

## STUDY THE QUALITY OF DRINKING WATER AT DIFFERENT PUBLIC PLACES IN NAGPUR

**Mr. Hemant P. Kawathe<sup>\*1</sup>, Miss. Divya Satmohankar<sup>\*2</sup>, Mr. Hamood Shaikh<sup>\*3</sup>,  
Miss. Karina Gabhane<sup>\*4</sup>, Miss. Gayatri Palewar<sup>\*5</sup>, Mr. Kushal Yadav<sup>\*6</sup>**

<sup>\*1,2,3,4,5</sup>Bachelor Of Engineering Students, Department Of Civil Engineering, Wainganga College  
Of Engineering And Management, Nagpur, Maharashtra, India-441114

<sup>\*6</sup>Assistant Professor, Department Of Civil Engineering, Wainganga College Of Engineering  
And Management, Nagpur, Maharashtra, India-441114

### ABSTRACT

As the city collects its water from different sources and a substantial amount of population depends upon it for his or her daily use, a study has become necessary within the present days to see suitability of this water for health and other purposes. Aim of this work was to check the standard of drink from 5 different places in Nagpur. Water samples are collected from various sites of Nagpur city for about four weeks, and 5 tests were done thereon. It includes Physical and chemical characteristics of water sample from selected sites. The oftenness was once during a week Over the due course of your time various parameters regarding the water quality were analyzed & the Indian Standards: 10500 was observed so as to test the acceptability of water. The parameters which were analyzed are pH value, Turbidity, Dissolve oxygen, Chlorine & Temperature.

**Keywords:** Population, PH Value, Dissolved Oxygen, Chlorine, Turbidity.

### I. INTRODUCTION

Water is one amongst the abundantly available natural resources. Life on the world began in water. Water is crucial for the survival of any style of life including every kind of human, insects, birds, animals, plants, etc. The regular monitoring of water quality has become an important consider the conservation of aquatic resources. consistent with world health organization 80% of the disease in human is because of lack of safe beverage. Water quality assessment helps in identification of any contamination and check the standard of water. In concert of the essential amenities government authorities provide portable to passenger in any respect the stations. But many time apathy has been observed towards the standard maintenance of water, storage tanks and particular area. This work seeks to test the standard of water made available at the general public transport stations in Nagpur city. cation concentration (pH) is a very important think about water analysis since it enter into the calculation of acidity, alkalinity, pH is vital to control enzyme system. the upper values of alkalinity indicate presence of bicarbonate, carbonate and hydroxide in water body. It increases the concentration of carbonate increasing the amount of alkalinity in water. drink should be rich in D.O. permanently taste hot temperature, biological impurities, substance like hydrogen sulfides reduced DO values. Water is one in every of the three major components of the environment, therefore, there exists a detailed linkage between the standard of water and therefore the environment which bears an almost importance for eco-system. Many styles of macroscopic flora and fauna grow in several sorts of aquatic habitats. The physical and chemical quality of water vary in keeping with the basin shape and size, depth, light penetration, precipitation, location, temperature, chemical nature of surrounding soil and dissolved minerals, pH and also the biological components of the habitats rely upon them If all the physical, chemical and biological. parameters are in optimum condition the balance between these is maintained. Industrial water sewage and agricultural run-off can overload groundwater with chemical wastes and nutrients and make the facility toxic. Effective management of water resources and control of pollution have become increasingly important for sustainable development and human welfare, the term pollution is defined because the deterioration within the chemical, physical and biological properties of water by human and industrial activity. the economic activity discharges water containing hazardous chemicals on the open ground which can pollute the nearly groundwater.

## II. METHODOLOGY

### a) pH Test:

pH is essentially a measure of the acidity or alkaline of an solution. Solutions having pH less up to 7. Primary pH standard values are revealed by employing a concentration cell with transference, just by measuring the potential between a typical electrode like the chloride electrode & hydrogen electrode. Measurement of pH for aqueous solutions are often finished a pH meter or a glass electrode. We will also find the worth of pH by using indicators. For neutral sample, it's generally found to be around 7. If it's but 7, the sample is taken into a count to be acidic and for the alternative case, it's taken as basic. For general water, pH ranges between 6.5 to 8.5.

#### METHOD OF DETERMINING pH:

The pH value a given water sample is measured directly in modern days by employing a pH meter. A beaker or in close association with a calomel electrode is dipped into the water and it detects the concentration of proton. The meter is pre calibrated by using standard solution of known pH values and might be used on to read the worth.

