



PHYSIO-CHEMICAL STUDY OF WATER QUALITY OF COAL FIELD AREA OF BHURKUNDA, RAMGARH, JHARKHAND

BY

Dr. K. Swarnim* Mrs Seema Singh Dr. Nit Nayana*****

* HOD Zoology, Ranchi Women's Collage, Ranchi

** Research scholar Sona Devi University Ghatshils, Jamshedpur. *** HOD Bio-Technotopy Sona Devi
University Ghatshils Jamshedpur

ABSTRACT

Water is the fundamental and essential Component for all forms of life from plants to man. The need of physio-chemical analysis of water is very vital and all sources of water must be known before Consumption. The mining industry has been utilizing water Carelessly without anticipating the negative impacts, it is having on the ecological and biodiversity of the region. This research work was carried out to find the effect, coal mining activities were having on the water quality of the mines. The physio-chemical parameters that were determined for this purpose are temperature, P^H , Conductivity, TDS, DO, BOD, turbidity, Phenolphthalein, acidity, sulphate, phosphates, etc.

Key Words: Physio chemical parameter, coal mining and water quality.

INTRODUCTION:

Water is a most abundant physical substance and transparent liquid on earth. Water is principal needs and foundation of all form of life. Water is an essential natural resource for life of human beings, plants and animals on water planet. All processes of life are directly or indirectly connected to water, therefore human beings cannot survive

much longer without water as water plays a central and Critical role for every Cell and organ system on

human body to function properly. Water is responsible for every activity in human body. water is universal solvent due to its polar nature It dissolves a large number of different Chemical Substances, with physical properties, chemical properties and biological properties of Water. The biological and chemical character of ground water is acceptable for most uses but the quality of ground water is changed as a result of man's activities. In Context of Jharkhand and specially coalfield area of Bhurkunda, Ramgarh, water resource improvement has been needed.¹⁻¹⁰

Material and methods

The materials and methods from Sample Collection to analysis of water has adopted the Standard analytical procedure and methods. The water Samples of various location of coalfield area of Bhurkunda were analyzed for determination of degree of pollution as physio-chemical parameters like pH, EC, TDS, TH, D.O, BOD, turbidity, temperature, sulphate, phosphate & Phenolphthalein acidity etc.

RESULTS AND DISCUSSION

It is important to analyze both physical and chemical parameters of the water to ensure that the water is well within the standards for safe Consumption as well to preserve the surrounding ecosystem from degradation from the contaminants. The results of the same physio-chemical Parameter at different sample site one as:

Results of some physical parameter of the samples.

sample	TDS (g/l)	Turbidity (NTU)	conductivity (ms/cu)	Temperature
sample 1	0.090	45.8	0.145	23.15
sample 2	0.275	23.9	0.452	23.38
sample 3	0.321	31.20	0.256	24.40
sample 4	0.489	08.10	0.759	31.10
sample 5	0.658	10.70	1.08	31.35
sample 6	0.422	22.80	0.658	31.38

CHART TITLE

TDS (g/l) Turbidity (NTU) conductivity (ms/cu) Temperature

45.8

31.2
23.1⁵ 23.3⁸ 24.4 23.9

31.1¹ 31.3⁵ 8.110.7

31.38

22.8

0.14⁵ 0.45² 0.25⁶ 0.75⁹ 1.0⁸ 0.65⁸

0.0⁹ 0.27⁵ 0.32¹ 0.48⁹ 0.65⁸ 0.422

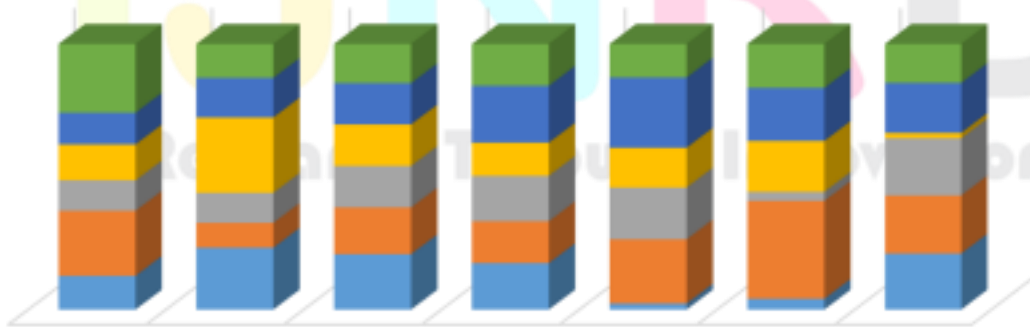
SAMPLE1 SAMPLE2 SAMPLE3 SAMPLE4 SAMPLE5 SAMPLE6

