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Research Article

Assessment of Water Quality From Salim Ali Lake Aurangabad (MS) India

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Abstract

Human beings are also facing the health impacts due to increased pollution. Environmental pollution has reached to such a stage that biological species are struggling for its existence. None of the spheres of earth remain untouched by pollution. Be it hydrosphere, lithosphere or atmosphere, each one is experiencing abnormal levels of pollution. Atmosphere is polluted the most. Major sources of atmospheric pollution are industrial emissions, vehicles, construction activities, mining, dust particles and other anthropogenic activities. With advancement in science and technology, human population has also increased dramatically. The present work has been carried out to create knowledge about quality and potability of the water From Salim Ali Lake Aurangabad. The parameters like pH, TDS, TH, Turbidity, Iron , fluoride, chloride, Sodium, Magnesium, Potassium, Sulphate and Nitrate, Calcium etc. were determined to evaluate the quality of water. The results were compared with the ISI and WHO.

INTRODUCTION

The water environment can generally be characterized as a dilute, aqueous solution, containing a large variety of organic and inorganic chemical species, dissolved and in suspension, and including a variety of plant and animal life. Knowledge of the qualitative and quantitative composition of water is the first step to reveal the nature of the particular environmental problem. One of the most important environmental areas is the quality of life-giving water (Sudhir Dahiya and Amarjeet Kaur, 1999;Tahir MA et al., 2008).

Now a day lakes are degraded by both natural and anthropogenic activities, which deteriorate their quality, and push them to the bank of extinction. In this process of unplanned human developmental activities initiated the need of suitable conservation strategies. Normally, lakes perform the functions directly related to their physical, chemical and biological integrity to decide quality status of water (Abdul Jameel and Sirajudeen, 2006; Ayibatele NB, 1992)

The present piece of research work is initiated on pollution status at Salim Ali Lake by interference and increase in the population of phytoplankton and microbe (ICMR, 1975; Khan and Khan, 1985; Manivaskam, 2005) Salim Ali Lake is popularly known as Salim Ali Talab or Abari Houd and located near Delhi Gate Aurangabad. It is situated in the northern part of the city. During the Mughal period it was known as Khiziri Talab. Later on it has been renamed after the great ornithologist, naturalist Salim Ali and also known as birdman of India (Raja, Lydia Sharmila, 2002).

Water is an integral part of life on this planet. Water have been studied and managed as separate resources, although they are interrelated. Surface water seeps through the soil and becomes groundwater. Conversely, groundwater can also feed surface water sources. Surface water or groundwater, can contain a range of contaminants

that may make the water unsafe to drink or aesthetically unacceptable (e g, bad taste, odour or appearance). Such contaminants include: particles, microbiological contaminants, naturally occurring chemical substances and chemical substances derived from human activities. Treatment for these contaminants is particularly important for surface waters and shallow groundwater that are effect on the human health. To identify the safe drinking water it is necessary to study the physico chemical parameter and by comparing the parameter with the standard values (Mishra, Pradip Tripathi, 2002).

MATERIALS AND METHODS

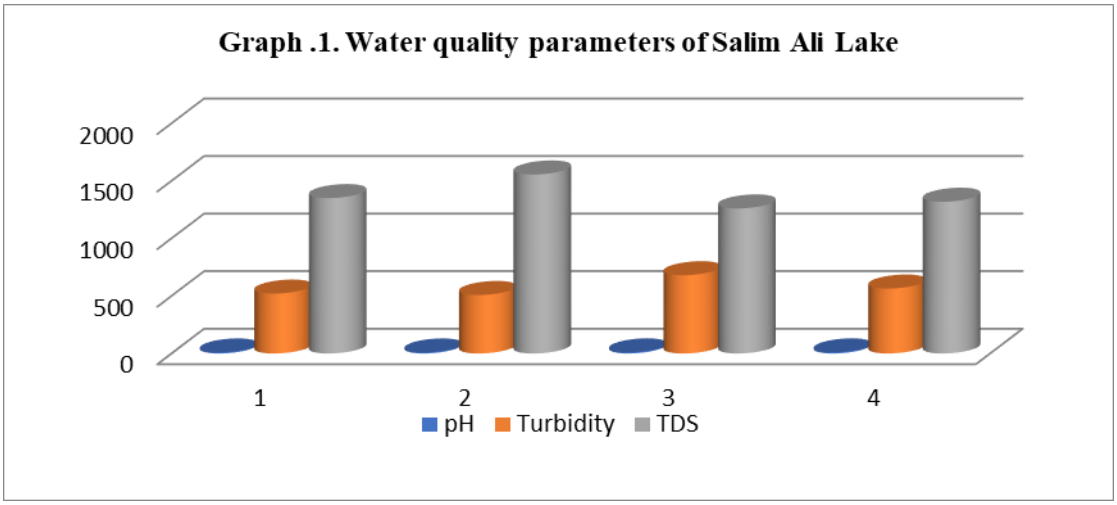
The water samples were collected from five sampling stations of Salim Ali Lake, Aurangabad for the physico chemical analysis. The entire sample collected in the morning into a high grade one litter plastic bottles in the month of October-2015 and brought immediately to the lab for analysis. During the analysis the temperature is kept constant at 26^0 C. Analysis of water sample is done by using standard procedures. For example TDS were measured in lab by using standard procedure of Trivedi and Goel. The pH was measure by digital pH meter. Chlorides, calcium, magnesium, sulphate etc were measured by the standard methods given APHA. (Shrinivasa and Venkateswaralu, 2000).

