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ENVIRONMENTAL MONITORING OF SOLID HAZARDOUS WASTE POLLUTION

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ABSTRACT

The article is to discuss the methods for evaluating the quality of the environment available. The need Assess the quality of the insurer's what contaminant concentrations resulting environmental hazardous waste specific Site BE does not exceed acceptable levels, to protect public health and the ecosystem. But the study of Site monitoring of hazardous waste is to characterize the sound of pollution of air, soil and groundwater in sufficient detail to facilitate pouring Way Appropriate management of the site. Field studies involving the measurement of biological parameters physical, chemical and that basement control and transport ambient air contaminants at the site. An important factor in understanding and characterize the hydrological flows and local self Regional reported the frequency of sampling of groundwater and surface water. Detailed analysis of the soil, groundwater and air, to implement what is all parameters are in Analytics Prescribed limit.

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KEYWORDS: Heavy metal analysis, SOx, NOx, Solid Hazardous waste, air monitoring, soil and groundwater pollution monitoring.

INTRODUCTION

Hazardous Waste Management (HWM) is a very important issue and assumes importance globally. There is no good dump safe available India to eliminate hazardous waste (HW) until 1997. Much Some industries in India, especially on a large scale and in some clean medium scale processing and proper disposal structures. Treatment plant for the disposal of household waste as treatment, storage and disposal (TSDF) for the management of industries HWS generated is one option useful in such conditions. Small Guidelines issued by the Ministry of Environment and Forests under Hazardous Waste (Management and Handling) Rules issued in 1989 under the Environment (Protection) The Act of 1986 is available in India for selecting the best site for TSDF. Planning includes several HWM aspects of the detection and quantification of HW development and monitoring of TSDF. The purpose of the study site monitoring of hazardous waste to characterize the sound of the air, soil pollution and groundwater in sufficiently precise to facilitate proper management of the site. Location surveys involve measurement of physical, Chemical and biological parameters that control soil and the transport of contaminants in the air environment at a given site.

MATERIALS AND METHODS

Environmental monitoring:

Schedule and sampling Type:

The purpose of sampling were to collect a part small volume sufficient material to be comfortably transported and handled in the laboratory while which it is precisely the material currently championship. This implies, firstly, that the relative proportions of the the concentration of all relevant components must be Also in the sample relative to the material to be sampled, and secondly, that the sample should be manipulated in such a way that no significant change in the composition occurs before tests are run. The analysis is generally intended to reveal the composition of the samples at time the time or the sampling period is carried out. The device must be such that are avoided or at least minimized. Monitoring water and soil is to provide reliable and data usable requires resources of analysis and others are used the best advantage. The first step in planning monitoring was to decide which data are required and how is useful. The survey, the purpose of the study and changes anticipated are other points to consider.

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Analysis of soil and water;

The first step of the sampling program plan:

The choice of the most appropriate care required data. The selection of the proposed sampling site the relative position of the various water and, magnitude and importance. Perhaps by chance, it is also an important factor of pollution exhibition scheduled wins. Site location for the soil and groundwater Site selection must be based on the advice of and 'what can be negative or the opportunity is probably due to the operation of the landfill or within one kilometer. As a result, the four stopped I decided to collect points of soil sampling. Water and land samples are taken away, there is very distant from each other. Although only samples but you can never be recovered from water samples from where he became the only option available Or in any case, that is close to this structure is available on human settlement. So, the four lanes that are selected from human settlements as described below:

Site I: Near 2 km Area
Site II: Near 2 km Area
Site III: Borewell B1, B2, B3, B5, B6, B7
Site IV: Open dugwell near TSDF and near temple

Soil parameters analyzed & methodology applied

Parameters	Methods/Instruments
pH	Digital pH Analyser
Electrical Conductivity	Digital EC/TDS Analyser
Metals	Atomic Absorption Spectroscopy

