EFFECT OF ECOCLEAN-2300 ON PHYSICO-CHEMICAL PARAMETERS OFGROUND WATER ALONG THE MUSI RIVER

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ABSTRACT: Water is the most abundant compound on Earth's surface, covering 71 percent of the planet.Safe drinking water is essential to humans and other life forms even though it provides no calories or organic nutrients. River Musi also known as "Muchukunda" is originating from Ananthagiri hills in Vikarabad, but it also has place in our epics as a holy river. It is once a fresh water stream irrigating hundreds ofacres of agriculture land before it joins river Krishna in Nalgonda. Due to rapid urbanization and industrialization 350 MLD(million liters per day) of untreated domestic and industrial waste is flowing into it.As river is basis for any civilization many people depend on this river and use it for irrigation, about half of the daily vegetables used in the city are grown using this polluted water. As the ground water recharge in this area also influenced by this river and officially 12% of city depends upon the ground water for drinking, there is a need for the analysis of quality of this water.A study has been made using ECOCLEAN 2300 which is a herbal reagent for waste water treatment.The present study focused on the effect of MUSI RIVER (Hussain sagar) on ground water quality in Hyderabad city under GHMC. Pollutants were responsible for the degradation of aquatic ecosystems and groundwater resources. Ground water samples are collected from each location and Physical & chemical parameters are analyzed by using suitable methodologies of pH, Total dissolved solids, Total Hardness, chlorides and Biological oxygen demand water quality parameters areassessed.

Keywords: Ecoclean2300,Greater Hyderabad Municipal Corporation(GHMC),pH,TDS,DO.

INTRODUCTION: Hyderabad is the capital City of Telangana state,geographically situated in land locked arid zone and no perennial river but a seasonal River, Musi flowing through it.There are two dams built on the Musi river that are Osman Sagar and HimayatSagar.Both of the reservoirs constitute the major drinking water sources for Hyderabad. For longer periods,it is the capital city of so many rulers and in long run expanded to the 8500sq.km in Telangana southern Indian State.

Water quality refers to the chemical, physical and biological characteristics of water. It is a measure of the condition of water relative to the requirements of one or more biotic species and or to any human need or purpose. Fresh water lakes are vital resources for any country because they regulate the urban climate and also have a prominent effect on ground water quality and ground water table.ECOCLEAN-2300 is a single dose herbal reagent for sewage water treatment.It is a unique combination of *Azadirachta indica*(Neem),*Moringaoelifera*(Drumstick), Strychnos potatorum(Cleaning nut),*Ocimum sanctum*(Tulsi) and *Melaleuca alternifolia*(Tea tree oil)blended together using organicsolvents and stabilizers. ECOCLEAN-2300 at 40ppm,not only induces flocculation and causes separation of both suspendedand dissolved solids but also affects TDS,TSS,BOD,COD of water with no smell and side effects.

STUDY AREA: The state capital of Telangana, Hyderabad lies between North latitude 17º 19'30" and East longitude 78° 23'-78° 30'. The normal annual rainfall is 772 mm of which 72% is the contribution from the SW monsoon, 14% from the NE monsoon and the rest during winter and summer. Hussain sagar lies between North latitude 17º 25'25.968" and east longitude 78º 28'25.7664".Himayathnagar liesbetweenNorth latitude 17º 24'24.2712" and east longitude 78º 28'45.5664".Chikkadpally lies between North latitude 17º 24'16.0344" and east longitude 78º 29'39.7464".Nalakunta lies between North latitude 17º 24'5.1552" and east longitude 78º 30'18.0972". Ground water samples were collected on both sides of nala ofHussain sagar lake at an interval of 0.5 km upto 2km. Soil also plays a major role.

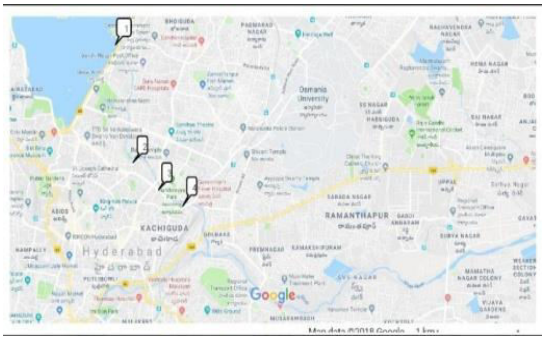

Fig1.Study area map using google earth pro withsampling sites.