RESULT AND DISCUSSION

The collected water sample from different stations was little greenish and having little odor and the temperature of all sampling stations recorded was the 26^0c.

Table 1: Water quality parameters of Salim Ali Lake

Sr. No	Parameter	Sampling stations			
		Site A	Site B	Site C	Site D
1	pH	8.7	8.6	9.4	9.3
2	Turbidity	520 mg/lit	508 mg/lit	680 mg/lit	564 mg/lit
3	TDS	1350 NTU	1555 NTU	1260NTU	1318 NTU



pH:

It is a measure of how acidic/basic water is. The range goes from 0 - 14, with 7 being neutral. pH of less than 7 indicate acidity, whereas a pH of greater than 7 indicates a base. pH is really a measure of the relative amount of free hydrogen and hydroxyl ions in the water. The standard range pH is 6.5 to 8.5 given by ISI and WHO. In the analysis the pH recorded of station A and B water sample has the pH above the standard range (9.3 & 8.6 respectively).

Turbidity:

Turbidity is the measure of relative clarity of a liquid. Clarity is important when producing drinking water for human consumption. Turbidity can provide food and shelter for pathogens. If not removed, turbidity can promote regret of pathogens in the distribution system, leading to waterborne disease outbreaks, which have caused significant cases of gastroenteritis throughout the United States and the world. Although turbidity is not a direct

indicator of health risk, numerous studies show a strong relationship between removal of turbidity and removal of protozoa. During the investigations it was noted that, water sample of all stations have the turbidity below the standard range of ISI and WHO.

Total hardness:

In ground water hardness is mainly due to carbonates, bicarbonates, sulphates, chloride of Ca and Mg. The data of the analysis reveal that the total hardness recorded from station A was (520 mg/l), from station B it was (508 mg/l), From C (680 mg/l), from D (564 mg/l), which is above the standard value of WHO.

Total dissolve solid (TDS):

TDS is directly related to the purity of water. The TDS is the term used to describe the inorganic salts and small amounts of organic matter present in solution in water. The principal constituents are usually calcium, magnesium, sodium, and potassium cations and carbonate, hydrogen carbonate, chloride, sulfate, and nitrate anions. The TDS of water sample of Station B (1555 NTU) and station C (1318 NTU) having the range above the standard values of WHO (Trivedy and Goel, 1986).

Calcium:

Calcium is a mineral that is an essential part of bones and teeth. The heart, nerves, and blood-clotting systems also need calcium to work but higher the amount of calcium causes harmful effect s on the health. During the present investigations the level of calcium recorded was above the range decided by WHO. The level of Calcium recorded at station A was (134 mg/l), B (147mg/l), C (106 mg/l), D (168) and E it was (373mg/l).

Magnesium:

Hardness of water is directly concern with the magnesium and the sample of the different sampling stations was ranging above the standard value given by the WHO.

Chloride:

In the recorded chloride level of water samples from station A was (510mg/l) and station B (496mg/l) which is found above the limit of ISI and WHO.

Sodium:

The sodium concentration into the all sample of Salim Ali lake was above the prescribed limit by WHO and ISI.

Potassium:

It is found that the content of potassium is higher in all sampling stations i.e. A (19 mg/l), B (69), and C it was (270mg/L).

Iron:

The concentration of Iron in the water sample of station C (0.38 mg/l), D(0.31 mg/l) and E it was (0.71 mg/l) ranging above the standard value given by the WHO and ISI.

Fluoride:

Fluoride can occur naturally in water and the fluoride concentrations above recommended levels, which can have several long term adverse effects, including severe dental fluorosis, skeletal and weakened bones The World Health Organization recommends a guideline maximum fluoride value of 1.5 mg/L as a level at which fluorosis should be minimal. In the analysis of the water sample it is found that the fluouride is below the standard range**.**

Sulphate:

Sulfate is a constituent of TDS and may form salts with sodium, potassium, magnesium, and other cations. Sulfate is commonly found in nature and can be present at concentrations of a few to several hundred milligrams per liter.

Nitrate:

The nitrate concentration in the water sample of the station B it was (49mg/l) and at C it was (59 mg/l) ranging above the standard limit of ISI. (S Mumtazuddin et al., 2009).

Conclusion:

The physico-chemical analysis of Salim Ali lake in Aurangabad city reveals that water of all sampling stations not fit for drinking and primary treatment.

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