Assessment of Drinking Water Quality Parameters in Mullaghori Khyber Agency

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Abstract - Water is one of the precious gifts of Allah, so the proper use of clean water is very essential. The clean drinking water is one of the basic needs of human life. This research study has been conducted on the assent of drinking water quality in mullaghori area district Khyber Agency. This is a backward area of FATA agency situated at about 10 km from Warsak dam. The research area is mainly mountains region as well as plain area. In some areas there is no agriculture but there is some areas where agricultural is possible and is being practice. The study area was being divided in five sections namely Lora Miana, Sheikhan, marble chowk, Sherbridge and Zaga. The drinking water samples have been collected from different sources of these areas on random basis. These samples has been analyse for physical and chemical parameters. The physical parameters are pH, colour, odour and turbidity and taste. The chemicals parameters are Alkalinity, calcium hardness, total hardness, magnesium hardness, nitrate, sulphate, iron manganese and suspended solids. The tests have been conducted in UET laboratories under standard procedure. The test then being compared with WHO and NEQS standards.

Keywords— Water quality, WHO, parameters, pH, NEQS, FATA, Warsak dam

I. INTRODUCTION

The water requirement for public water supply scheme should be portable or physically water i.e. fit for drinking purpose. It is however not essential to have physically or chemically pure water. The presence of mineral in water is required to give some taste to water and also assist in food assimilation.

Water is life. That is why presence of water on mars leads to exploration missions. Water is basic necessity for human 70% is composed of water. Although the ratio of water and land is 3:1 but available clean/fresh water is less than 4%. Interestingly this les proportion is not available to a common man, 80% of disease are caused by water in all developing countries including Pakistan. According to WHO every 21 million people become victims due to polluted water which causes death of a baby after every eight second [1]. So the problem of water is universal.

Keeping in view the above points, the Government of Pakistan has proposed a new plan to supply clean drinking water to every community and every reach. Furthermore water will also be made available to the communities which have nothing to drink. A part from air water is the most important substance to the life of almost all living things including human beings. Man concern with water is as old as his existence. There is sufficient evidence to indicate that the technique of covering water in pipes for supplying large communities was practiced hundreds of years ago. The importance of clean water supply for control of communicable disease was established hundreds of years ago. Because of rapid industrialization and urbanization the provision of modern water supply is well documented.

The living standards of a community cannot be raised to any extent of significance without an up to standard water supply system.

Government of many developing countries considers the provision of safe water supplies as one their major responsibilities. In recognizing the fact that nation, the government of Pakistan has included supply of safe water and the maintenance stride standards for the purification of drinking water among the most important steps to be taken under the unique feature of modern water supply water system is its emphasis on water qualities. The major step of the development of modern treatment process quality improvement was the use of slow and filters. Coagulation followed by sedimentation was employed for purification in many countries. Coagulation on a countries basis has become a standard unite in modern treatment plant. Modern technology of water treatment reached a high mark with introduction of rapid filter and chlorination. It must be realized that the function of the modern water supply system is to provide of high quantity all time. Intermittent supplies can be allowed to reach a user under any circumstance. Modern technology has reached the level that there are not excuse for failure to deliver safe water to customers. The role of water and water cycle according to wolf mean water intake by man per day is 2200g or 3, 1% of body weight per day" [2]. Many living contaminate of water like parasitic organisms which lake up their abode or within other living organisms to obtain food are ready to attack man if they can get to have some attack directly other need water living intermediate hosts to produce them their attack posture.

Water consumed by men contains large number of non living or living chemical containment and a variety of them can be places in water both before and after its purification. If the change takes place in the quality of water e.g. if it become polluted them, the new comers to communities may be upset due the sudden changes in the impairment in the capacity of the body to adjust itself with these changes in the mechanism, the body will break down entirely. Some of the water's chemical constituents like arsenic, cadmium, chromium, chlorine and nitrate are not be beneficial on contrary; at certain level of known concentration they may produce serious and adverse physiological changes in man. Copper, iron and zinc may be metabolized benefit: it is at certain optimum amount. Excessive fluoride will cause dental flousis but if present in optimum amount it will reduce dental carries are or decaying of bones. A deficiency of iodine is the primary cause of simple endemic goiter, in which the enlargement of thyroid gland takes place and hence, a diet of water and food balance to furnish the request amount of iodine is essential for a good health. The optimum amount of sodium present in water control is even restricting several heart diseases along with kidney and liver [3]. Man as well as other living matter is always exposed to background ionizing radiation coming from outer space and from traces of naturally radioactive isotopes chiefly potassium and those radium series in soil and water. Although they are, of little importance because they are of love intensity and effects on man during 5 ionizing radiation plus that naturally present must not be permitted to rest a level and hence, becomes an inimical to mans health and water is important for man keep clean his health, to substance and organism from his body. Cleanliness is inimical to external parasites such as lice mites, and to the fungi responsible for skin diseases. The use and reuse of common utensils in home and public institution and place without adequate cleaning and disinfecting, is another cause of diseases transmission even among people living and relatively high advance communities.

II. DATA AND METHODOLOGY

Climate

The climate of an area is the key factor in analysing the groundwater quality. The data is usually taken for about 30 years. Some common factor to be considered is discuses below.

Temperature

The temperature is the same as that of Peshawar valley. The temperature of the area is almost the same as that of Peshawar valley. The temperature in winter is usually between 10 ºC to 25 ºC and in some areas the temperature may reach to 2 ºC. The temperature in summer is usually between 25 ºC to 45 ºC (PMD daily report).

Humidity

The humidity is generally high in summer. It may be up to 80% high and 50% low. The humidity in winter is from 40 to 50 % range (PMD daily report).

