QUALITY ANALYSIS OF WATER OF TWO DISTRICTS (MURSHIDABAD AND BIRBHUM) OF WEST BENGAL

Ishani Roy Chowdhury(*[1])

CMJ UNIVERSITY

SHILLONG

*[1] Research Scholar – Senior Chemistry Teacher , Welland Gouldsmith School,Kolkata

Ishani.roychowdhury@gmail.com

ABSTRACT

Water is a liquid at ambient conditions and it often co-exists on Earth with its solid state ice & gaseous state water vapors or steam. Water covers 70.9% of the earth's surface and is vital for all forms of life. Water on earth moves continually through a cycle of evaporation or transpiration, precipitation and runoff, ultimately reaching the sea. Water is an essential requisite for life for human beings, animals or plants. The present research work is to analyze the health of the water bodies of the two districts of West Bengal (Murshidabad and Birbhum) in order to make the people aware that consumption of polluted water may cause morbidity and mortality not only to them but to the ecosystem as a whole.

KEY WORDS :

Ambient condition, evaporation, transpiration, precipitation, consumption, morbidity, mortality.

The research work is based on the Quality Analysis of water of two districts of West Bengal(Murshidabad and Birbhum) and to find the ways for the various usable purposes. Natural ground water bodies like wells,tubewells etc are subjected to pollution comprising of organic and inorganic constituents. Therefore determination of ground water quality along with agricultural and industrial waste water is important from the view to observe the suitability of water for a particular use[(1)] . The present research work is however an attempt to estimate the water pollutants qualitatively and quantitatively to get a better insight of the various water sources. The samples of water are collected from five sources,viz pond, river, tubewell, agricultural fields and Industrial wastes from the two districts of Murshidabad and Birbhum and analyzed following APHA et al[(2).]

METHODS

Water samples were collected from the respective spots of the two districts Murshidabad and Birbhum during the post-monsoon period between 0800 to 1200 hours. The estimation of pH, total hardness BOD,COD, suspended solids, heavy metals along with the bacteriological organisms were analyzed in the laboratory after collecting the samples[(3)(4)].

RESULTS AND DISCUSSIONS :

The physical and chemical parameters of the five water samples collected from different sources from the two districts Murshidabad and Birbhum are given in Table 1 and 2 respectively. The values of pH, total hardness, suspended solids and COD were below the IS permissible levels indicating that the quality of water from the above mentioned sources were within the safe standards. However, the investigation showed high values of BOD especially in the industrial waste water.

MURSHIDABAD DISTRICT (TABLE 1)

SOURCES	BOD mg/lit	COD mg/lit	pH	HARDNESS ($CaCO_3$) mg/lit	SUSPENDED PARTICLES
NORMAL VALUE	30	250	6.5-8.5	300	500
POND WATER	4.0	18	7.4	226	42
RIVER WATER	5.0	6.0	7.7	147	27
GROUND WATER	3.0	5.0	8.0	408	18
AGRICULTURAL WATER	12	62	7.5	139	22
INDUSTRIAL WASTE WATER	42	101	6.5	330	50

BIRBHUM DISTRICT (TABLE – 2)

SOURCES	BOD mg/lit	COD mg/lit	pH	HARDNESS ($CaCO_3$) mg/lit	SUSPENDED PARTICLES
NORMAL VALUE	30	250	6.5-8.5	300	500
POND WATER	8.0	18	7.3	71	51
RIVER WATER	5.0	8.8	6.8	131	112
GROUND WATER	3.0	5.0	7.3	90	10
AGRICULATURE WATER	10	44	8.4	83	22
INDUSTRIAL WASTE WATER	40	123	2.7	485	91

The bacteriological investigation showed a positive test of coli form bacteria[5] .The results are shown in Table-3,which indicates that the ground water and pond water of the two districts are contaminated with pathogenic bacteria which may cause serious human illness.

MICRO-ORGANISMS FOUND IN GROUND WATER AND POND WATER

(Table-3)

PARAMETERS (IN NUMBER)	MURSHIDABAD	BIRBHUM
1. Coliform organism per 100 ml.	2100 - 3200	2400
2. Faecal Coliform per 100 ml	130	160
3. E. Coli per 100 ml.	110	105

The heavy metals were detected by Atomic Absorption Spectrophotometric method [6] and the data from Table-4 indicates the presence of a higher percentage of Arsenic in ground water collected from the two districts. Dipankar Chakraborty head of the department of Environmental Studies, Jadavpur University(WB) told in a seminar recently that arsenic poisoning has assumed dangerous proportions in West Bengal.In 1988,only seven villages were affected but now, the number has risen to 840 villages this year,he said. He also said that 2 million people were drinking water infected by Arsenic in eight districts of West Bengal including Murshidabad and Birbhum.

