

Bacteriological Analysis In Reference to MPN of Ground Water Used as Drinking Purpose of Olpad Region, In Surat, Gujarat.

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Abstract: Water is one of the important factor of life. Without water the living things cannot survive. Drinking water gets from many sources like river, stream and ground water etc. The present study was undertaken for quantitative estimation of the ground water with reference to MPN of Olpad region, Surat (INDIA). The microbiological study of 4 villages of the region was undertaken to know the water that used as drinking water is actually potable or not. The 7 samples were collected from 4 villages and “MPN” (Most Probable Number) method was done for detection of faecal coliforms. The method was followed properly with incubation and different results were found. According to this study “MPN” number of the sources found various. The water sources are contaminated with bacterial contamination. Pathogenic bacteria can cause different types of disease like cholera, dysentery etc. The method is followed by conformation test for detection of proper pathogenic bacteria.

Key Words: Olpad Taluka, Ground water, MPN, Bacterial contamination.

I. INTRODUCTION

Water is indispensable for all living organisms. Life, as we know it, is impossible without water. Water has always been considered as a “Gift of God” as something that human beings are as naturally entitled to as the air they breathe. (Panday, 2003). Water is the main commodities which man used than any resources for survival of his life. Most of our demand of water is fulfilled by rain water which can deposit in surface and ground water. (Goel 1997). The human activities are constantly increased with time that also leads to increase the pollution. It increases the addition of industrial, domestic and agricultural waste in ground water reservoirs at an alarming rate. The lack of sanitation, improper waste disposal, faulty well construction and lack of water source protection measures increase ground water contamination and 40% or more of the disease outbreaks were attributed to polluted ground water consumption. (Rai and Sharma, 1995). The water seeps through the earth it is often filtered quite effectively so that at some depth there are few bacteria remaining. But the bacterial contamination is depend upon the local geology of water sources, nature of soil &

porous strata, slope of water table and the nature, distance and direction of local pollution sources.

Olpad is one of the developing town nearest the Surat, Gujarat. It located in an area of North West of Surat. Around 105 villages and sub villages present in Olpad region. The peoples consume the water for their different purpose from different sources like, tube well, open well, bore well and hand pump. The peoples consume the water for drinking purpose with or without treatment. The main reason of the study that the water consumed by the villagers is actually contaminated with bacterial load or not.

II. MATERIALS AND METHOD

The faecal contamination of water is determined by “Presumptive coliform test” by using MacConkey broth, which is an MPN (Most Probable Number) count of coliforms. The multiple tube fermentation test is more used for all kind of water. There are 3 sets of tubes and each set contain 5 tubes.. From which 1st set of 5 tubes containing 10 ml double strength medium MacConkey broth. Next set of 5 tubes containing 10 ml single strength medium and last set of 5 tubes are also containing 10 ml single strength medium. All the tubes containing one Durham’s vial in inverted position for determine gas production. The tubes with proper cotton plugs put for autoclave. The tubes were sterilized at 121^oC, 15 PSI for 15 min. All the samples were shaking proper before inoculation. By maintaining sterile condition and by using sterile glassware inoculate the samples. The 1st set of 5 test tubes receive 10 ml of sample. In another 5 tubes that contain single strength medium receive 1 ml sample. The remaining 5 tubes receive 0.1 ml of sample. All the tubes were put in incubator at 35-37^oC. After 48 hours all the tubes examined carefully for results.

For the present study 7 samples were taken for examination of bacteriological study from 4 villages of Olpad region. Sample 1 and 2 was from “Jothan” village that is hand

pump water. Sample 3 is from “Talad” village that is an open well sample. Sample 4 and 5 was from “Atodara” village that is Tube well water. Sample 6 and 7 was from “Sithan” village that is bore well water. The study was conducted for 6 months from feb 2015 to july 2015.

III. RESULTS

Table No 1. MPN counts of February month

Month	Sample No	MPN/100 ml
February	S-1	50
	S-2	33
	S-3	21
	S-4	17
	S-5	<2
	S-6	4
	S-7	2

Table No 2. MPN counts of March month

Month	Sample No	MPN/100 ml
March	S-1	40
	S-2	26
	S-3	26
	S-4	80
	S-5	14
	S-6	<2
	S-7	2

Table No 3. MPN counts of April month

Month	Sample No	MPN/100 ml
April	S-1	60
	S-2	70
	S-3	22
	S-4	26
	S-5	60
	S-6	12
	S-7	17

Table No 4. MPN counts of May month

Month	Sample No	MPN/100 ml
May	S-1	130
	S-2	30
	S-3	70
	S-4	23
	S-5	50
	S-6	14
	S-7	11

Table No 5. MPN counts of June month

Month	Sample No	MPN/100 ml
June	S-1	30
	S-2	27
	S-3	33
	S-4	50
	S-5	30
	S-6	<2
	S-7	14

Table No 6. MPN counts of July month

Month	Sample No	MPN/100 ml
July	S-1	50
	S-2	23
	S-3	34
	S-4	23
	S-5	23
	S-6	7
	S-7	8

IV. DISCUSSION

Coliform count performed by MPN method is normally used for quantitative estimation of water. The high bacterial load was found in many samples. From the results it is cleared that from april to june the bacterial load was found high than before. It may be because of scarcity of water before rainy season. The high bacterial load is found because the water sources are not properly protected by surroundings. Agricultural area and another sources of fecal coliforms like drainage lines are near to the water sources. The bacterial disease like typhoid, dysentery, Cholera etc is transmitted through the water. The water may be contaminated naturally or manually. But the contamination is may be decrease by proper hygiene practices.

V. CONCLUSION

The present study indicates the present status of ground water of Olpad region. The drinking water is an important factor so it is must to assess the bacterial quantity of the drinking water water. The main source of water is ground water in rural areas. Some natural activities and mostly man made activities are responsible for faecal contamination of ground water. From the above study it can be concluded that the MPN counts are higher. It is because of close the water sources from drainage pipes, septic tanks or sanitary wastes. The study is facilitating the health authorities to control the pollution of Olpad region. The peoples must be aware about the quality of water and how they can decrease the bacterial

contamination by maintaining proper hygiene condition. The peoples should need to pre treated the water before use for drinking or cooking. They can also boil the water it kills the bacteria at some level. They also aware about water born disease that cause by different types of bacteria. The body of the peoples may be resist with some species of bacteria but the water is transformer of the disease causing bacteria and it is high risk of contamination with water.

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