### b) Temperature:

Temperature testing is that the process of measuring temperature levels in water. Temperature could be a key consider water testing Temperature affects the dissolved oxygen levels in water, the speed of photosynthesis, metabolic rates of organisms, etc. Aquatic organisms rely on particular temperature ranges for his or her health. Each species of organism thrives in a very specific temperature range, and lots of animals use temperature as a proof for when to breed and when to migrate. If there's an abnormality in temperature this could disrupt the balance of aquatic ecosystems with devastating effect. Water temperature also impacts water density; differences in water temperature and density can cause stratification.

#### METHOD OF DETERMINING TEMPERATURE:

Using a digital thermometer can help to work out temperature.

### c) Turbidity:

The haziness or cloudiness of a fluid tanks to various individual particles (TSS or TDS) which will be seen with naked eyes (like smoke in air) is through as turbidity. The determination useful of turbidity may well be termed joined of the foremost important tests of water quality. Fluids may have suspended solid matter comprising of particles of varied different sizes. While some are sufficiently big cool down quickly at the underside of the container if a liquid sample is left to square, the smaller ones might settle very slowly or may not settle in the least if the sample is agitated consistently or if the colloidal particles are present. These solid particles, which are smaller in size, are the rationale for any liquid to appear like turbid. Turbidity (or haze) is taken into a count within the case of transparent solids like glass moreover. Turbidity is an optical characteristic of water and is additionally an expression of the number of sunshine scattered by material within the water when a lightweight shines through the water sample.

#### METHOD OF DETERMINING TURBIDITY:

First, take the beaker and wash it naturally. Then, H<sub>2</sub>O is poured into the beaker. Turbidity of water is measured by the turbidity meter. If the turbidity isn't zero, then the settings are adjusted on make it zero. Then, the beaker is again washed properly. Then, the sample is poured into the beaker. The turbidity of the water is measured using the turbidity meter. the identical procedure is repeated for all the samples.

### d) Chlorine:

When chlorine is added to water, sort of the chlorine reacts first with inorganic and organic materials and metals within the water and available for disinfection (this is termed the chlorine demand of the water). After the chlorine demand is met, the remaining chlorine called total chlorine. Total chlorine is further divided into:

- 1) combined chlorine, which is that the number of chlorine that has reacted with inorganic and organic nitrogen containing molecules to create weak disinfectants that are unavailable for disinfection and
- 2) Free chlorine, which is that the chlorine that's left over and is out there to inactivate diocese causing organisms measure of the portability of the water.

**METHOD OF DETERMINING CHLORINE:**

Take 10ml sample during a very beaker put sample of water in container of chlorine test, then put the container within the chlorine meter then set it to zero. When zero is prepared on digital scale, add 3 to 5 drops of normal GI standard solution in it and gently mix. await 2 minutes. Put the sample in chlorine meter and take the record.

**e) Dissolved Oxygen:**

Dissolve oxygen (D.O) levels in natural & wastewater are addicted to the physical, chemical and biochemical activities prevailing within the water body. The analysis of D.O could also be a key test in pollution control activities and waste treatment process control. Dissolved Oxygen during a water sample is determined by following digital DO meter. The saturation DO value is that the dissolved oxygen which a given water can contain at a given temperature and pressure. During the principle, the expected DO value for suitability in domestic use is 4-8 mg/lit.

**METHOD OF DETERMINING D.O**

Turn ON the digital DO meter, take 200 ml of water put the probe of DO meter within the beaker having water sample and take the records.

**III. RESULTS**

Sr No.	Location	Ph	TEMPERATURE	Turbidity	Chlorine	Dissolved Oxygen
1	Ajani Railway Station	7.05	33.3	0.005	0.03	5.6
2	Ganesh Tekdi Mandir	7.01	30.0	0.003	0.02	5.7
3	Central Railway Station	7.12	30.5	0.004	0.03	5.8
4	Mayo Hospital	7.03	28.5	0.001	0.04	5.6
5	WCEM, Nagpur	7.01	31.7	0.002	0.03	6.0

**IV. CONCLUSION**

1. Public water sources identified for study Ajani Railway Station, Ganesh Tekdi Mandir, Central Railway Station, Mayo Hospital & WCEM, Nagpur. These sources have sufficient quantity of water supply for drinking purpose.
2. The water from different sources identified for study is fit for according to our analysis and have the test results within the permissible limit.
3. There is need to improve hygiene near these sources as these sources are generally unattended.

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