HEAVY METALS IN GROUND WATER (Table-4)

METALS	NORMAL VALUE	MURSHIDABAD	BIRBHUM
Iron (Fe)	3.0	0.2	0.2
Cadmium (Cd)	2.0	0.021	0.019
Arsenic (As)	0.001-0.002	0.008	0.004
Lead (Pb)	1.0	0.05	0.04
Zinc (Zn)	0.1	0.15	0.83
Chromium (Cr)	0.05	0.05	0.06

CONCLUSIIVE REMARKS

It may thus be stated that water pollution has become a major global problem which require on going evaluation and revision of water resource policy at all levels. It has been suggested that it is the leading worldwide cause of deaths and diseases.[7]

Therefore it may be remarked at this level of the research work that water quality monitoring is an important exercise for the evaluation of the nature and extent of various contaminants. The present research work aims at developing a long range strategic plans to meet the future needs for the community growth and expanding the purpose solving efforts in respect of the usable water sources.

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7. Pink,Daniel H(April 9,2006)"Investing in Tomorrow's Liquid Gold"

LEGEND

Fig 1 : Comparative study of the various parameters of districts of Murshidabad and Birbhum.

Fig.2: Comparative study of heavy metals presents in deep tube well water of the two districts of Murshidabad and Birbhum.

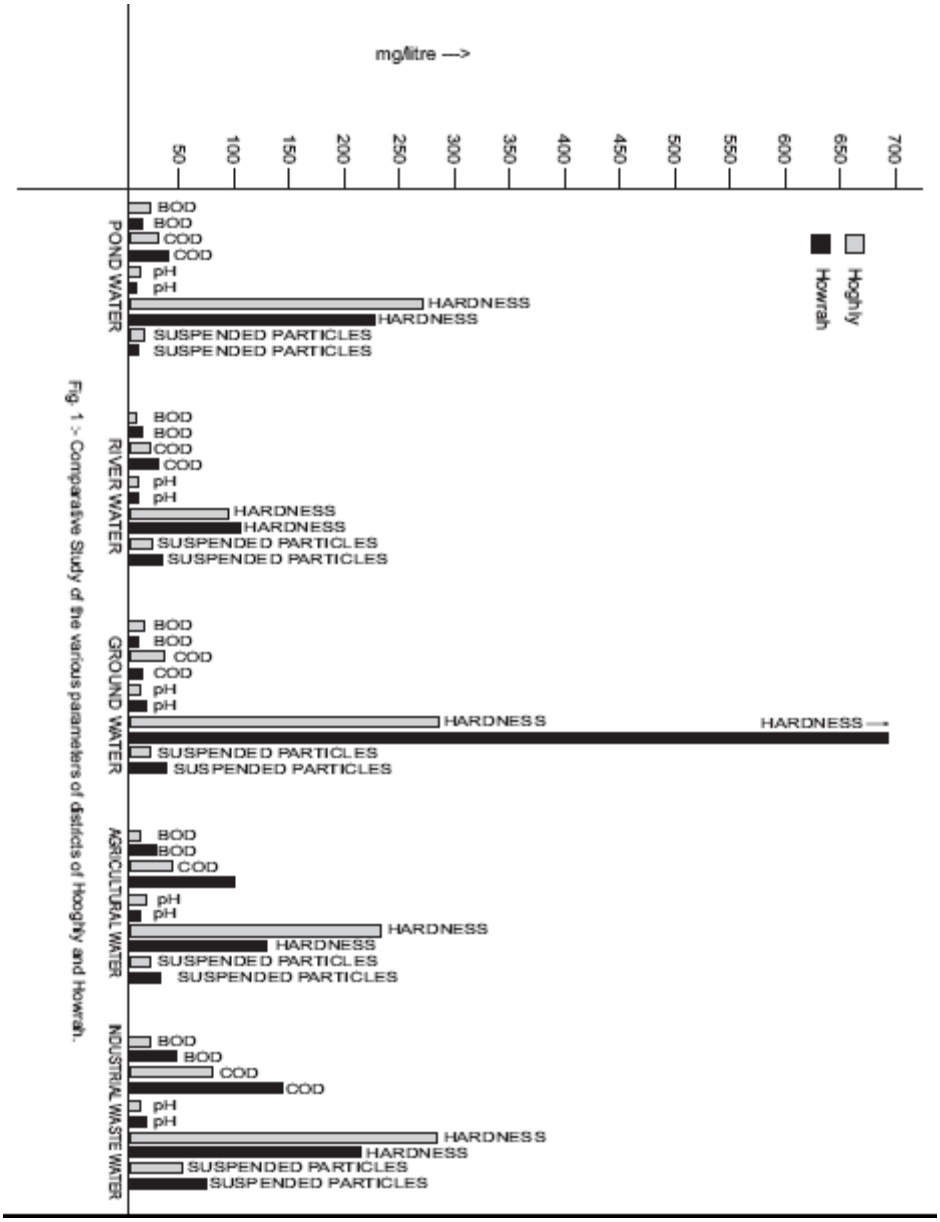

Fig. 1 :- Comparative Study of the various parameters of districts of Hooghly and Howrah.

