

Water Quality Assessment during the Pre-Monsoon Season in Salem Block, Salem District, Tamil Nadu, India

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Abstract

The present study deals about the quality of water for assessing purpose of domestic use. The study area is covering 1278 km² in 14 panchayats. We analyzed the different physico-chemical parameters during pre-monsoon season in the year 2013 to 2014. The analyzed physic – chemical parameters are Fluoride, Iron, Chloride, Nitrate, Sulphate, pH, TDS, Hardness and Alkalinity. All the parameters are coming under the desirable limit of drinking water except TDS. Two panchayats are having above the permissible limits of Hardness.

Key words: Water Quality, Physico-chemical.

Introduction.

We need water resource for domestic, industrial and agricultural purposes and water is essential for animals and human body metabolism and proper functioning of cells. Naturally, water is abundant in earth surface around 71% only 1% are useful for human consumption (Mihayo. et.al. (2012). Earth contains only 2.5% of fresh water others are useless for human habitations. Anthropogenic activities and industrial growth are the main reason for contaminating the surface and subsurface

water bodies and the water scarcity also. Norsaliza Usali et.al(2010) stated that water quality monitoring program are needed for creating awareness among the people and to know the present and future scenario of contamination of water resources. Rajkumar et., al (2012) revealed that variation availability of water in quantity and quality can cause significant fluctuations in the economy of a country. The present study focused upon the quality of water and its characteristics.

Study Area.

The present study focused in Salem Block (Fig.1), Salem District, Tamil Nadu, India. It is located in Latitude 11°39'52" and Longitude 78°8'45" and total area covered by 1278 km² in 14 panchayats. The average elevation is 278m (912f). The study area bounded at North side of Nagaramalai hill, South side of Jarugumalai Hill, West side of Kanjamalai Hill, East side of Godumalai Hill, North East side of Shervaroy hills and south west side of Kariyaperumal Hills.

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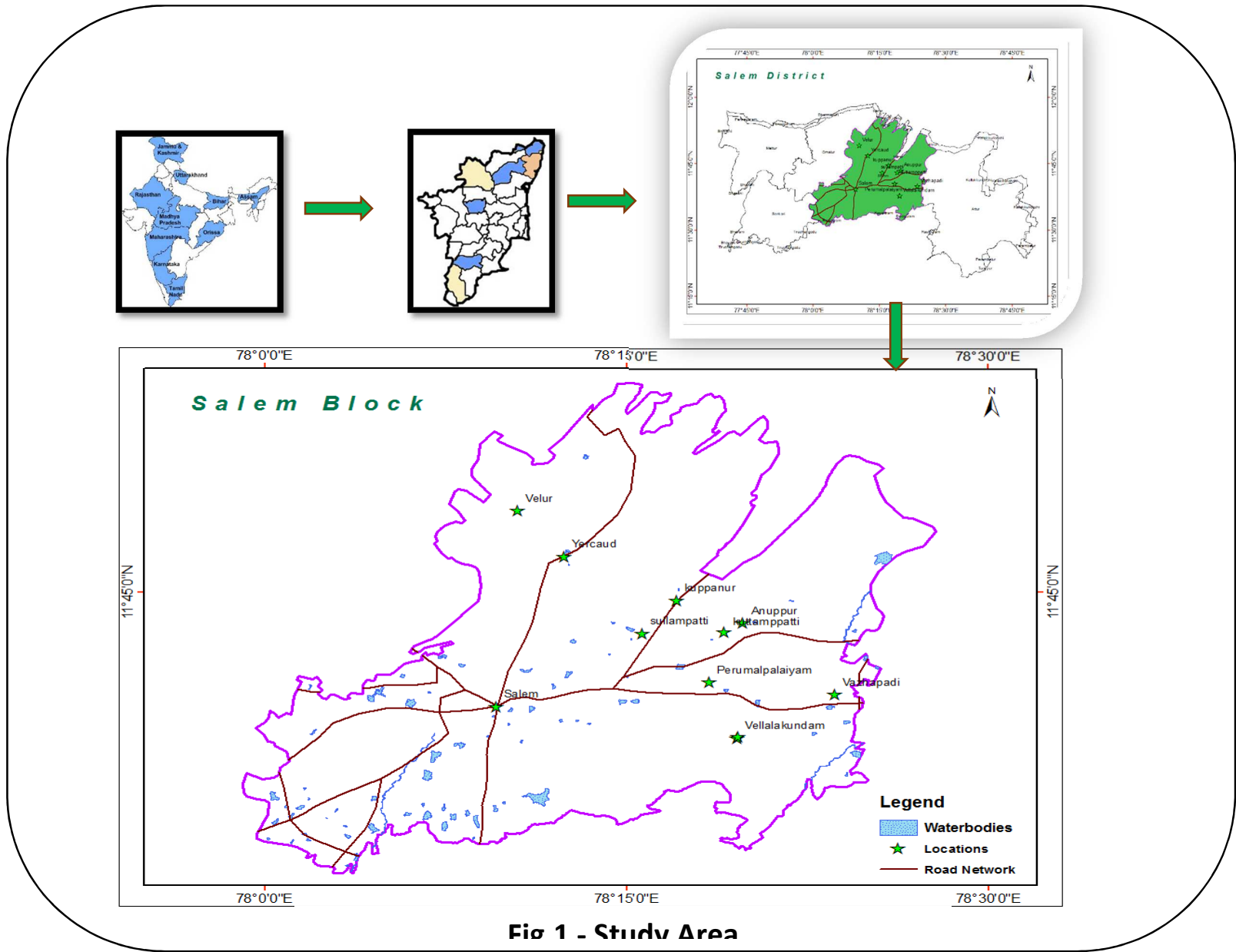


