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RESEARCH ARTICLE

Analysis of Ambadi Dam Water and its Possible Side Effects on their Peoples of Kannad Tq. Kannad Dist. Aurangabad State, Maharashtra Nation, India

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Abstract

According to Health Significance as suggested and explained by World Health Organization Guidelines (WHO) for Drinking-water Quality; WHO standards we has been compared with the AMBADI dam water sample results and the diseases caused by drinking water for the peoples of kannad city. The dam water samples were taken from two different sides of dam water. Such results were compared with WHO standards, pathri village drinking borewell water & lawhali-takli dam water tq. kannad dist.- Aurangabad Maharashtra. Some physical and chemical parameters were studied as follows; pH, hardness of water, Th, TA, TDS, EC, alkalinity, temperature, DO & amount of cadmium, chlorine, Mg, Zinc etc was studied. The dam water was disturbed, bad smelled and diluted by some peoples situated near to dam. According to TDS, EC, pH these parameters values found to be high in comparison with WHO standards permissible limits. The polluted dam water causes waterborne diseases like diarrhoea, cholera etc. the dam water should not allow the peoples to pollute and provide high quality filtration plants by Municipal Corporation. Some bacteria we found such bacteria Salmonella, Shigella, and Vibrio were found in contaminated dam water.

Keywords: Chemical and Physical Parameters; Ambadi dam water sample of Kanad city & WHO Standards

Introduction

The chemical activities of certain strains of yeasts provide us with beer and bread. As well, the growth of some bacteria in contaminated water can help digest the poisons from the water. The project was based on testing the quality of water. Three different samples were collected from 'Kantajhar Basti' situated behind the campus of NIT Rourkela from three different tube wells at two different times of the year. The first set of samples was collected after the rainy season in the month of September, 2013. And the second set was collected in April, 2014 [1-4]. Water-quality data were collected and analysed by the U.S. Geological Survey and ABB Environmental Services, Inc., in 1993-94 Ground water in the Ashumet Valley, Cape Cod, Massachusetts, has been contaminated by two sources on the Massachusetts Military Reservation (MMR) -a sewage-treatment plant and a former fire-training area [5-7]. The MMR sewage-treatment plant discharged treated sewage to rapid-infiltration beds near the southern boundary of the reservation from 1936 to 1995 [8]. The detailed study of this dam water shows that it has mesotropic water revolutions. According to the international standards and world health organization the typical values we found matches near about. Total dissolved solids, Total solids, Transparencies of water, Total suspended solids, potentiometric and conductivity all these parameters passes the quality tests for drinking water for human health [9]. Ground water is generally considered least polluted compared to other inland water resources, but studies indicate that ground water is not absolutely free from pollution though it is likely to be free from suspended solids. The major problem with the ground water is that once contaminated, it is difficult to restore its quality. Hence there is a need and concern for the protection and management of ground water quality. It is well known that no straight forward reasons can be advanced for the deterioration of water quality, as it is dependent on several water quality parameters [10,11]. Their presence of strong correlations among different parameters and a combined effect of their inter-relatedness indicate the water quality. Ground water quality in the industrial areas is determined by measuring the concentration of some physico-chemical parameters and comparing them with drinking water standards [12]. There are a variety of trace elements present in virtually all potable water, some of which play a role in metabolism. Major ions in drinking water are correlated with palatable and unpalatable mineralization that affects the quality of drinking water (WHO, 2006) [13]. SO_4^{2-} makes

water taste unpalatable by decreasing the concentration of Ca^{2+}, which is essential for good tasting water. Elements such as Co, Cr, Fe, Mn, Mo, Ni, Se, Sn, V and Zn are essential for growth [14]. The recommended dietary amounts for Mg^{2+} are 6 mg/kg per day, but excess Mg^{2+} makes water taste bitter [15-21]. The diffrentiative water samples were collected from two different places of bore well water in pathri village. These water samples were analyzed in the laboratory in the year of 2014-2015 as we have analyzed these parameters are as follows, pH, Iron, Chloride, Turbidity, Total hardness and Total alkalinity [22]. The article gives us detailed information of chemical parameters of Shivna lawhali-takli (medium project) dam water. In this article we are looking forward for such a inherent studies such of chemical parameters of temperature, dissolved oxygen, calcium, sulphate, chloride, ferrous, cobalt, nickel and phosphate. All these chemical parameters were observed in the seasons of winter, summer and monsoon during the year of 2014-2015 [23].

