445544)

ENLIGHTENED BY

K SUBHASHINI

(Assistant professor of zoology)

DEPARTMENT OF ZOOLOGY

DR BRR GOVT DEGREE COLLEGE

JADCHERLA, TELANGANA

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STUDENT STUDY PROJECT

ON

GROUND WATER QUALITY
&
POLLUTION
STATUS AT RAIPALLE VILLAGE, RAJAPUR MANDAL

Department of zoology

Dr.BRR Government College, Jadcherla.

Mahbubnagar – 509301

Accredited by NAAC with "B++" Grade//An ISO 9001-2015 Institution

Mahbubnagar (DIST), Telangana state, India-509301

Affiliated to Palamuru University

SUPERVISOR

HEAD OF ZOOLOGY
Dr. B.R.R. GOVT., COLLEGE
JADCHERLA

PRINCIPAL

PRINCIPAL
Dr.B.R.R. Government Degree Colle
Jadcherla

DECLARATION

We hear by declare that the investigation results incorporated in the present project titled " GROUND WATER QUALITY & POLLUTION STATUS OF WATER" (RAIPALLE VILLEGE, RAJPUR MANDAL, MAHABUBNAGAR DIST.) were originally carried out by us under the supervision of K SUBHASHINI department of zoology, DR BRR GOVT DEGREE COLLEGE JADCHERLA No part of this work has been submitted to any other university or institution for the award of any diploma or degree.

NAME OF THE STUDENT	CLASS	HALL TICKET NO	SIGNATURE
R. TEJASHWINI	BZC	20033006445065	R. Tejashwini
A. BHAVYASRI	BZC	20033006445507	A. Bhavyasri
S. SHIVANI	BZC	20033006445075	S. Shivani
J. KRISHNAVENI	BZC	20033006445538	J. Krishnaveni
K SWATHI	BZC	20033006445544	K. Swathi

SUPERVISOR

HOD
DEPT. OF ZOOLOGY
Dr. B.R.R. GOVT. COLLEGE
JADCHERLA

PRINCIPAL

PRINCIPAL
Dr.B.R.R. Government Degree College
Jadcherla

Dr.BRR GOVERNMENT DEGREE COLLEGE , JADCHERLA

Accredited by NAAC with "B++" Grade// An ISO 9001-2015 Institution
MAHABUBNAGAR (DIST.),TELANGANA -509301
Affiliated to Palamuru University

Dr. Burgula Ramakrishna Rao Govt. Degree College
Dist. Mahabubnagar
JADCHERLA-509 301 T.S.

CERTIFICATE

This is to certify that the Project work entitled "Ground water quality & Pollution status at aipalle village Rajapur Mandal" Is carried out by R. TEJASHWINI - (20033006445065) S. SHIVANI - 20033006445075) A. BHAVYASRI - (20033006445507) J. KRISHNAVENI - (20033006445538) K. SWATHI (20033006445544) As done this student as a part of student study project competition from DR BRR GOVT DEGREE COLLEGE, JADCHERLA.

DATE: 19/08/2023

SUPERVISOR 19/08/2023

HOD. OF ZOOLOGY
Dr. B.R.R. GOVT. COLLEGE
JADCHERLA

PRINCIPAL

PRINCIPAL
Dr.B.R.R. Government Degree College
Jadcherla

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R. TEJASHWINI - (20033006445065)
S. SHIVANI - (20033006445075)
A. BHAVYASRI - (20033006445507)
J. KRISHNAVENI - (20033006445538)
K. SWATHI - (20033006445544)

ABSTRACT

The present study aimed to analyze and compare the ground water quality with WHO standards of selected village Raipalle belonging to Rajapur mandal. Ground water samples are collected where ground water is the only source for drinking. All the ground water samples were subjected to analysis of physio chemical parameters such as color, turbidity, total dissolved solids, pH, electrical conductivity, chlorides, total hardness, nitrates, fluoride, sulphates etc. The obtained results compared with WHO standards.