Water parameter analyzed & methodology applied

Parameters	Methods/Instruments
pH	Digital pH Analyser
Electrical Conductivity	Digital EC/TDS Analyser
Total Dissolved Solids	Digital EC/TDS Analyser
Sulphate	APHA 4500SO_4^{--} Turbidimetric Method
Nitrate	APHA 4500-NO_3^-B UV Spectrophotometric Method
Alkalinity	APHA 2320B Titration Method
Hardness	APHA 2320C EDTA Titration method
Chloride	APHA 4500CI"B Argentometric method
Metals	Atomic Absorption Spectroscopy

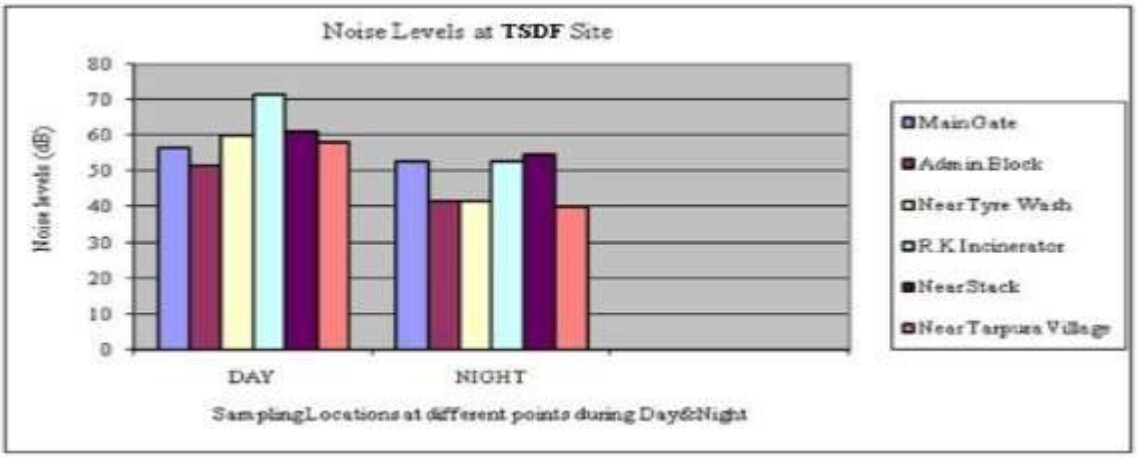
Sampling and analysis of ambient air quality sampling SOx and NOx

(a) 25 ml of the absorbent means and sampling is used in the bubblers doe that passes through a high-volume sampler
(b) The air flow rate is maintained at 1.5m3 / min

(c) After the sampling volume is the solution are added all the make-up to25 ml distilled in the same way as they had done, and the calibration curve.

The night the Sox and analysis procedure was applied in the West Method Geake Respiratory suspended particulate matter (RSPM) and suspended particulate matter (SPM) For the glass RSPM filter papers are used. Since these particles Small as the force is applied to the value of the centrifugal force and has not been able to be separated from the air, and in relation to the dry weight of the pre-sampler, in the book of one end of the filter. Pore size filter paper is to seek a change of air in the respiratory parameter essential ambient air. After the filter paper sample is taken care of, and was again placed in a hurdle weighted with dryers. The difference in weight between the initial and final paper of the filter to obtain the value of RSPM in ambient air. In the same way to apply a centrifugal force of the SPM, and therefore are those that are separated after collecting a barrier weighted with a bottle of a pre-cyclone it is placed within the SMP, where all gathered.

