

COLLECTION OF PRE-MONSOON GROUND WATER SOURCES FROM DARYAPUR & ANJANGAON-SURJI TAHSILS AND INVESTIGATE THE PHYSICO-CHEMICAL PARAMETERS.

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ABSTRACT

Water is the one of the topmost gift natures granted to all living creatures. It plays vital role for surviving world. A good quality of drinking water is essentially for all the people throughout the world. Quality drinking water should have balanced pH, rich contaminants and toxin free, minerals occurring, healthy. Some physical and chemical parameters were used for examined pH, TDS, Total Alkalinity, Total hardness, Chloride, turbidity. Poor quality of drinking water hazardous for health, in the present investigation undertaken groundwater samples for detecting from two tahsils, were 185 villages involved, surrounding area water mostly use for drinking purpose, agricultural, industrial and domestic. Mostly reasserts are groundwater sources (natural water) which contain different impurities.

Keywords: - Water, hazardous, investigation, physical, chemical, impurities.

INTRODUCTION

Water and lives are two edges of the identical coin. Water is introductory need for survival of all residing organisms. The grade of water is required worry for mankind as it is straight forwardly connected with well-beings and creature's husbandry. In India, large portion of the population is dependent on groundwater as the solely source of consuming drinking water supply, and it accessed mainly from river, borewell, handpump, tap water. Quality of groundwater believed to be comparatively much clean and free from pollutants than surface water. However, delayed release of commercial effluents, homegrown sewage and stable waste dump causes the ground water to become contaminated and created well-being issues [i]. Ground water quality has become an important water resources trouble due to rapid enlarge in population, quick industrialization, unplanned urbanization, flow of population from highland to table and too much use of fertilizers, insecticides in agriculture [ii]. The focused of the testing were checking physiochemical estimation of groundwater quality (pH, TDS, turbidity, Total hardness (TH), Total Alkalinity (TA) and Chloride. Assuming the upsides of turbidity is high in delivered water, it can be demonstrator the cluttered in the treatment process specially liquefaction, sedimentation and filtration [iii]. Water containing more than 500mg/l of TDS is not considered advisable for drinking water supplies, but in unavoidable instances 1500mg/ is likewise permitted [iv]. Severely elevated Chloride concentrations are detrimental to aquatic organisms and can increase the mobility of metal and other bioactive compounds [v]. Ground water quality in the industrial regions is detected by estimating the convergence of some Physico-Chemical parameters and contrasting them with drinking water grade [vi]. The majority of alkalinity in natural water caused by hydroxide, carbonate and bicarbonate, Alkalinity in itself is not hazardous to human beings [vii].

The high centralization of total hardness in water sample may be due to disintegration of polyvalent metallic ions from sedimentary rocks, seepages and run offs from the soil [viii]. pH is a term universally to explicit the intensity of the acid or alkaline circumstance of a solution. The pH readings of water samples ranged from 6.5 to 8.5 and were found within the guidelines recommended by WHO. The greater of pH indicates higher productivity of water [ix]. Groundwater satisfactory evaluation for ingesting motive is the imperative because of the sturdy relationship between the water chemistry and the human health [x]. Drinking contaminated water can cause numerous detrimental health indications and diseases including polio, vomiting, dysentery, gastroenteritis, cholera, typhoid, and diarrhea [xi]. Poor drinking water quality prompts

to extensive severe and incurable diseases and, innumerable countries are a major cause of death [xii]. Waterborne ailment is a global burden which is estimated to cover more than 2.2 million deaths per annum around and higher cases of illness everyday including diarrhea, gastrointestinal complaints and methodical illness about 1.4 million of these deaths are children's [xiii].

In present study (investigation) we collected samples from two Tahsils, that is (Daryapur and Anjangaon surji) out of these two Tahsils 145 villages in Daryapur and 117 villages in Anjangaon out these villages 185 samples collected from different sources.

The samples were collected in cleaned and dried bottle; these samples were labeled with respect to collecting point, date, and time to avoid error with proper precautions for determining physical and chemical parameters.