Findings reveal that ground water quality of the villages were deteriorating, most of the parameters found excess in limit. Almost all ground water samples in study area found unfit for drinking purpose. It is suggesting that the evaluation of water quality parameters as well as water quality management practices should be carried out periodically to protect water resources. The awareness campaign of waterborne diseases and importance of safe water for human health should be commenced by Rural Water Supply and Sanitation (RWS) department.

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INTRODUCTION

Three fourths of the earth's surface is covered by water resources. Water is very important to life. Water quality criticality factor affecting human health and welfare. Studies showed that approximately 1.7million deaths and 1.9 million disabilities world wide are attributable to unsafe water, poor sanitation and hygiene.

The problem is backward socio-economic development resulting in one of the lowest standards of living, poor environmental conditions and low level of social services. Ground water is an important resource for domestic and agriculture in both rural and urban areas of India. The chemical composition of ground water is a very important criterion that determines the quality of water.

Water quality is very important and often degraded due to agriculture, industrial and human activities. Even though the natural environmental processes are provided by means of removing pollutants from water, there are definite limits. It is upto the people to provide security to protect and maintain the quality of water. Drinking water with good quality is very important to improve the life of people and prevent diseases.

Pollution of ground water comes from many sources such as discharge of waste, pesticide residues from agriculture, industries and municipalities are the main sources. Sometimes surface runoff also brings mud, leaves and human and animal wastes into surface water bodies. The pollutants may enter directly into the ground water and contaminating it.

STUDY AREA

Raipalle is one of the famous villages of Rajapur mandal belonging to the Mahbubnagar district in the terms of ground water facilities it stands among the top villages of Mahbubnagar district where underground water facilities are mostly used for the people lively hood. In this area, the natural resources availability is very high but facing very difficulty with water resources due to less rainfall and high evaporation rate. Even though water resources are very less in quantity, due to lack of awareness in farming communities available present water bodies are also under contamination. Hence the present study has been undertaken to determine the physio chemical characteristics of ground water in selected villages of Mahbubnagar mandal where the ground water is the main source for drinking.

(***RAIPALLE VILLAGE GEOGRAPHICAL LOCATION***)

Materials and Methods

The sampling places are referred as stations and coded as S1 to S15. The stations are represented as Bhavani colony, Ambhedkar colony, Sri ram colony, BC colony, Indra nager colony, Srinivas nager colony , Venkateshwara colony. (which are comes under Rajapur mandal. Water sample were collected from various bore wells of respective Locations of raipalle village . The samples were collected in 1000ml plastic bottles which were previously washed drenched overnight with 5% of HNO3 solution to avoid contamination. During sampling extra care was taken and plastic bottles were rinsed several times with the water being collected. All the samples were found odourless and colourless. After sampling onsite analysis was done for Temperature, pH, Electrical Conductivity due to their unsteadiness in nature. Samples were then transferred to Zoology lab, Dr B.R.R. Government Degree College, Jadcherla and kept at 80 C-100 C in refrigerator prior the time of analysis.

RESULT AND DISCUSSION

Physico chemical analysis results of ground water samples of Rayapalli (V) Mahabubnagar (DIST)

NAME OF THE COLONY	PH	EC	TDS	TA	TH
Bhavani colony	7.09	1802	955	552	416
Ambhedkar colony	7.11	1644	871	552	412
Sri ram colony	8.19	1641	869	576	360
BC colony	7.68	1412	748	356	268
Indra nager colony	7.78	1515	802	384	236
Srinivas nager colony	7.59	2710	1436	432	712
Venkateshwara colony	7.2	612	324	264	164

All parameters are expressed in mg/lit. Except pH and EC. EC in µS/cm.