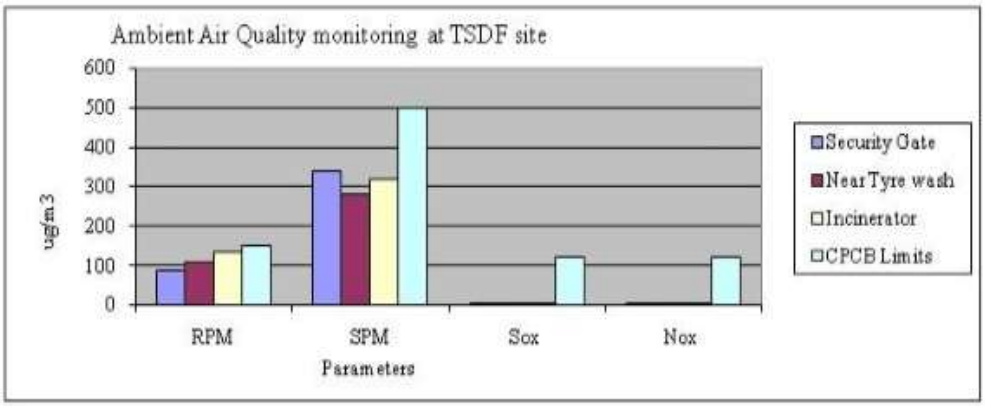
S.No.	Location	Day time Reading dB	Night time Reading dB	CPCB Limits dB (Industrial Area)
1.	Main Gate	53.7	51.4	
2.	Admin Block	41.7	38.9	
3.	Near Tyre Wash	52.0	41.2	
4.	Incinerator (R.K.)	70.1	50.0	Day Time: 75 Night Time: 70
5.	Near Stack	62.4	49.7	
6.	Near 2 km Area	56.3	40.2	



DAY AND NIGHT THE NOISE LEVEL OF THE VARIOUS LOCATIONS CLEARLY SHOWS THAT IT IS GRANTED DURING THE SELECTED LIMIT, AS PRESCRIBED CPCB . THE NOISE IS THE HIGHEST DEGREE OF WHICH WAS NEXT REDUCED TO ASHES, THAT WAS UNDER THE INSTALLATION.

B. Ambient air quality level of the site Ambient air quality monitoring

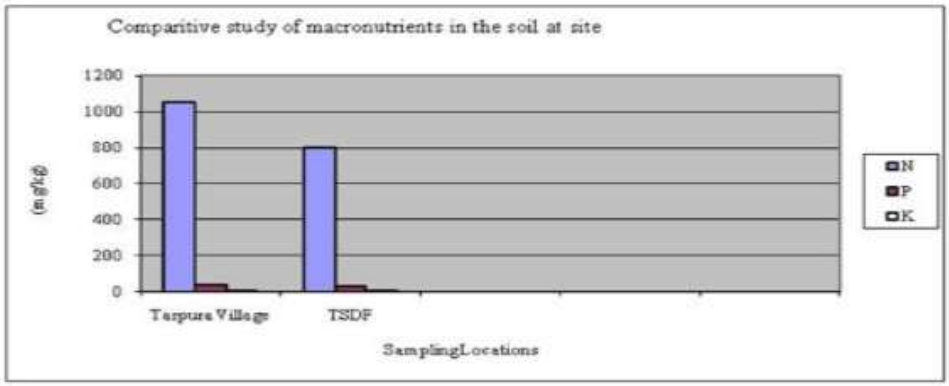
LOCATION	SPM	RSPM	SOX	NOX
Security gate	321	77.7	2.1	2.8
Tyre wash	264	97	3.8	3.2
Incinrator	382	144	3.9	2.6
CPCB LIMITS	500	150	120	120



THE RESULTS ALSO SHOW THAT LEVEL OF SPM, RSPM, NOX AND SOX ARE ALSO BELOW THE PERMISSIBLE LIMIT.

C. Soil quality level of the site Soil quality monitoring

PARAMETER	NEAR 2 KM AREA VILLAGE	NEAR 2 KM AREA
Electrical Conductivity	172	132.3
LOD	2.3	2.4
LOI	5.9	8.9
Cl (mg/kg)	13.2	112.0
Na	14.0	42.5
K	1.9	-
N	1038	-
P	37	-



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Heavy Metal Analysis of Soil

Location	Cu	Cr	Pb	Zn	Fe	Ni	Mn	Co
Behind TSDF	117	5.2	ND	248	10,000	63	877	48
Near Vill.	109	5.4	ND	234	72,000	61	932	31

UNIT = mg/kg

The only parameter studied showed that the high value of N in the soil and heavy metal Analysis also showed a very high concentration of iron is torn respective other metals .

