GROUNDWATER QUALITY ASSESSMENT AROUND SOLID WASTE LANDFILL AREA: A CASE STUDY OF UDDNOOR VILLAGE, GULBARGA, KARNATAKA

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Abstract

Physical, chemical and bacteriological analyses of water samples from seven bore wells located around landfill site at Udnoor, Gulbarga was carried out to ascertain the magnitude of dumpsite pollution on groundwater quality. During the study period, 9 bore wells were selected around the landfill area at a distance of 250, 500,750 and 1000m. The parameters analyzed during the study period were pH, total dissolved solids (TDS), Total Hardness, Nitrate,) and heavy metal such as Lead using standard laboratory procedures. The pH ranged from 7.7 to 9.8 indicating acidic in nature in the month of Feb. the three bore wells near landfill i.e. within 500 m. Concentrations of Hardness Public enlightenment on waste sorting, adoption of clean technology, using climate change mitigation strategies and the use of sanitary landfill to prevent further contamination of ground water flow are recommended.

INTRODUCTION

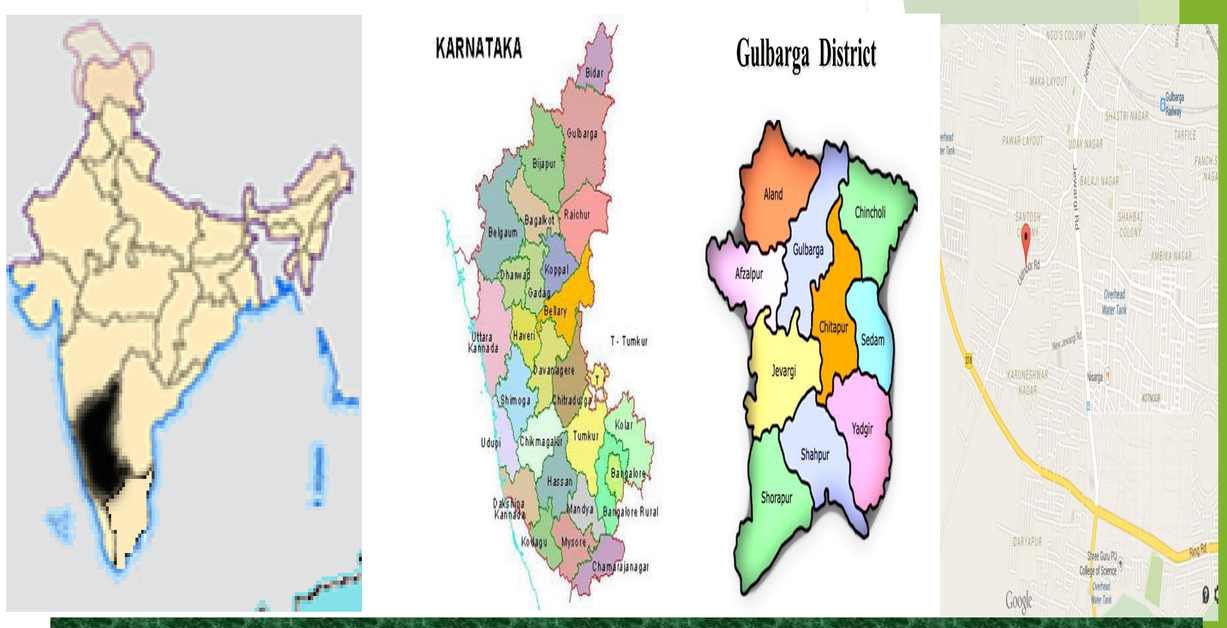
Groundwater is a globally important and valuable renewable resource for human life and economic development. It constitutes a major portion of earth's water circulatory system known as hydrological cycle and occurs in permeable geologic formation known as aquifers i.e. formations having structure that can store and transmit water at rates fast enough to supply reasonable amounts to wells. Waste includes all the discarded solid materials from commercial, municipal, industrial and agricultural activities..

METHODOLOGY

The most suitable bottles to use are made from polyethylene or glass. All samples should be properly labeled with details of the source, date of sampling, time of sampling and address. The samples should be tested in laboratory within 24 hours from the time of collection. The analyses covered physical, chemical and bacteriological parameters of water samples from each bore well. The qualitative analyses were carried out at the Chemical analysis laboratory.

	SAMPLES (Mg/L)								
PARAMETERS	S1	S2	S3	S4	S5	S6	S7	S8	S9
TDS	355	442	377	695	379	356	635	379	1260
PH	8.2	8.7	8.6	9.8	8.1	7.9	8.4	8.1	7.7
EC	735	929	784	148	774	736	1364	784	2700
TOTAL HARDNESS	300	90	300	170	290	190	140	160	350
ALKENITY	160	120	325	225	240	250	200	240	280
CHLORIDE	75	125	25	250	50	50	100	100	1250
FLOURIDE	1	3	1	3	1	1	3	3	1
IRON	0	0	0	0	0	0	0	0	0
NITRATE	0	2	5	10	10	10	1	5	5
TURBIDITY	0	0	0	0	0	0	0	0	0
BACTERIA TEST	+VE	-VE	+VE	-VE	-VE	-VE	-VE	-VE	+VE

STUDY AREA



FILD PHOTOGRAPHS

SUMMARIES AND CONCLUSION

It was also observed that the wells lying within the 500m, from the landfill area were contaminated with E-Coli bacteria, whereas the wells within the 500 – 1000m were within the prescribed limits of BIS and WHO standards.

The above result indicates very poor sanitation and damaging effects to health of both man and animals if surrounding well waters were used for domestic purpose.

From the study, it can be recommended that re-designing of sanitary landfill with clay or plastic liners to prevent leachate from getting to water table, adoption of clean technology for recycling greenhouse gases emanating from the landfill and a sustainable land management programmed for reclamation insisted.

Recommendation has to apply in such a way that, scientific method of storage of solid waste in Udnoor has to be treated.

Collection of waste from the public people in an important activity to control disposal and water quality degradation.

Analysis of water quality in and around the Udnoor solid waste disposal yard around a buffer zone of 1 sq. Km. Indicates that there must be harmful effects in solid waste disposal yards.