*pH=pH

*EC=Electrical conductivity

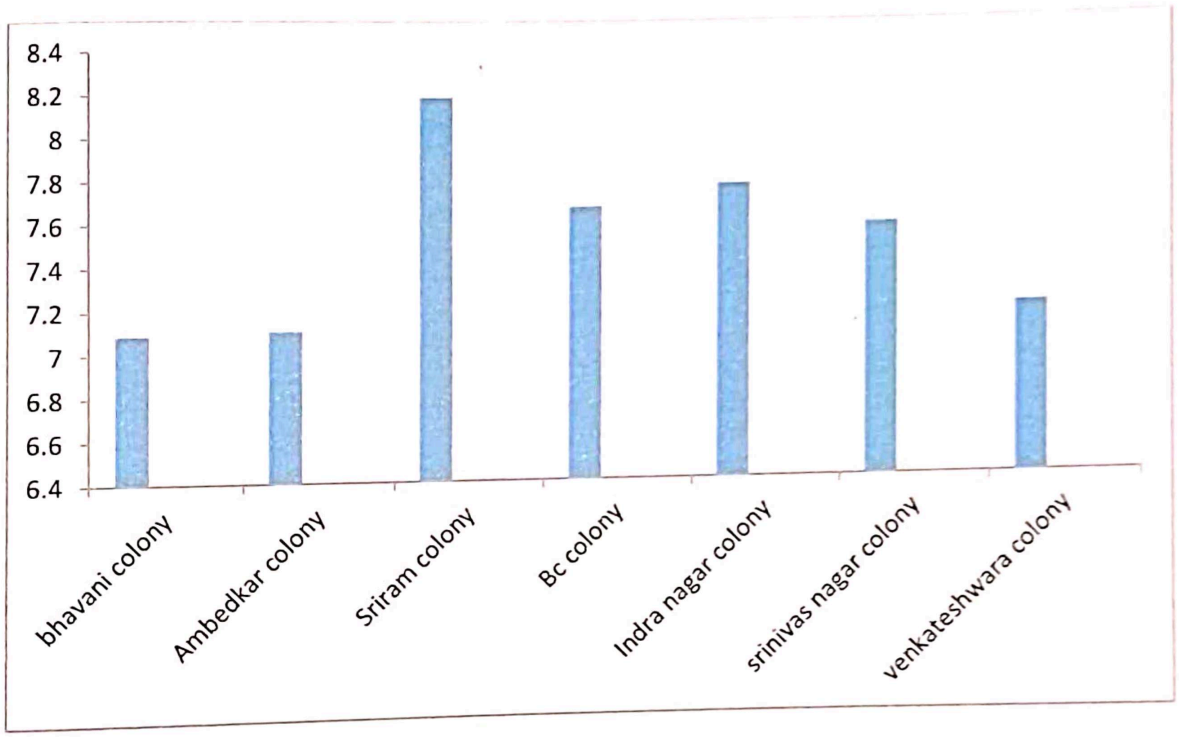
*TDS= Total dissolved salt

*TA= Total alkalinity

*TH= Total hardness

PH of water

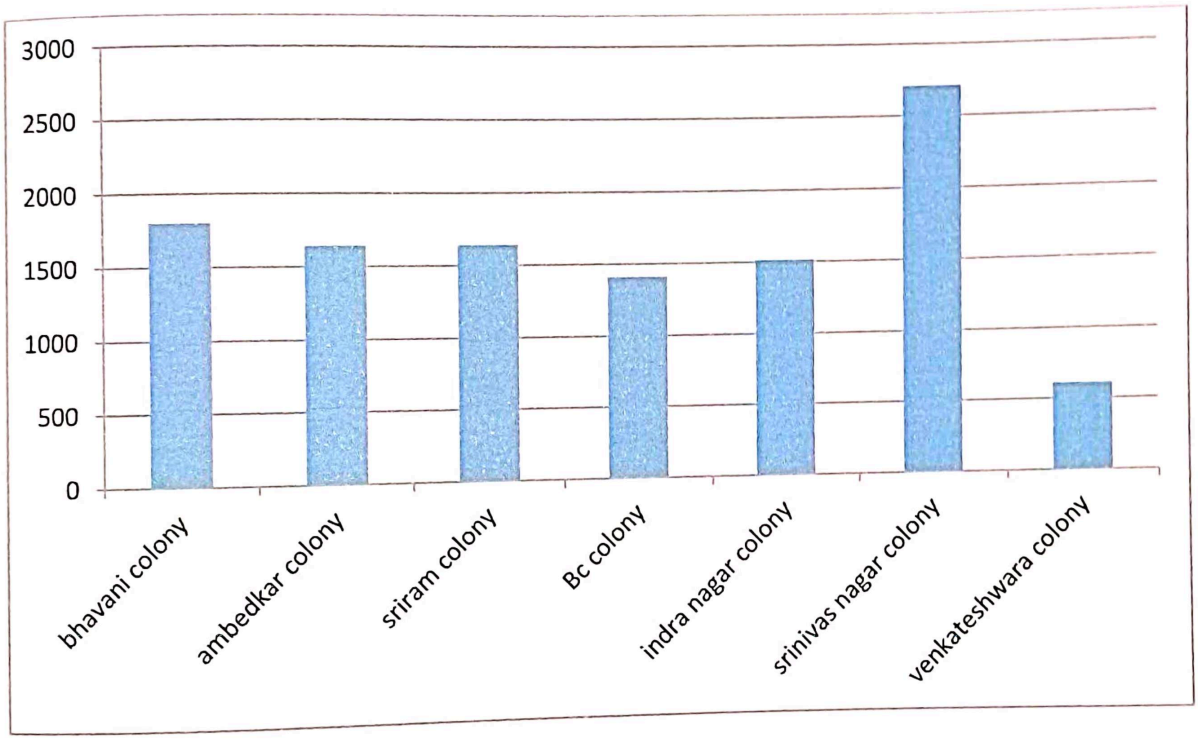
The pH of water is refers to the measure of hydrogen ions concentration in water. It ranges from 0 to 14. In general, water with a pH of 7 is considered neutral while lower of it referred acidic and a pH greater than 7 known as basic. Normally, water pH ranges from 6 to 8.5. It is noticed that water with low pH is tend to be toxic and with high degree of pH it is turned into bitter taste. According to WHO standards pH of water should be 6.5 to 8.5. In this study samples were found 7.09 to 8.19 which are slight basic. The highest pH value 8.19 observed at Sri ram colony where as the lowest value i.e. 7.09 found at Bhavani colony All the ground water samples were found within the limits as prescribed by WHO.



Above graph refers to PH of given water samples

Electrical Conductivity (EC)