D. Water quality level of the site Water quality monitoring

S.No.	Location	Parameters	Results	Drinking water limit
1.	Borewell 1	pH	7.2	6.5-8.5
		EC	372.0µmho/cm	NA
		TDS	236.8 mg/l	500mg/l
		T. Hardness	132.0 mg/l	300 mg/l
2.	Borewell 2	pH	7.1	6.5-8.5
		EC	486.6 µmho/cm	NA
		TDS	313.3 mg/l	500mg/l
		T. Hardness	84.0 mg/l	300 mg/l
3.	Borewell 3	pH	7.6	6.5-8.5
		EC	631.8 µmho/cm	NA
		TDS	406.3 mg/l	500mg/l
		T. Hardness	54.0 mg/l	300 mg/l
4.	Borewell 5	pH	6.9	6.5-8.5
		EC	447.9µmho/cm	NA
		TDS	293.0 mg/l	500mg/l
		T. Hardness	182.0 mg/l	300 mg/l
		pH	6.8	6.5-8.5

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		EC	594.0µmho/cm	NA
5.	Borewell 6			
		TDS	383.1 mg/l	500mg/l
		T. Hardness	190.0 mg/l	300 mg/l
		pH	7.2	6.5-8.5
		EC	486.0µmho/cm	NA
6.	Borewell 7			
		TDS	313.0 mg/l	500mg/l
		T. Hardness	169.8 mg/l	300 mg/l
		pH	7.5	6.5-8.5
		EC	522.0 µmho/cm	NA
7.	Open Dugwell (Behind TSDF)	TDS	334.0 mg/l	500mg/l
		T. Hardness	177.0 mg/l	300 mg/l
		pH	7.3	6.5-8.5
8.	Open Dugwell (Near Temple)	EC	782.0µmho/cm	NA
		TDS	502.0 mg/l	500mg/l
		T. Hardness	210.2 mg/l	300 mg/l

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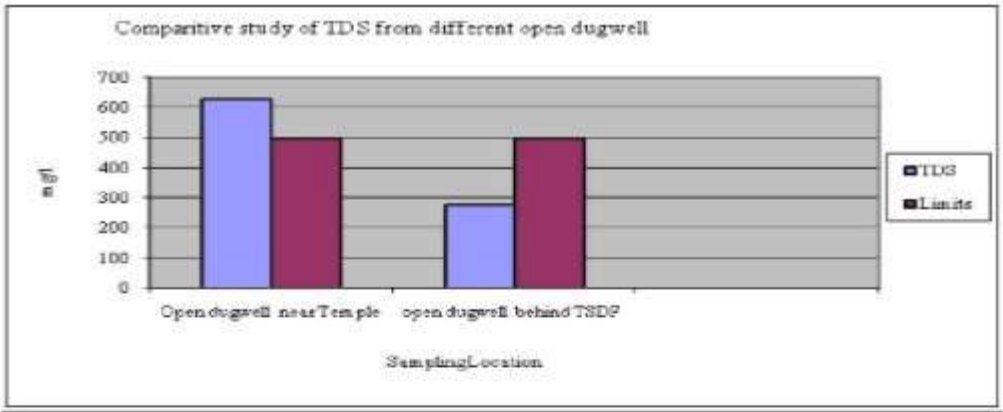

