QUALITY CHECKING FOR DIFFCERENT TYPES OF WATER & OXYGEN DEMAND OF INDRAYANI RIVER IN KAMSHET-TALEGAON MIDC-DEHU.

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ABSTRACT

Having clean water is a necessity and a human right for all men, women and children. People need clean water to maintain their health and dignity. The quality of our global freshwater reserves is increasingly threatened by contamination. Water contains natural contaminants and is increasingly polluted by human activities, such as open defecation, inadequate wastewater management, garbage dumping, poor agricultural practices and spills. chemicals at industrial sites. Water quality analysis is a tool that can help identify safe drinking water, either at the source, in a piped distribution system, or at home. Testing is necessary if you need to evaluate the effectiveness of a treatment technology to remove contaminants from drinking water.

Keywords: **Drinking water sources of water,treating water treatment needed,contaminants effects which pollute**

I.INTRODUCTION

People need clean water for maintaining their health. Having better water is essential to working and having the ability to go to school. However, the degradation of water quality threatens the gains made over the last twenty years to improve access to safe drinking water. Between 1990 and 2011, global efforts helped 2.1 billion people access better quality water, but not all of these new sources are necessarily safe. The quality of our global freshwater supplies is increasingly threatened by contamination

The chemical contamination of drinking water, natural and pollution, is a very serious problem. Arsenic and fluoride alone threaten the health of hundreds of millions of people around the world. But microbiological contamination is even more serious, especially human excrement. Fecal contamination of drinking water contributes significantly to diarrheal diseases. About 2,000 children under the age of five die daily from diarrheal diseases worldwide. Almost 90% of child deaths from diarrheal diseases are directly related to water contamination, lack of sanitation or lack of sanitation.

However, you cannot rely solely on water quality testing to protect public health because it is not physically or economically feasible to test all drinking water. You should also use other tools and resources, such as health monitoring and surveys, to help you ensure water quality. An improved drinking water source is a source of potable water or a distribution point which, by design and construction, is likely to protect water from external contamination, particularly fecal matter. Improved drinking water sources include running water, public pipelines, boxed wells, protected trough wells, protected springs, collected rainwater and bottled water (only if another improved source is used for cooking and personal hygiene)

1.1.1 The following topics are addressed in this Report:

1. Characteristics of safe drinking water
2. Planning for water quality testing
3. Sanitary surveys as a means to observe water quality
4. Testing options, including portable field kits and laboratories.
5. Physical, chemical and microbiological parameters and test procedures
6. Interpreting water quality test results.

1.1.2 What Does Improved and Safe Drinking Water Mean?

Healthy drinking water does not pose a significant health risk during your life. Drinking water has microbiological, chemical and physical characteristics that respond to World Health Organization (WHO) guidelines or national standards for drinking water quality.

II.DRINKING WATER QUALITY

We find our drinking water in different places depending on where we live in the world. . Three sources that are used to collect drinking water are:

- Water Underground Water that fills the spaces between rocks and soil to form an aquifer. The depth of groundwater and water comes from the soil.
- The surface water is drawn directly from a stream, river, lake, pond, spring or similar source. The quality of surface water is generally unsuitable for untreated consumption.
- Rainwater collected and stored using a roof, soil surface, or river basin. The quality of rainwater collected on the roof surface is generally better than that of a soil or rocky basin.

When water moves in the water cycle, it naturally captures many things along its course. The quality of the water will naturally change from one place to another, with the seasons and the types of rocks and soils it crosses. Water can also be polluted by human activities such as open defecation, inadequate wastewater management, waste disposal, poor agricultural practices (use of fertilizers or pesticides near sources). Water and chemical spills at industrial sites. In developing countries, 75% of all industrial waste and up to 95% of wastewater is discharged into surface water without any treatment (Carty, 1991). Even if the water is clean, it does not necessarily mean that we can drink safely. It is important to assess water safety by taking into account the following three types of parameters:

• Microbiological bacteria, viruses, protozoa and helminthes (worms)
• Chemical minerals, metals, chemicals and pH
• Physical temperature, color, smell, taste and turbidity

1.2.1 Safe drinking water should have the following microbiological, chemical and physical parameters:

• Free of pathogens (A pathogen is any living organism that causes disease. Pathogens commonly found in drinking water include bacteria, viruses, protozoa and helminthes)
• Low in concentrations of toxic chemicals
• Tasteless, odorless and colorless (for aesthetic purposes)

Microbiological quality is generally the main concern, since infectious diseases caused by pathogenic bacteria, viruses, protozoa and helminths are the most common and widespread health risk associated with drinking water. Only a few chemicals have caused widespread health effects of nitrates that drink water with excessive amounts of these chemicals. These include fluoride and arsenic (WHO, 2011).