Fig 1 - Study Area

Results and Discussion.

The following table is representing the results of various physic-chemical parameters of collected water samples at Salem block during the pre-monsoon season in the year 2013 to 2014.

Location	Fluoride	Iron	chloride	Nitrate	Sulphates	pH	TDS	Hardness	Alkalinity
Andipatty	0.812778	0.08889	149.3333	28.38889	61.94444	7.398333	1024.722	440.6667	400.4444
Ayyamperumalpatti	0.977778	0.02778	196.8889	31.83333	69.88889	7.485556	1093.202	407.7778	432
Chettichavadi	0.85	0.21	227	33.55	66.45	7.493	1124.3	506.8	428.7
Dalavaipatti	1.033333	0.32778	198.4444	28.55556	58.94444	6.68	1062.621	416.2222	420.2222
Erumapalayam	0.96	0.14	153.8667	27.13333	53.2	7.448667	915.1333	438.9333	352.2667
Kondappanaickenpatti	0.85	0.03571	189.4286	30.42857	73.28571	7.465714	1008.214	459.4286	427.4286
Majaragollappatti	1.044444	0.17778	197.7778	29.66667	63.66667	7.305556	1078.333	467.3333	392.8889
Mallamoopampatti	0.826087	0.06957	158.2174	26.17391	54.69565	7.291304	971.7391	448.2609	370.2174
Sanniyasigundu	0.822222	0.04568	147.4444	8.191358	66.44444	7.43	1047.7	1025	394
Selathampatti	0.733333	0.06667	181.3333	27.88889	83.55556	7.305556	1132.222	503.5556	387.4444
Triumalagiri	0.933333	0.02778	208	29.22222	67.55556	7.672222	1039.327	622	414
Vedugathampatti	0.74	0.2	157.7	28.3	66.2	7.494	1001.5	438.4	394.8
Vattamuthampatti	0.77	0.2	196	31.6	68	7.5	1143	484	432
Sarkar Gollapatti	0.9	0.2	168	29	48.8	7.5	994.9	431	400.7

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Fluoride

The Fluoride concentration varies between 0.7333 mg/l to 1.011 mg/l. These ranges of fluoride content in water is desirable limit according to the WHO standards. The fluoride content is maximum in Majaragollappatti (1.04 mg/l) and minimum in Vedugathampatti (0.74mg/l). (Chart-1)

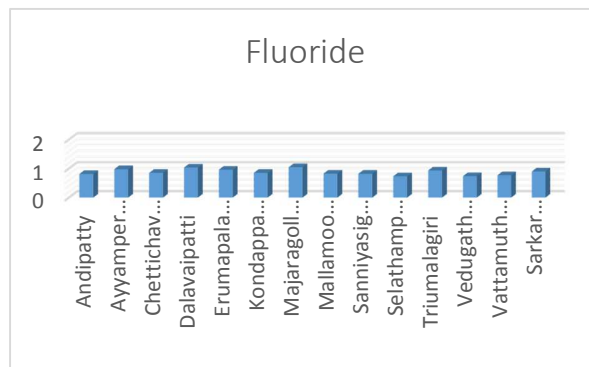


Chart-1

Chloride

The chloride concentration varies from 147.44 mg/l to 227 mg/l. These ranges of chloride content in water is desirable limit according to the WHO standards. The chloride content is maximum in chettichavadi (227 mg/l) and minimum in Sanniyasigundu (147.44 mg/l). (Chart-2)