METHODOLOGY:-

Our research paper aims to analyze the Physico-chemical parameters of groundwater samples. Collected from different ground water sources in different villages in Daryapur and Anjangaon surji tehsil belongs to Amravati Maharashtra region India.

Sample Collection: -For this research, we collect 185 ground water sample from different villages and their locations were recorded with a portable GPS devise. All the groundwater samples were collected in clean and sterile plastic bottle containers up to 2 liters. After that container were tightly closed and labeled on water samples. TDS and pH measure by using TDS and pH meter respectively. And nitrate was check by using UV spectrophotometer and other parameters such as alkalinity and hardness were analyzed by using titration method in the laboratory of the department of sub division water testing office Daryapur.

Determination of pH:- The pH scale is logarithmic and contrarily pointer the convergence of hydrogen particles in the solution [xiv]. pH is most imperative in deciding the corrosive nature of water. The pH is measure by utilizing pH meter. Plunge the electrode in a gathered example and read it. This will give the pH of gathered sample.

Measurement of TDS:- Highly noteworthy association between TDS and EC buttressed the reality that EC relies extraordinarily upon the measures of disintegrated particles in water. This outcome is in concurrency with prior comparative outcomes revealed by [xv] [xvi]

[xvii] Dip the anode in a gathered sample and understand it. Then this will give the TDS of gather sample.

Measurement of Chloride (ion):- The chloride fixation fills in as a sign of contamination by sewage individuals acclimated with higher chloride in water are exposed to diuretic effects [xviii]. It was controlled by Mohr's technique utilizing silver nitrate as titrant and potassium chromate solution as indicator. It is measured by titration method. Take 50ml of water sample add 0.5 ml potassium chromate arrangement our test will become yellow color. Then titrate with silver nitrate solution at the end it changes yellow to reddish color then note down the last perusing.

Measurement of Alkalinity:- Alkalinity is the entirety of parts in water that tend to lift the pH to the basic side of lack of bias. It is estimated by titration with standardized acid to a pH value of 4.5 and is communicated normally as milligrams per liter as calcium carbonate (mg/l asCaCo₃). Commonly occurring materials in water that increase alkalinity are carbonate, phosphates and hydroxides [xix]. Carbonate and bicarbonates break up in it and causes alkalinity. Borates, phosphates are portion of the significant ionic particles additionally answerable for alkalinity in water samples [xx]. It was determined by titrimetric method utilizing standard arrangements of 0.01M HCl and methyl orange as indicator. Alkalinity of water is estimated by the titration strategy to estimate alkalinity take 50ml of water sample add few drops of methyl orange indicator and it turns orange. Then titrate with standard acid solution 0.02N H₂SO₄ and it changes to orange to yellow color then note down reading.

Determination of Hardness: -Hardness of water on the measure of calcium or magnesium salt or both. It was estimated utilizing using EDTA (Ethylene Di amine Tetra Acetic acid Corrosive) as titrant with ammonium chloride and ammonium hydroxide buffer solution and Erichrome Black T as indicator. Total

hardness recognizes by the titration technique first take 50ml of water sample add in the end of our sample will become blue. Then at the point at long last note down the perusing.

Nitrate: -Nitrate was recognizing by utilizing noticeable spectrophotometer. The higher furthest reaches of nitrate is 45ppm (molecule per million). Take 50 ml clear example, add 1 ml 1N HCL arrangements and blend completely prepare standards curve. Prepare nitrate calibration standards in the range of 0 to 10 mg NO₃ as N/litter. Treat nitrate principles in a similar way as test. Spectrophotometer measurement, Read absorbance against distilled waters 0 absorbance. Use frequency of 220nm to obtained nitrate perusing and frequency of 275 nm to decide impedance of disintegrated nitrate [xxi].

RESULT: -

The present investigation was carried out to check the quality of drinking water from different villages for assaying physico-chemical and biological parameters were turbidity, pH, TDS, totalalkalinity, total hardness, chloride, characteristics.