Materials and Methods

Preparation of water samples

The samples were collected in polythene sample bottles of capacity one litre in the month early in the morning and evening time. According to dam water sites the desired samples were selected from door sides of dam and from the walls of dam water. Samples were collected from approximately about 30-35 cm below the surface of stagned water.

Study of Area & Sampling

Estimation of such area and gathering of reports of kannad Tq. is situated in medium hot & humid environment with 60-70% rainfall. The mean daily temperature found to be 32 °C. The ground water found to be contaminated due to rural peoples. According to improvement of water quality and highlighted diseases we have collected samples from same dame water but from three different location sites. The water samples taken from every selected study area analysed in the well-known regional laboratory. The main purpose of analysis was that to discover uncommon physical and chemical parameters of doubtful water. The desired samples were collected from 5-8 feet depth of water in three different polythene bottles from three different sites of the ambadi dam water. According to WHO parameter standards such results were compared and detailed discussed. The waterborne diseases were discussed through the water quality, turbidity, the peoples use dam as wash area for vehicles, clothes etc. so the whole water causes different types of diseases.

According to Electrical conductivity, pH, Temperature, total dissolved solids etc. were measured on potentiometer, conductivity meter which was calibrated. Such samples were kept in proper conditions.

The investigation of Nickel, Sodium, Ferrous, Manganese, Chromium, Calcium and Lead were carried out by using Flame Atomic Absorption Spectrophotometer. Physical and chemical parameters were analysed by recording average values. Water having its own colour i.e. a colourless liquid but Colours in ground waters can occur due to decomposition of organic matter and leakage through sewage. According to taste of water many odours and tastes may be found in water. The taste of water is commonly found to be sweetish, light and brackish the reason behind this is that the number of factors is responsible organic matter, living organisms, iron, industrial waste and rural people's illegal use, etc. The obtained samples were collected on a monthly basis for a period of three month (January 2015 to April 2015).

Water Quality Analysis

According to the water quality of physical & chemical parameters were investigated using standard analytical methods [1,24]. The temperature, pH and dissolved oxygen were searched on site using HQ40d multimeter, turbidity was determined by using turbidity meter. Standard laboratory methods as described by the APHA (1998) for the examination of water samples was employed for the analysis of total solids, total suspended solids, total dissolved solids, calcium, magnesium and chlorides. Suphate (SO_4^{2-}) was determined using Nephelometric turbidity meter [25-27]. All chemicals were purchased of high quality and an analytical grade. The contamination of chemicals and water is avoided to observe clear and neat results.

Results and Discussion

Such permissible values of WHO standards shows that the observed values of Ambadi Dam water sides 1 and 2 of Dissolved oxygen, calcium, magnesium, chlorine, sulphur, total hardness, total alkalinity, TDS, pH & EC crossing the permissible limit of WHO standards. In case of comparison with Pathri village borewell drinking water ranges of chlorine, TH, TA, TDS the values of Ambadi dam water side 1 and 2 found less (Table 1). Also here we may easily observe the values of Lawhali-takli dam water od DO, Calcium & Chlorine found to be comparatively less while the values of TA, TDS, pH found to be more. In case of chemical parameters of calcium, lead chlorine, sulphur, copper and zinc found in observable range.

S. No.	Physico-chemical parameters	Ambadi dam side-1	Ambadi dam side-2	Pathri village bore well water	Lawhali-TakliDam Site	WHO standards
1	DO (mg/L)	5.89±0.09a	5.91±0.08a	----------	3.25±1.27	5.0-7.0
2	Ca^{2+} (mg/L)	121.01±2.00b	111.77±2.08b	----------	09.85±3.42	100
3	Mg^{2+} (mg/L)	21.11±0.37b	21.76±0.45b	----------	----------	120
4	Cl- (mg/L)	38.12±0.46b	38.96±0.56b	416	38.84±9.12	250
5	SO_4^{2-} (mg/L)	381.02±0.66b	382.99±0.78b	----------	----------	250
6	TH (mg/L)	410.16±1.22b	410.78±0.99b	416.1	==========	300
7	TA (mg/L)	126.14±3.10b	122.76±3.36b	413	267.26±9.88a	120
8	TDS (mg/L)	685.10±12.01b	687.16±12.20b	1050	1144.78±23.79a	500
9	pH	7.02±0.10b	7.13±0.09b	7.2	8.8 to 9.36	6.5-8.5
10	EC (µS/cm)	889.02±12.04c	887.11±13.00c	----------	366 to 474	750
11	T (°C)	16.12±0.45b	17.15±0.48b	----------	29.870 C	<40
12	Cadmium	0.009	0.013	----------	=======	----------
13	Chromiun	0.011	0.018	----------	========	----------
14	Lead	0.19	0.23	----------	--=======	----------
15	Copper	0.044	0.038	----------	======	----------
16	Zinc	0.211	0.201	----------	========	----------