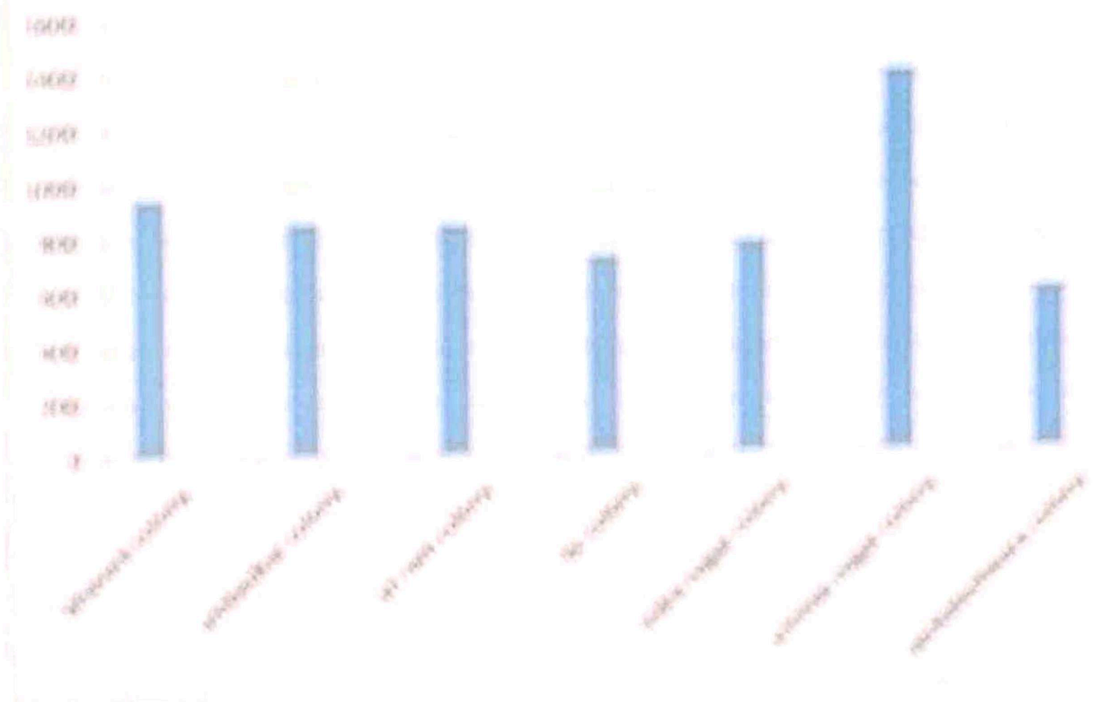
Pure water is not a good conductor of electric current rather a good insulator. Increase in ions concentration enhances the electrical conductivity of water. Generally, the amount of dissolved solids in water determines the electrical conductivity. Electrical conductivity (EC) is actually measures the ionic process of a solution that enables it to transmit current. According to WHO standards EC value should not exceeded 400 µS/cm. In study area all the ground water samples were found excess values of electrical conductivity. The value ranges from 612 µS/cm to 2710 µS/cm. The highest EC found at Srinivas nagar colony i.e 2710 µS/cm



Above graph refers to electrical conductivity of given water samples

Total Dissolved Solids (TDS)

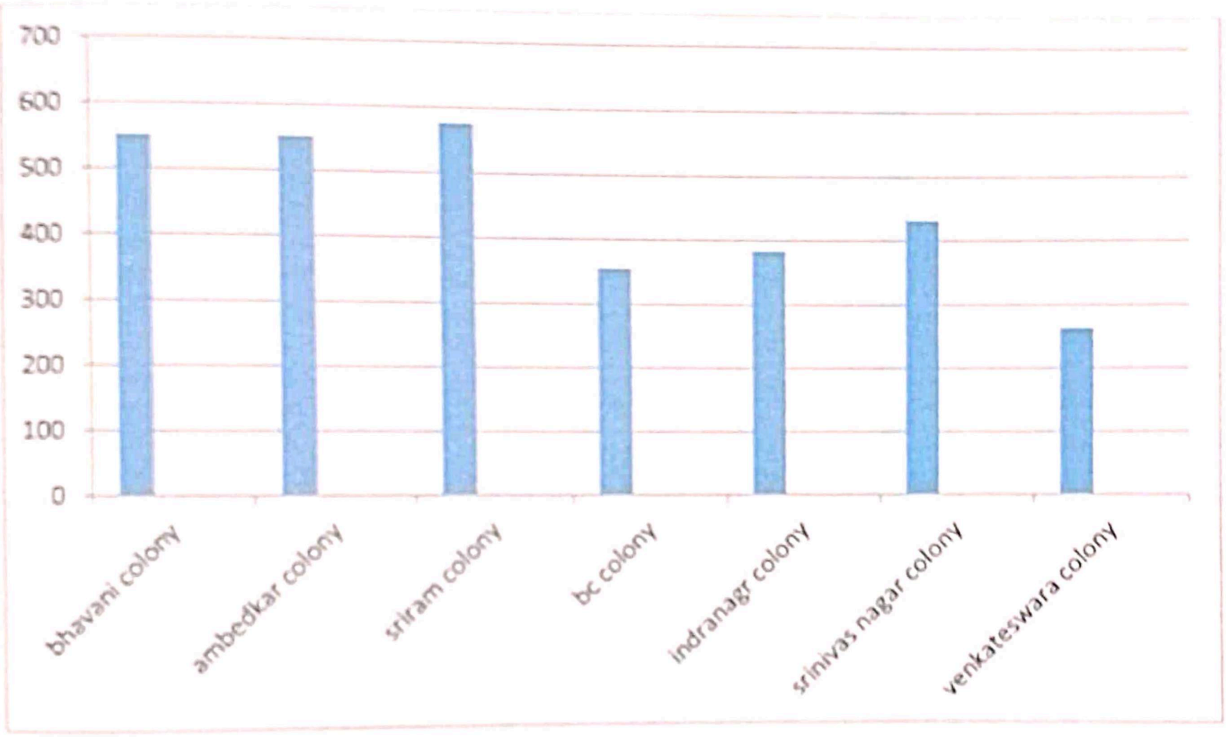
Water has the ability to dissolve a wide range of inorganic and some organic minerals or salts such as potassium, calcium, sodium, bicarbonates, chlorides, magnesium, sulphates etc. These minerals produced un-wanted taste and diluted colour in appearance of water. There is no agreement have been developed on negative or positive effects of water that exceeds. The WHO standard limit of 1,000 ppm. Total dissolved solids (TDS) in drinking water is originates many ways from sewage to urban industrial wastewater etc. Therefore, TDS test is considered a sign to determine the general quality of the water. The values of ground water samples vary between [illegible] ppm to [illegible] ppm. Ground water samples of [illegible] colony found [illegible] ppm of TDS respectively and which is found excess in limits as prescribed by WHO. Remaining all samples found within the prescribed limit.