-05-

Result Some Chemical parameter of Sample.

sample	sulphate (mg/L)	BOD	DO (mg/L)	P ^H	Phenolphthal ein acidity (PPM)	T _H (PPM)	PO ₄ ³⁻ (PPM)
sample 1	92.88	2.22	10.50	5.08	2	102	3.20
sample 2	178.26	0.89	8.86	4.58	21	923	3.32
sample 3	83.62	1.08	7.89	4.98	17	85.86	3.27
sample 4	98.58	2.70	7.85	3.62	13	478.20	0.30
sample 5	87.20	1.42	7.83	6.23	23	500.20	2.86
sample 6	188.78	1.22	7.44	4.58	11	415.29	2.23

CHART TITLE



sample 1 sample 2 sample 3 sample 4 sample 5 sample 6

SULPHATE (MG/L)

BODDO (MG/L)
PH (PPM) THP304

The mining industry has been expanding at a rapid rate keeping in mind the demand of the present day. In mining industry, bigger, stronger and faster machines and equipment have been invented to keep pace with the demand. Technological developments have been taking place and with it, concerns about the future of the planet. This work has flagged greater safety and environmental protection measures to check the pollution caused by the mining industry.

CONCLUSION

It clearly shows that coal mining has a certain impact on the water quality. The low pH values at a one pit of the Bhurkunda show an acidic character in nature and concentrations of other parameters accordingly. Since awareness and restriction with regard to water quality should be placed to the regulatory authorities, the water quality of the coal field Bhurkunda area has the potentiality to improve and restore itself with due course of time.

ACKNOWLEDGEMENT

Authors are grateful to Principal Dr. Supriya Medam and in charge Science block -Cum-HOD Zoology Ranchi Women's College Ranchi to provide the necessary facilities to carry out this research work. Authors express their deep sense of gratitude to Hon'ble Chancellor Sri Prabhakar Kr. Singh and Vice - Chancellor Dr. J.P. Mishra for the support at University level.

References

1. Scottish Development Department, Towards cleaner water Edinburg : HMSO, Report of a River pollution survey of Scotland 1975.
2. Stigter TV, Ribeiro L and Carvalho Dill A M M, application of a ground water quality idea as an assessment and communication tool in agro environ. Policies - Two Portuguesecase studies, J. of Hydrology, 327, 578-591, 2006 a.
3. Adnan S and Iqbal J, spatial Analysis of the Ground water quality in the Peshawar District, Pakistan, Procedia Engineering, 70, 14-22, 2014
4. Ramesh K and Dharmaraj E, Rj BJR. physico-chemicalcharacteristics of ground water of Manachanallur Block Tichy, Tamilnadu, India.
5. Kha TA Trace elements in the Drinking water and their possible Healtheffect in Aligarh City, India". J. of water Resource and protection, 3, 522-530, 2011.
6. Subba Rao N, Assessment of ground water conditions in parts of Guntur district, Andhra Pradesh, India. UGC Miner Research Project Report, 1995.
7. Patel P and Bhatt S.A Fluoride Contamination in groundwater of Patan District, Gujrat, India, International J of Engineering Studies, 1(2), 171-172
8. Bouwer H, Integrated water management 2010 :Emerging issues and challenges, agricultural water management 45, 2000.
9. Mangukiya R, Bhattacharya T, and Chakraborty S, Quality characterization of ground water using water quality India in Surat city Gujrat India, International Research J, of Environment Sciences, 1(40), 14-23, 2012
10. Mariappan V, Prabakaran P, Rajan MR and Ravichahandran AD, A systematic study of water quality index among the physic chemical characteristic of ground water in and around Thanjavur Town, IJEP, 25, 551-555, 2005.

International Research Journal

IJNRD

Research Through Innovation