In our study we collected 185 samples from ground sources of Daryapur and Anjangaon tahsils contains villages, and out of 185 samples 25 samples found affected and out of these 25 samples having high TDS where 10 samples were high in chloride, in which 10 samples 4 sources found in Anjangaon-surji tahsil and 6 sources found in Daryapur tahsil chloride affected, which are above 1000. 20 samples found high in total hardness, out of these 20 samples 12 sources found in Anjangaon-surji tahsil and 8 sources found in Daryapur tahsil which were above 600ppm Hardness, Alkalinity found in 8 sources which were above 600 ppm. In that 8 samples 7 found in Anjangaon-surji tahsil and 1 found in Daryapur tahsil. Results are showing in table given as below. And affected samples mentioned in a bold letter.

Anjangaon- surji				
Village Name	TDS	Chloride	Total Alkalinity	Total Hardness
CHAUSALA	3017	1286	564	800
WANOJA	2950	972	460	620
SAKHARI	2073	576	620	556
SAKHARI	3047	906	680	770
MALKAPUR	2940	810	544	1240
SAIYADGAON	2810	560	620	1000
KOKARDA	2100	360	596	920
KOKARDA	2900	744	404	1280
LAKHANWADI	2530	720	492	920
SAMSHERPUR	2600	940	640	652
SARFABAD	2880	280	944	552
SARFABAD	2580	710	984	428
GHODASGAON	3016	1500	280	988
GHODASGAON	3010	1374	332	1000
JAVLABK.	8062	3068	1464	860
Daryapur				
TONGLABAD	3330	844	404	1248
GOLEGAON	2490	860	396	927
LASUR	2570	652	464	932
LASUR	2250	467	536	972
JAINPUR	4850	1232	980	1336
BHAMOD	6880	3630	236	1280

LOTWADA	6720	4200	296	800
CHANDKHED	6730	4680	212	1040
RUSTAMPUR	2049	1490	180	242
RAMAGAD	2058	1240	280	260

Table 1:-List of water samples which are affected in two tahsils.

DISCUSSION: -

There were Chausala, Javla BK, Jainpur, Bhamod, Lotwada, Chandkhed having very high TDS. [Table] (Highest TDS degrees were decided in Thole tank water, whilst the minimal values were found in Ghulmet faucet water [xxii]. In our study samples in Ghodasgaon, Bhamod, Lotwada, Chandkhed, Rustampur and Ramagad are found affected in chloride. [Given table] Higher Chloride concentration in samples from sites s2 and s3 may be due to large discharge of sewage close to the sampling sites [xxiii]. And Sakhari, Malkapur, Saiyadgaon, samples in Kokarda, Lakhanwadi, Tonglabad, Golegaon, samples in Lasur, Bhamod, Lotwada, Chandkhed were found very in Total Hardness. (The hardness was found to be in the range of 72mg/lit to 380mg/lit in post-monsoon and 140 mg/lit to 620mg/lit in pre monsoon [xxiv] [xxv]. And there is no one sample found Alkalinity affected in our investigation [Table1] (The mean value of alkalinity in the ground water of Telungupalayam area was 150.85mg/l [xxvi].

CONCLUSION: -

In this investigation, the quality of groundwater is checked through physico-chemical parameters including TDS, Alkalinity, Chloride and Total Hardness. Samples arrived from Two Tahsils were 145 Villages in Daryapur town and 117 villages in Anjangaon surji. Samples derived from saline affected areas and this area containing soil having high TDS which has hazardous for Aquatic Microorganism, Human beings and Animals. Out of 185 water samples 25 water sample display shows affected in TDS, 10 samples came across in Chloride, 20 displays in Total hardness and 8 samples affected in alkalinity. All the investigation performed by very careful attention towards contamination of water sources is necessary, so the future risk will be under controlled cause its direct linked-up with human health. All affective it is shown in above reliable data.

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