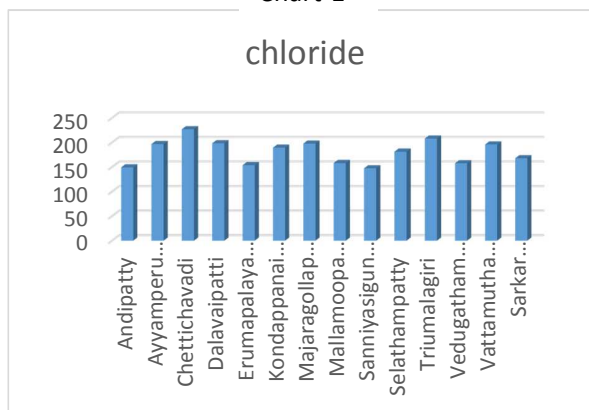


Chart - 2

Nitrate

The Nitrate concentration varies from 8.19 mg/l to 31.8 mg/l. These ranges of Nitrate content in water is desirable limit according to the WHO standards. The Nitrate content is maximum in Ayyamperumalpatti (31.8 mg/l) and minimum in Sanniyasigundu (8.19 mg/l). (Chart-3)

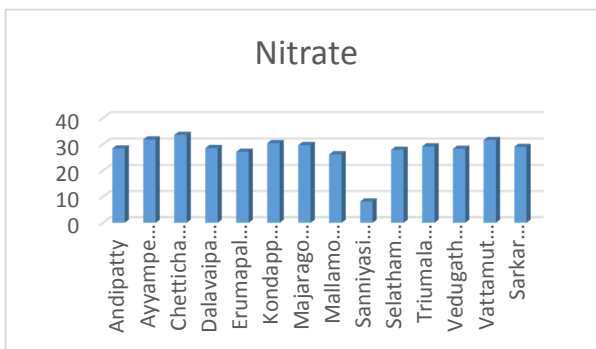


Chart-3

pH

The chloride concentration varies from 6.68 mg/l to 7.6 mg/l. These ranges of pH content in water is desirable limit according to the WHO standards. The pH content is maximum in

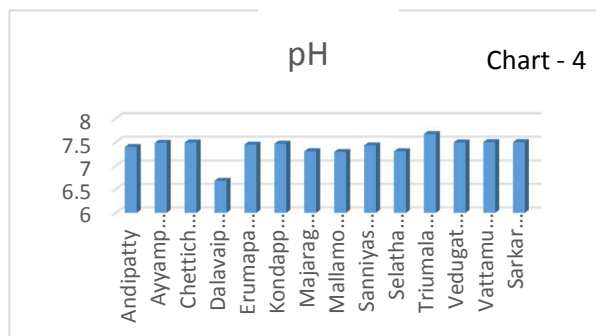


Chart - 4

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Tirumalagiri (7.6 mg/l) and minimum in Dalavaipatti (6.68 mg/l). (Chart-4)

Hardness

The Hardness concentration varies from 407 mg/l to 1025 mg/l. These ranges of hardness content in water is desirable limit according to the WHO standards except the Sanniyasigundu and Tirumalagiri panchayat because these are above in permeable limit. The hardness content is minimum in Ayyamperumalpatti (407 mg/l). (Chart-5)

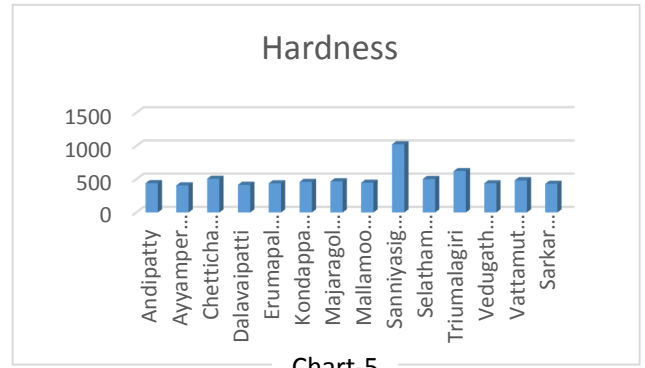


Chart-5

Alkalinity

The Alkalinity concentration varies from 352 mg/l to 432 mg/l. These ranges of alkalinity content in water is desirable limit according to the WHO standards. The alkalinity content is maximum in Erumapalayam (432mg/l) and minimum in Vattamuthampatti (352 mg/l). (Chart-6)