Table 1: Physical and chemical parameters of AMBADI Dam water samples and results were compared with WHO standards, Lawhali-Takli Dam water parameters & pathri village borewell water

DO: The process of oxygenation was due to supplementation of water from photosynthesis of plants. Such a processes maintains there metabolic process of aquatic organisms and maintain aquatic life. The maximum difference dissolved oxygen was seen in the range between (5.91±0.08a mg/lit) in the season of winter and minimum dissolved oxygen was observed in the range between (4.68±0.16 mg/lit) in the season of winter days.

Temperature: The maximum temperatures were recorded (35 °C) during summer and minimum Value was recorded (18 °C) during winter and in monsoon the temperature was (26 °C) recorded. Dissolved Oxygen

Chloride: The amount of Chloride was found under the ground level of dam water also some salts were found in stagned water such as amount of NaCl. The maximum amount of Chloride was observed in the range between (32.04±7.10mg/lit) in the season of summer and minimum Chloride was observed in the range between (23.78±4.24mg/lit) in the season of summer days.

Chromium: Generally chromium is found in ground level of water very rarely it is transition metal. The maximum amount of Chromium was observed in the range between (0.018) in the season of monsoon and minimum Chromium was observed in the range between (0.011) in the season of winter days.

According to graphical approach the obtained values of dam sides shows vibrational lines; it means that the observed valus of ambadi dam sides 1, 2, pathri village borewell water and lawhali-takli dam water was found to be crossing the permissible limits of WHO (Figure 1). Somewhere we may observe that the polluted water can causes many types of diseases. The chemical parameters cadmium, lead, chromium shows it's amount of presence in water [28-36].

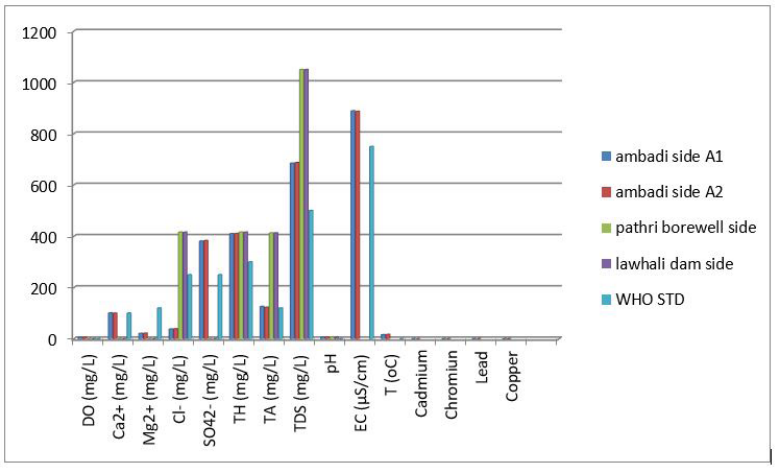

Figure 1: Graphical representation of comparative analysis of Ambadi dam samples, Pathri village borewell samples, lawhali-takli dam samples & WHO standards

Conclusion

Above comparative study of different water samples shows bacterial infection & pollution caused by population and pollution of rural peoples. It causes different types of diseases such as, malaria, colleara, diaria, skin infections etc. such comparative study shows inherent path towards analytical chemistry research and development. The dam water is not as safe as WHO standards to drink for the peoples of city. So the health problems must be occurring for the peoples of the city. The comparative study gives more analysis methods should develop in future for polluted and contaminated water.

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