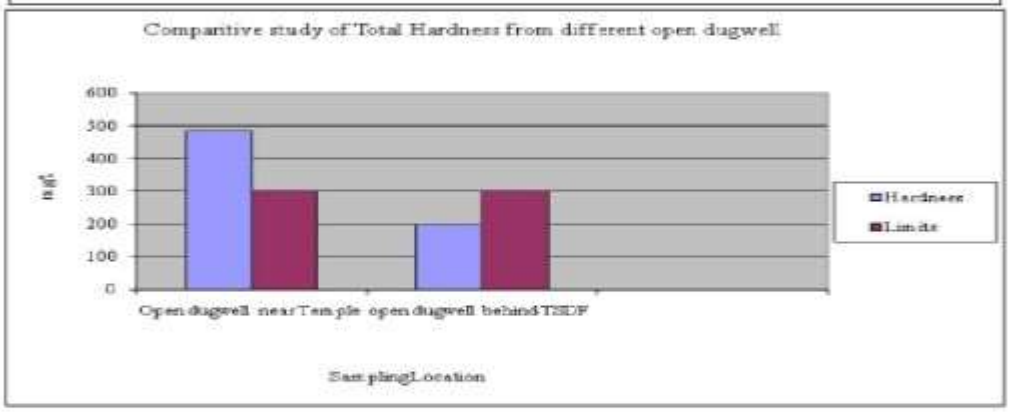

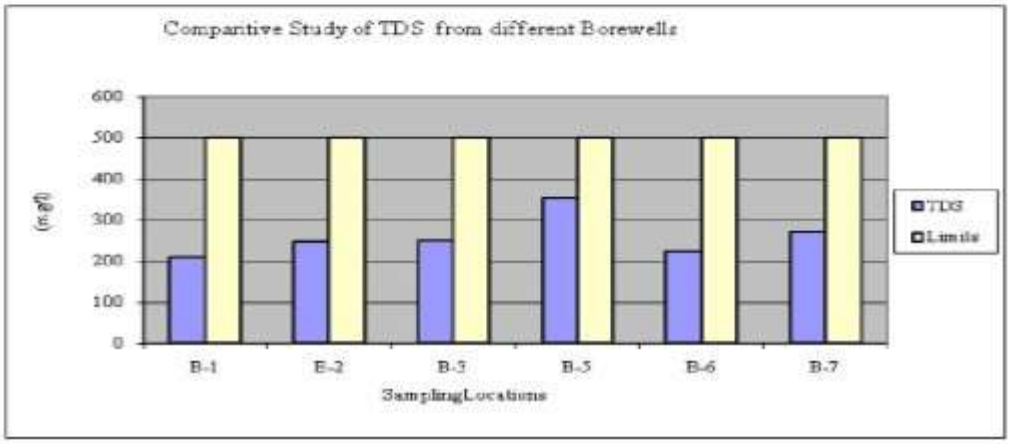

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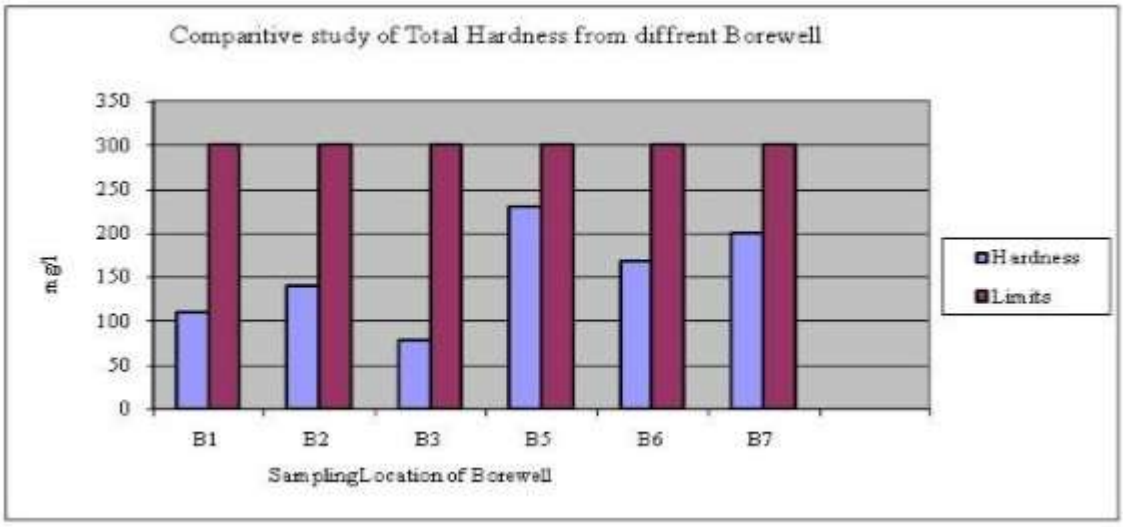