Rainfall

The rainfall pattern is different from Peshawar. Some time its heavy rain in which causes flood in river Kabul. Some time no or less rainfall causes drinking water scarcity in most of the area. There is heavy rainfall from July to august [4].

Drinking water sources

The drinking resources are different in different areas. In some areas people use dug wells for drinking purposes. In some areas people use tub wells constructed government for drinking. People living in plain areas use both hand pumps and tub wells for drinking. The place called Lora Miana they used water tank for drinking.

IMPURTIES IN WATER

it is not possible to find pure water in nature the rain water as it drops down to the surface of earth absorb dust and gases from the atmosphere, it is farther exposed to organic matter on the surface earth and by the time the impurities present in water may be divided into the following three categories.

1. Physical impurities

2. Chemical impurities

3. Bacteriological impurities.

Analysis of water

In order to aseration the quality of waters, it is subjected to various tests. These tests can be divided into three categories.

physical tests

chemical tests

bacteriological tests

Physical tests

This test was conduct to find out physical properties like colour test, odour and turbidity. "Sampling for physical examination" collection of sample depends upon the analysis. No attempt should be made to use the same sample to for chemical bacteriological and microscopic examination because the method of collection and handling are different for various types of examination. A recorder should be made of very sample collected and bottle be identified preferably by attaching an

appropriately inscribed tag or labelled. The record should include sufficient information to provide positive identification of the sample all a killer, dale is well as the name of the sample collected, which may be needed in the future for correlation such as weather condition, water level, stream now or the like by map or with the side of staks, buoys or land marks in such a manner as to permit their other persons without reliance upon memory or personal guidance.

III. RESULT AND DISCUSSION

RESULTS

The study was carried out on "The assessment of drinking water quality in Sub Tehsil Mullaghori Disrict Khyber. The study was carried out on the Physical and Chemical analysis of drinking water.

The samples were collected from 5 different areas of Mullahgori sub tehsil of District Khyber. Their names are followings.

1. Lora Miana

2. Sheikhan

3. Sher Bridge

4. Marble Chowk (Nehr ghara)

5. Zaga Kaly

The samples were tested in the laboratory of University of Engineering and Technology Peshawar.

The result were comprise of two type of Analysis i.e. Physical analysis and

Chemical analysis

Physical and chemical analysis

The following physical parameter of drinking water were tested and their result as follows.

Colour, Thermal conductivity, Alkalinity and Calcium hardness.

Table 4.1 physical and chemical results of different samples for drinking water.

Sample No.	Colour	Thermal conductivity	Alkalinity	Calcium hardness
S ≠1	18	1.69	404	660
S ≠2	27	1.58	180	680
S ≠3	60	0.92	148	252
S ≠ 4	78	0.94	80	240
S ≠ 5	69	1.00	132	520
S ≠ 6	64	0.92	100	200
S ≠7	78	1.40	100	300
S ≠ 8	351	0.49	40	200
S ≠9	100	0.42	86	300
S ≠ 10	135	0.66	44	244
S ≠ 11	142	1.36	120	548
S ≠12	131	1.07	100	320
S ≠ 13	151	0.57	90	260
S ≠14	149	0.78	100	264
S≠ 15	148	1.86	140	400
S ≠ 16	153	0.97	120	340
S ≠ 17	715	1.7	120	230
S ≠ 18	193	1.11	100	240
S ≠19	302	0.73	100	220
S ≠ 20	305	0.61	100	240

DISCUSSION

The different parameters of drinking water have been tested in the laboratory and the result of each sample has been listed in the table. The parameters are many but a few has be tested as the facilities were not available for other tests. Most of the results has been falls in the in the range of WHO standards and NEQS standards.

Colour

A WHO standard is less than 15 TCU.

NEQS standards is the same i.e. 15 TCU.

The colour of the entire samples that were tested in the laboratory is out of the range. The colour has following effects on human's health. The colour of sample less than 15 TCU is acceptable to the consumer. The colour is one of the most important parameter in the determination of the quality of the water. The best drinking water quality water must be colourless. The drinking water of all mullaghori area, there was colour in drinking water.

Alkalinity

The alkalinity of most of the samples is within the range. There is no health guidelines is given by WHO. The higher concentration of alkalinity in water may cause the following health concern

(Wolf, J et al 2014) It can to lower the normal stomach acidity, which is useful to kill bacteria and other undesirable pathogens entering our body.

It can cause skin irritation.

Too much of alkalinity can cause nausea, vomiting, hand tremors, muscles twitching and confusion

IV. CONCLUSION

The site selected for research is sub Thesil Mullaghori, district Khyber agency. It is situated near Warsak dam west of Warsak road about 10-15 km. the area is mostly mountains area with less agriculture activities. The research site has been divided in to five sections to make the analysis of drinking water easy. These include Lora Miana, Sheikhan area, Pindi Lalma, marble chowk Nehr ghara and Sherbridge. The drinking water source of Lora Miana is mostly wells which are open to the environment and there is no cover on it. It is a completely mountains area with no agriculture is there. The main source of drinking water is open wells but the water table in that area is very low and in June July there is sever scarcity of water. The samples were collected from each well that has been used in that area by peoples. The height of each well is also been determined with help of GPS accurately up to 3m. These samples were then analysed in the laboratory under standard condition and the result of each parameter of drinking water was compare with WHO standards and NEQS standards. The result of each sample were listed in table with height, name, WHO standard and NEQS standard. Most of the parameters show some high concentration in drinking water except nitrate. The colour of water was much higher than WHO standard and NEQS standard. Other parameters were also showing some variation which may have great effect on the health of the peoples of Lora Miana. There is on government hospital where we approach for annual patient report but the behaviour of the staff was very rude and the refuse to give us data. Therefore we interviews different peoples and fined about the diseases but still there may be some deficiencies in this research.

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