

# The Effect of Municipal Solid Waste Dump Site on the Various Ground Water Parameter

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## ABSTRACT

The environment has become an affecting concern with the societies and approach makers. The contamination of environment due to human activity. The primary objective of this paper is to study the various groundwater sources collected from nearby area of Municipal Solid Waste Dump Site, Sangamner, Ahmednagar District (MS), India. The hardness concentration varied from 488 to 868 mg/L. Chloride concentration oscillated from 19.43-36.94 mg/L. The concentration of Sodium ions in the study area is from 55.6 to 70.25 mg/L. All collected samples are found to be not potable for drinking purposes.

**Keywords:** Municipal Solid Waste, Human Activity

## I. INTRODUCTION

The disposal of municipal solid waste is major concerns as waste generation is increasing day by day. The term municipal waste is an "Applies to those waste generated by house hold and to waste of similar characters derived from shops, offices, and other commercial units."<sup>1</sup> The improper disposal of waste can cause serious environmental or ecological damage. This area is not safe for drinking, outdoor, bathing propagation of aquatic life, industrial cooling and for irrigation. This unscientific disposal gives rise to greenhouse gas emission like methane, carbon dioxide and causes air pollution.

Leachate fomentation and its subsequent accumulation pollutes the ground water and nearby water bodies<sup>2</sup>. The rain water runoff from these dumps contaminates nearby land and water there by spreading diseases. They also the source of air pollution. The municipal solid waste is causes the soil as well as water pollution. The municipal stream

may often contain some hazardous waste such as hospital wastes, paints, solvents and batteries careless handling and disposal of municipal wastes may thus pose a threat to human health in many developing countries.



**Figure 1 :** Municipal Solid Waste Dump Site

## II. METHODS AND MATERIAL

Analysis of water samples for parameter etc. pH, Sodium, Potassium, Calcium, Magnesium, Sulphate, Chloride, Bicarbonate, COD, BOD, TDS, TSS and Total Hardness (Table 1).

**III. RESULTS AND DISCUSSION**

36.94 mg/L. The concentration of Sodium ions in the study area is from 55.6 to 70.25 mg/L (Table 2).

The hardness concentration varied from 488 to 868 mg/L. Chloride concentration oscillated from 19.43-

**Table 1 :** Groundwater quality of collected samples compared with standard data

Parameters of drinking water	WHO(1993)	BIS		Analyzed samples range
		Acceptable limit	Maximum Permissible Limit	
pH	Not mentioned	6.5-8.5	No relaxation	7.57-8.15
Hardness (ppm)	100-125	100.0	125.0	488.0-868.0
COD (ppm)	5.0-50.0	5.0	50.0	16.0-105.00
TDS (ppm)	100-2000	100	2000	240.0-320.0
Sulphate (ppm)	1.0	1.0	-	0.75-2.48
Chlorides (ppm)	10-15	10	15	19.43-36.94
Sodium (ppm)	2-3	2.0	3.0	55.6-70.25
Potassium (ppm)	20.0-100.0	20.0	100.0	2.0-3.0

**Table 2:** Physicochemical Parameters of Analysed Samples

Parameters of drinking water	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>
pH	7.57	7.64	7.92	8.15
Hardness (ppm)	488	520	824	868
COD (ppm)	105	57.60	16	38.40
TDS (ppm)	320	240	280	320
Sulphate (ppm)	2.23	0.75	2.48	2.03
Chlorides (ppm)	19.43	36.94	29.19	31.03
Sodium (ppm)	55.6	70.25	60.25	59.01
Potassium (ppm)	3.0	2.0	2.0	2.0

## EFFECT OF ANALYSED PARAMETER ON LIVING ORGANISM AND PLANTS

The salinity of water, increase the pH which is affect soil & plant health. Hence the percentage agricultural yield is decreases. The hardness of water increases due to the presence of  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  ions, which affect the human excretory system. COD increases due to increase organic matter. Total Dissolved Solids effect on turbidance & color of water. The chloride increases the salinity & its effect on water holding capacity of soil. The leaching of sulphate in water by the use of sulphate fertilizers. Higher the percentage of Sulphate, affect the taste of water. High concentration of Sodium in water, peoples affected with certain disease like excretory system & digestive system. The less amount of potassium, affect the growth of plant, decreases the limpness of the seed, effect on formation of carbohydrates & fats in plant.

## IV. CONCLUSION

The hardness concentration varied from 488 to 868 mg/L. Chloride concentration oscillated from 19.43-36.94 mg/L. The concentration of Sodium ions in the study area is from 55.6 to 70.25 mg/L. Hence we conclude that all collected samples are found to be not potable for drinking purposes as well as for agricultural uses.

## SIGNIFICANCE AND APPLICATION OF THIS STUDY

1. Selection of sites for disposal of municipal solid waste should be done from the area having minimum water sources (Wells).
2. One should avoid digging the wells near to MSW dumping sites.
3. To avoid leaching, the dump sites should be subjected to soling and PCC treatment.

4. The solid waste is separated in cells, first cell contains decomposable materials, second cell contains slowly decomposable materials, & third cell contains non degradable materials. The decomposable material is used for the formation of manure & to avoid the leachate formation.

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