"Above graph refers to TDS of given water samples"

Total Alkalinity (TA)

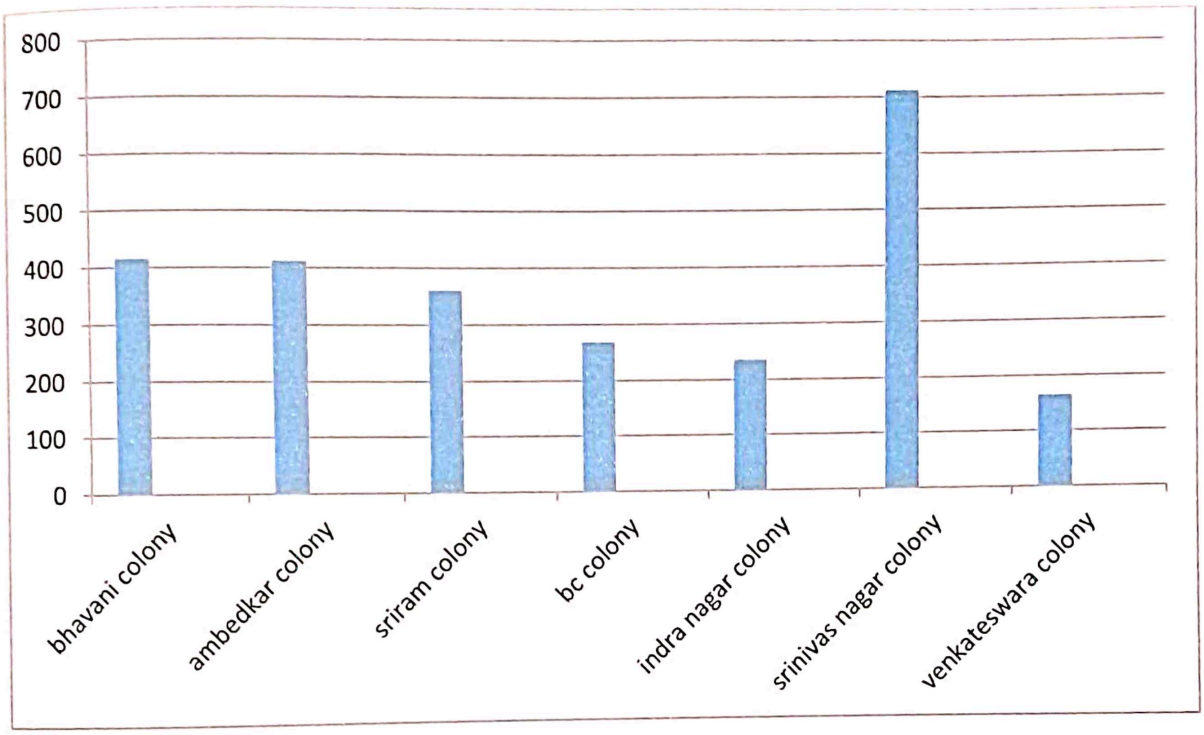
Alkalinity is the presence of one or more ions in water including hydroxides, carbonates and bicarbonates. It can be defined as the capacity to neutralize acid. Moderate concentration of alkalinity is desirable in most water supplies to stable the corrosive effects of acidity. However, excessive quantities may cause a number of problems. The WHO standards tell the alkalinity only in terms of total dissolved solids (TDS) of 500 mg/l. In study areas, results show that alkalinity ranges from 264mg/lit to 576mg/lit.53% of ground water samples were found excess in limits among highest TA found at Sriram colony i.e. 576mg/lit.