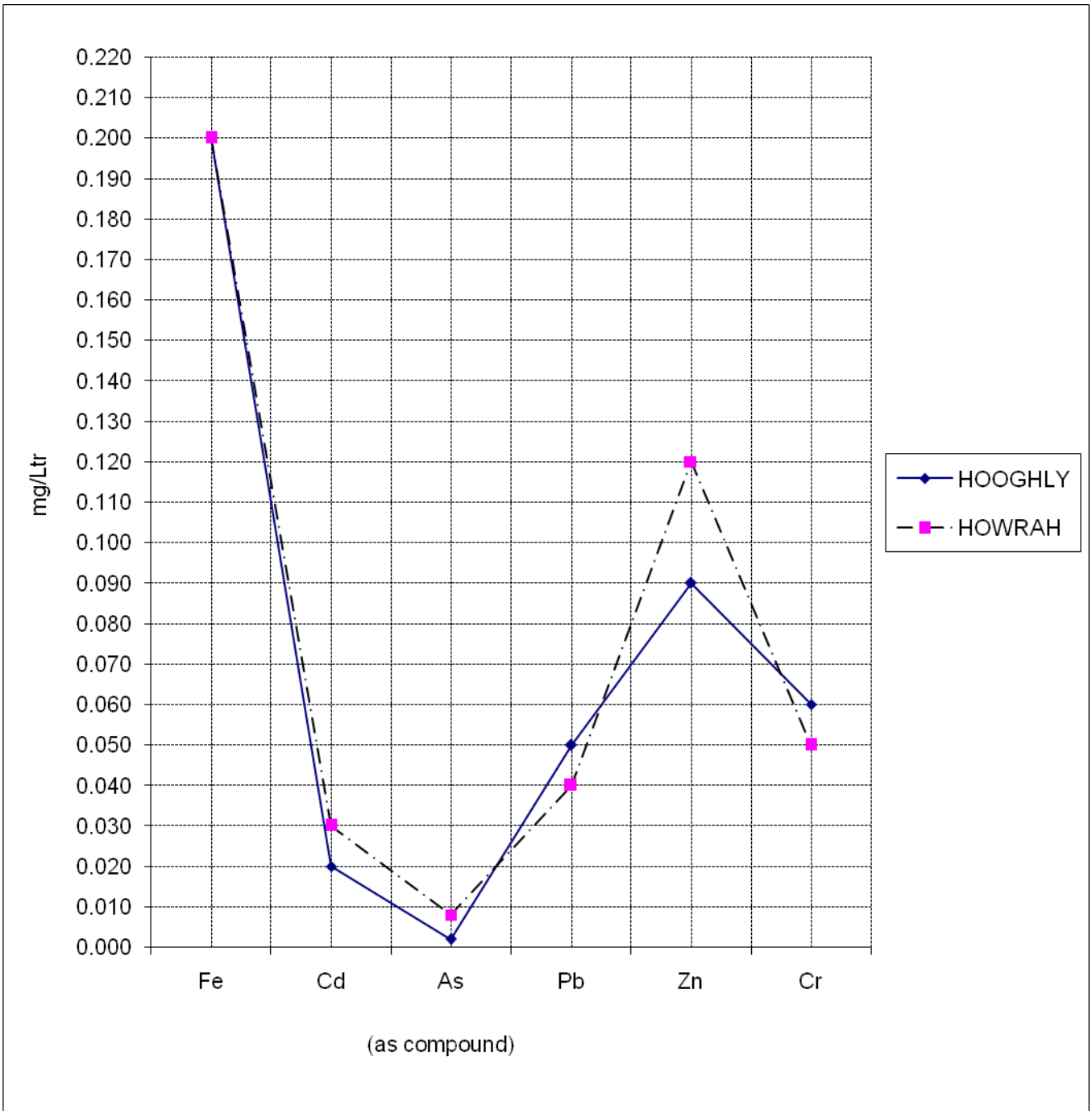

FIG – 2 : COMPARATIVE STUDY OF HEAVY METALS PRESENT IN DEEP TUBEWELL WATER OF THE TWO DISTRICTS , HOOGHLY & HOWRAH.