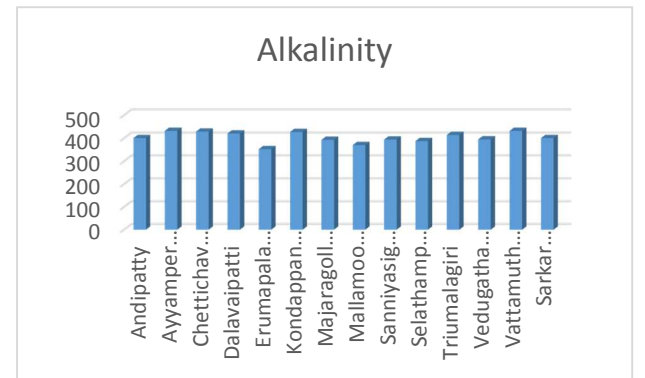


Chart-6

TDS

The TDS concentration varies from 915 mg/l to 1143 mg/l. These ranges of TDS content in water is under the alternative source category according to the WHO standards. The TDS content is maximum in Vattamuthampatti (1143mg/l) and minimum in Erumapalayas(915 mg/l). (Chart-7)

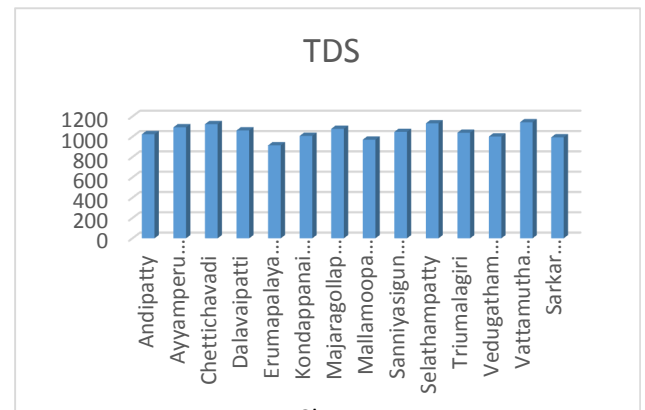


Chart-7

Iron

The iron concentration varies from 0.1 mg/l to 0.32 mg/l. These ranges of iron content in water is

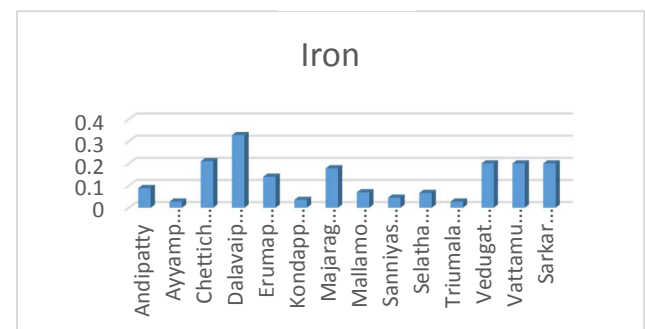


Chart-8

desirable limit according to the WHO standards. The iron content is maximum in Dalavaipatti (0.32mg/l) and minimum in Erumapalayas(0.1mg/l). (Chart-8)

Sulphates

The sulphates concentration varies from 48 mg/l to 83 mg/l. These ranges of sulphates content in water is desirable limit according to the WHO standards. The sulphates content is maximum in Selathampatty (83mg/l) and minimum in Gollapatti (48mg/l). (Chart-9)

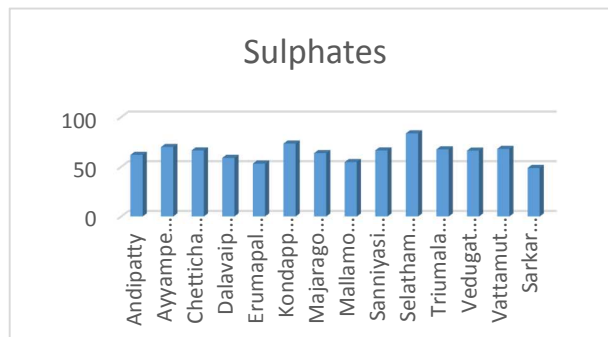


Chart-9

Conclusion

The water quality of Salem block is analyzed during the pre-monsoon season in the year 2013-2014. All the physico-chemical parameters are compared with WHO water quality standards. The present study area is having good quality of water for domestic purposes except Tirumalaigiri and Sanniyasigundu panchayats. Which are having a high percentage of Hardness above the permissible limits. The TDS is beyond the desirable limit, but it can be used as an alternative source of domestic water, if when the water is in deficiency conditions.

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