Fig.2 Musi river sampling

Materials and Methods: The present study has been carried out on the effect of MUSI RIVER on ground water quality under GHMC,Telangana state and ground waterin the vicinity to assess its quality for drinking &irrigation.The following experiments are performed such asPH,hardnesstest, TDS,DO,EC,chlorides, alkalinity and BOD. Twenty samples were analyzed for each parameter.

RESULTS AND DISCUSSIONS:
Sample-1 was collected around Hussainsagar for surface water analysis.

The collected water samples were analysed for pH, Hardness,TDS,chlorides,alkalinity,EC, DO &BOD using suitable methodologies before and after the treatment with Ecoclean-2300.Samples 2,3,4 are collectedfrom locations namely Himayat nagar, Chikkadpally and Nallakunta.The PH of all the samples increased after treatment (Table 1).

Hardness: Most of the ground water samples showed hardness within permissible limits,after adding ecoclean2300 hardness of thesamples decreased and are within permissible limits(Table 1).

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EC: The electrical conductivity gives qualititative picture of water (Table 1).

Total Dissolved Solids: The permissible limit is 500-2000 ppm. The TDS value varies from 171.8ppm to 747.2ppm for ground water and from 243ppm to 738.9ppm for surface water samples(Table 1).

DO: The results showed that DO was nil in surface water samples.A minimum of 4-5mg/l of DO is good for the survival of aquatic life.DO of surface water and ground water samples was increased after adding Ecoclean2300 which is essential.

ALKALINITY: Alkalinity of surface water and groundwater samples areabove permissible limits.The alkalinity values are reduced andare within permissible limits after treating with Ecoclean2300.

CHLORIDES:Chlorides of the ground water samples are within permissible limits.Chlorides of the samples after treating with the Ecoclean 2300 showed increment but are within permissible limits.

Table 1. Physico Chemical parameters of surface and Ground water samples before and after treatment with Ecoclean 2300

s no	location	pH		Hardness(mg/l)		EC		TDS	
		Before ecoclean2300	After ecoclean2300	Before ecoclean2300	After ecoclean2300	Before ecoclean2300	After ecoclean2300	Before ecoclean2300	After ecoclean2300
1	Hussain sagar	7.4	7.52	210	190	321.7 ppm @ 21.1c	272.4 ppm @ 27.1c	312.2 ppm @ 27 1c	272.4 ppm @ 27.1c
2	himayathnagar	7.75	7.95	332.5	299	887.1 ppm @ 28.7c	621.7 us @ 28.9c	429.7 ppm @ 28 c	362.8 ppm @ 26 c
3	chikkadpally	6.68	7.97	345	307	1.189 us @ 28.9c	1.08ms@ 26.7c	433p pm @ 28 c	242.5 ppm @ 26.1c
4	nalakunta	6.8	7.35	210	192	659.5 us @ 29.4c	593.5 us @ 27.9c	300p pm @ 25.7c	271p pm @ 27