III. DRINKING WATER QUALITY GUIDELINES AND STANDARD

1.3.1 Need for Testing

Testing is necessary if you need to evaluate the effectiveness of a treatment technology to remove contaminants from drinking water. There are other situations that may require water quality testing and can be a useful tool, such as:

• End user or community request
• Donor request
• Government verification of a treatment technology
• Monitoring compliance with standards or guidelines
• Research purposes

1.3.2 DEVELOP OBJECTIVES

The following are some of the objectives for water quality testing:

• Identify an appropriate drinking water source
• Identify the source of an outbreak of a drinking water related disease
• Investigate seasonal changes in drinking water quality
• Increase user awareness on water quality issues
•Assess the effectiveness of household water treatment and safe storage (HWTS) in reducing turbidity and pathogens
• Assess the concentration of arsenic and fluoride in drinking water
• Monitor compliance with standards or guidelines
• Evaluate the effectiveness of a safe water project.

IV. TYPES OF VARIOUS TESTS ON WATER SAMPLE

1.4.1 Physical Testing

Most physical parameters can simply be observed, such as taste, smell and color. Turbidity is generally the most important physical parameter to be measured, since high turbidity is generally associated with high microbiological contamination. In addition, high levels of turbidity can reduce the effectiveness of some water treatment technologies.

1.4.2 Chemical Testing

It is not possible to test all chemicals in the water that can cause health problems or needed. Most chemicals are rarely present and many result from human contamination of a small area, affecting only a few sources of water.

However, three chemicals can cause serious health problems and are present in large areas. These are arsenic and fluoride, which can exist naturally, and nitrate, which is commonly used in fertilizers for agriculture. When planning new water projects, priority should be given to testing these three contaminants. A second priority of water quality testing should be the chemical parameters that generally result in the rejection of water for aesthetic purposes, such as metals (mainly iron and manganese) and dissolved total substances. solids (salinity). When water is disinfected with chlorine, it is also important to monitor the quality of drinking water in relation to pH and free residual chlorine (CRL) as indicators of appropriate and effective treatment. . In addition, it may be important to look for chemicals known to be present locally, such as copper or lead from industrial pollution.

1.4.3 Microbiological Testing

The most serious public health risk associated with drinking water is microbiological contamination, making it a priority for water quality testing. Pathogens found in water - bacteria, viruses, protozoa and helminths can cause a wide range of health problems, but the main concern is infectious diarrheal disease transmitted by people who drink water contaminated with feces.

Screening for microbiological contamination is generally the priority in most potable water projects. Escherichia coli (E. coli) and / or thermotolerant coliforms (TTC) are the standard for controlling microbiological contamination.

V.INTRODUCTION TO THE STUDY AREA

The Indrayani River, a tributary of the Krishna River, originates in the Mavala Taluka of the Pune district in the state of Maharashtra. It stands on the crest of the Sahyadris Hills of the Western Gates. The Indrayani River transports industrial and urban effluents. The river does not run for at least seven to eight months. The water of the river is so polluted that it is considered a danger to the health of the inhabitants and millions of pilgrims that go to the cities of pilgrimage of Dehu and Alandi, located in its banks.

Effects on Humans

Chloride toxicity has not been observed in humans, except in the exceptional case of a change in the metabolism of sodium chloride. Healthy humans can tolerate the consumption of large amounts of chloride if fresh water consumption is sufficient. The chloride increases the electrical conductivity of the water and also its corrosivity. Chloride concentrations greater than about 250 mg / liter may give detectable taste in water, but the threshold depends on the associated cations. Consumers can, however, become accustomed to concentrations above 250 mg / liter. Health-based reference values for chlorides in drinking water are not proposed.