Heavy metals	Open dugwell behind TSDF	Open dugwell near temple	Drinking water limit
Cd (mg/l)	**Bdl**	Bdl	0.01
Pb (mg/l)	**Bdl**	Bdl	0.05
Cr^{6+} (mg/l)	**Bdl**	Bdl	0.05
Cu (mg/l)	**Bdl**	0.1	0.05
Fe (mg/l)	**0.4**	1.2	0.3
Mn(mg/l)	**0.1**	Bdl	0.1
Ni (mg/l)	**Bdl**	Bdl	-
Zn (mg/l)	**Bdl**	Bdl	5

Heavy metals	B-1	B-2	B-3	B-5	B-6	B-7
Cd (mg/l)	Bdl	Bdl	Bdl	Bdl	Bdl	Bdl
Pb (mg/l)	Bdl	Bdl	Bdl	Bdl	Bdl	Bdl
Cr^{6+} (mg/l)	Bdl	Bdl	Bdl	Bdl	Bdl	Bdl
Cu (mg/l)	Bdl	0.1	Bdl	Bdl	Bdl	Bdl
Fe (mg/l)	0.6	0.3	0.4	0.5	0.9	0.8
Mn(mg/l)	Bdl	0.1	Bdl	Bdl	Bdl	Bdl
Ni (mg/l)	Bdl	0.1	Bdl	Bdl	Bdl	Bdl
Zn (mg/l)	Bdl	Bdl	Bdl	Bdl	Bdl	Bdl

Several water quality parameters seven bore wells two dug wells shows that the allowable level under the limit

CONCLUSION

It should be remembered that this document does not address two key aspects related to ecological and remediation of hazardous waste, analytical methods to quantify the concentrations of pollutants in soil and groundwater and the microbiological characterization of contaminated sites. Tomorrow is very important for both of these areas deserve detailed paper capacity reclamation. An important element of understanding and characterizing the sampling frequency of the local groundwater and surface water hydrologic flow. Unfortunately, the sampling frequency is determined by the cost advantage is typically comprised between the examples of the things that often allow NIBH 1 large gaps, so that it can be cleansed of the issue of the seed, the removal of pollution on the trends and both the sense

of events to the crucial model for all. Another problem is the depth of the sample. The interpretation of field data is projected intervals can lead to errors due to complicate the discussion and interpretation of hydrological. From the analysis of air, water and earth only as a term of the individual terms of analytical processes.

REFERENCES

[1] Central Pollution Control Board, HAZWAMS / 11 / 1998-99, "Guidelines for the development of operational structure" Ministry of Environment and Forests, Government of India.
[2] Central Pollution Control Board, HAZWAMS / 17 / 2000-01, "Criteria for hazardous waste landfills" Ministry of Environment and Forests, Government of India.
[3] Central Pollution Board, HAZWAMS / 20 / 2002-03, "Guidelines for the transport of hazardous waste" Ministry of Environment and Forest, Government of India, New Delhi.
[4] Central Pollution Control Board, HAZWAMS / 20 / 2002-03, 'Manual for the Design, Construction and Quality Control of ticking, for hazardous waste landfills', Ministry of Environment and Forests, Government of India, New Delhi .
[5] The data M, Parida BP, BK Guha, Srekrishnhnam TR, 1999 'Managing industrial solid waste and Land fill practice', Naroha Publishing House, New Delhi.
[6] United Nation Environmental Program, 1985 'treatment and disposal method for chemical waste', International Register for Potentially Toxic Chemicals, Geneva.
[7] www.cpcb.nic.in
[8] www.envfor.nic.in
[9] www.fao.org
[10] Ioanna Paraskaki and Mihalis Lazaridis, quantification of air emissions from landfills: a case study of the landfill in Ano Liosia in Athens Metro Waste Manag Res (2005) 23 (3): 199-208.
[11] Thomas T. Shen, Air pollution assessment of the toxic emissions from the lagoons of hazardous waste and landfills, international environment, Volume 11, Issue 1, 1985, pages 71-76.
[12] G. Fred Lee Jones and Anne-Lee, Evaluation of surface water quality impacts of hazardous chemical sites, reclamation officer, Volume 9, Issue 2, pages 87- 113, Spring 1999.