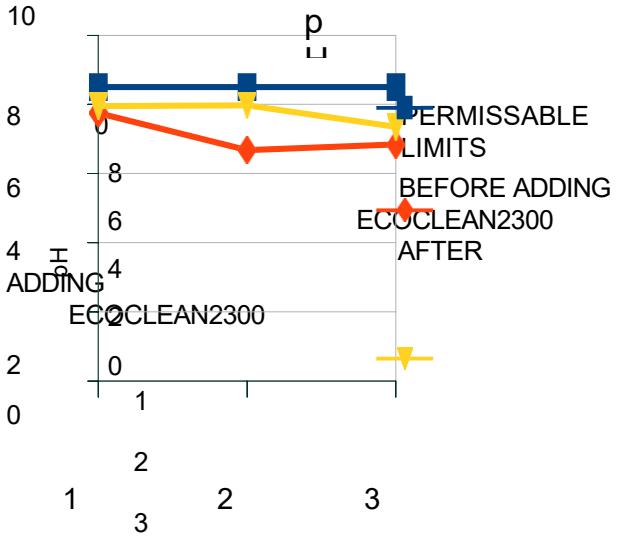


Fig .3 pH of samples

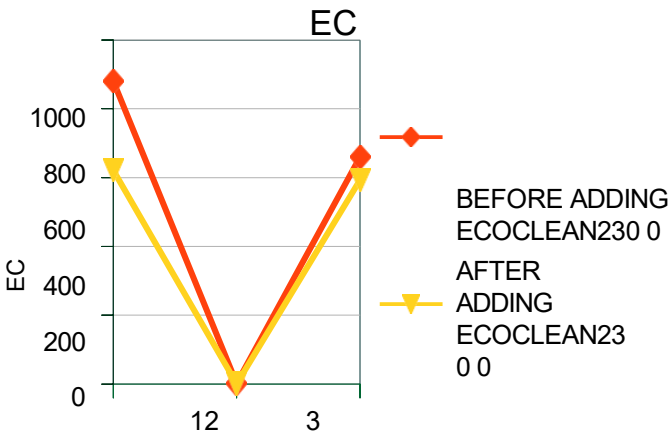


Fig .4 EC of samples

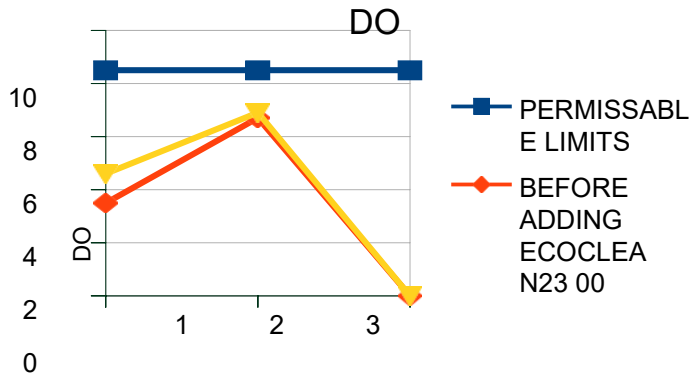
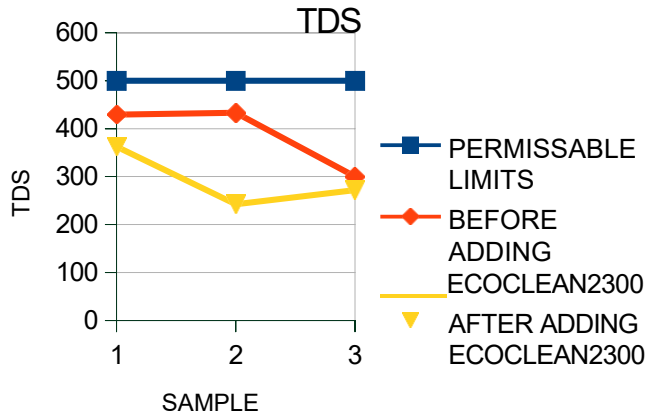
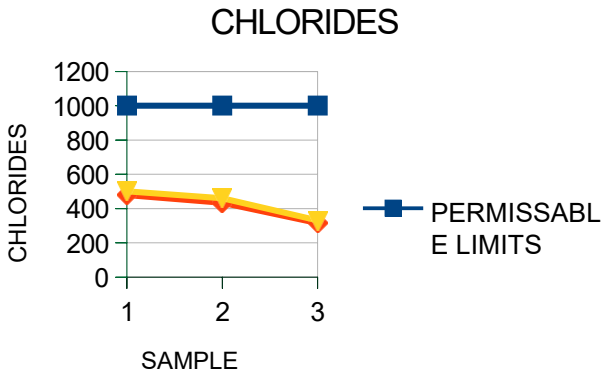


Fig.5 DO of samples





CONCLUSION: In the present study, ground water samples were collected and analysed.After adding the Ecoclean 2300 to the samples collected, there was difference in all the parameters .The PH of the samples increased comparatively but all the values are within the permissible limits i.e.,6.5-8.5,none is acidic. Dissolved Oxygen increased where as Electrical conductivity, Total dissolved solids, Sodium and Hardness were reduced after treating the waste water with Ecoclean 2300.SAR(sodium adsorption ratio) values are found to be below 3, hence Ecoclean 2300 treated water can be used for irrigation and other secondary purposes. The microbiological safety ofwater should be tested for

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