Some environmental Factors which pollute the water are:

- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)
- Conductivity
- Turbidity
- pH value
- Chloride Content

VI. OXYGEN SAG CURVE

The oxygen subsidence or deficit in the flow at any point in the self-purification process corresponds to the difference between the saturated OD content and the actual OD content at this time. The resulting amount of oxygen deflection can be obtained by adding algebraically the oxygenation and reoxygenation curves. The resultant curve thus obtained is called the sagging oxygen curve. Oxygen deficiency, D = actual OD - OD saturation The saturation value of OD for fresh water depends on the temperature and total dissolved salts it contains; and its value ranges from 14.62 mg / L at 0 ° C to 7.63 mg / L at 30 ° C and a lower oxygen content at higher temperatures.

The OD in the flow may not be at the saturation level and there may be an initial "O" oxygen deficit. At this point, when effluents with the initial charge of DB "Lo" are released into the stream, the OD content of the stream begins to decrease and the oxygen deficiency (D) increases. The variation of the oxygen deficit (D) with the distance along the stream and, therefore, with the time of flow of the point of pollution, is represented by the "oxygen subsidence curve". The main point of the arrow analysis is the point of the minimum OD, i.e. the maximum deficit. The maximum or critical deficit (Dc) occurs at the inflection points (as shown in Fig.) Of the oxygen deflection curve.

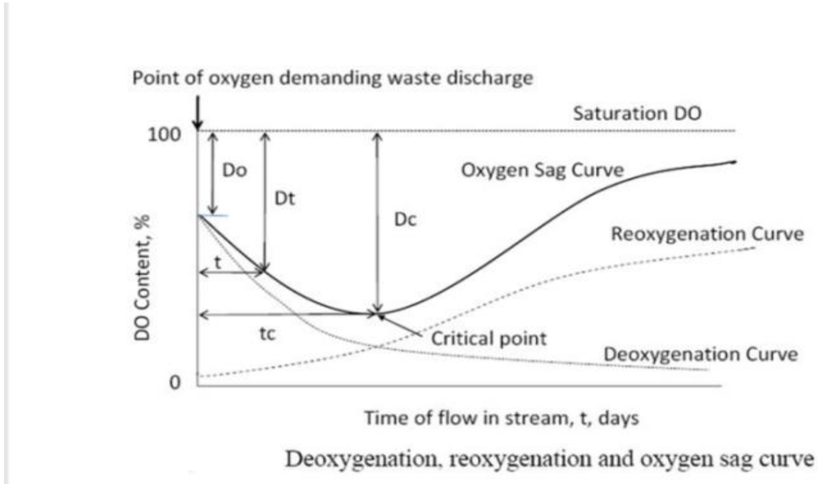

Fig.1.Oxygen Sag Curve

VII. RESULTS & CALCULATIONS

Raw Water (Tap Water):

Calculations:

Following are the calculations of RAW WATER:

1.pH – By using pH meter the pH of raw water is -7.47

2. Hardness –

Total hardness = (x-y) *Normality of titrant*50*1000 / Volume of sample
= 8.52*0.0465*50*1000 / 25
= 260.40 mg/lit

3. Chlorides – N1*V1 = N2*V2

N1*(Z-Y) = 0.0141*10

N2*(11.5-2.5) = 0.0141*10

N1 = 0.0156

Chlorides = (4.2-2.5) *0.0156*35.5*1000 / 10= 94.15 mg/lit

4.Chlorine Demand –

Chlorine Demand = P*N*35.45*1000 / 10
= 1* 0.0008*35.45*1000 / 10
= 0.32 mg/lit

(NOTE: As per the above calculations the all calculations are conducted

Table 7.1-tap water readings

Sr. No	**Parameters**	**Sample Result**
1.	pH	7.47
2.	Hardness	260.4
3.	Turbidity	19.3
4.	Chlorides	94.15
5.	Colour	7.26
6.	Chlorine Demand	0.32

Table 7.2-distilled water

Sr. No	**Parameters**	**Sample Result**
1.	pH	7.36
2.	Hardness	61
3.	Turbidity	21.3
4.	Chlorides	208
5.	Colour	12
6	Chlorine Demand	0.83

Table 7.3-river water

Sr. No	**Parameters**	**Sample Result**
1.	pH	7.36
2.	Hardness	61
3.	Turbidity	21.3
4.	Chlorides	208
5.	Colour	12
6	Chlorine Demand	0.83

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