Above graph refers to total alkalinity of given water samples

Total Hardness (TH)

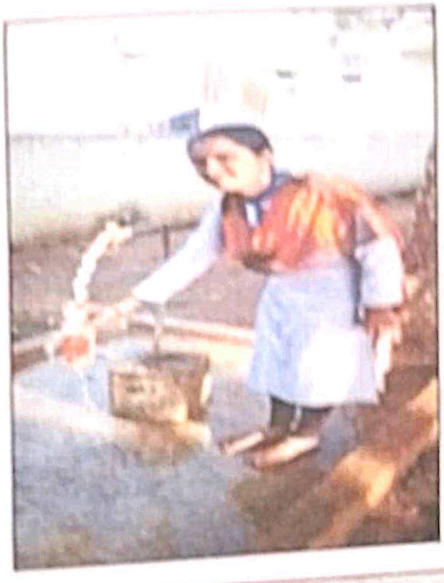
Hard water is characterized with high mineral contents that are usually not harmful for humans. It is often measured as calcium carbonate (CaCO3) because it consist mainly calcium, magnesium and their salts such as carbonates, bicarbonates, sulphates and chlorides are the most dissolved ions in hard water. According to World Health Organization (WHO) hardness of water should be 500 mg/l. In study areas, hardness ranges from 164mg/lit. to 712 mg/lit. Among 7 stations 1 Station has been found excess permissible limit namely Srinivas nagar colony (712mg/lit.).



Above graph refers to total Hardness of given water samples

PHOTO GALLERY

(**Consulting the agricultural officer for** the better Knowledge **about the groundwater samples**)



(Collecting the water samples)

(Testing of collected water samples)

CONCLUSION

After physio chemical analysis of 7 ground water samples of RAIPALLE VILLEGE, RAJAPUR MANDAL, Mahbubnagar DIST. the analysis values of different parameters were found excess in limits indicating poor water quality which are unfit for drinking and may effect on human health. In order to rescue precious human lives from water related diseases, a current study suggests that regular monitoring of ground water quality should be practiced. Concerned government should install more water purification plants to provide safe drinking water. Sewer drains should be kept away from water supply drains to avoid wastewater leaching in ground water. Sanitary conditions should be improved on an urgent basis. The awareness campaign of waterborne diseases and importance of safe water for human health should be commenced by Rural Water Supply and Sanitation (RWS) department.

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