

Disinfected Water -An Easy Approach

Er. Manoj K. Varshaney*

*FIPHE, FISCE, MIE, MIWRS

Sr. Lecturer, Civil Engg. Department, D.N. Polytechnic, Meerut-(U.P.) 250103, Mob. # 9412631163

Abstract- Water is one of the prime and basic essentiality for the survival of flora and fauna on this planet. The development has made the water consumption in vast realms. Due to population growth and inefficient use of water, the available water for per capita is gradually reducing. In some remote areas, water is out of reach and available water for drinking purpose is unfit. The received water in-houses may have contamination and may cause water born diseases. Public is using mineral R.O. (Reverse Osmosis) system, but it is un-affordable to all and nonfeasible for those not having pipe water supply. An viable and appropriate method of removal of microbes by keeping the water in glass bottle making it half blacken & contacting it 6 hrs to natural radiation, will prove the extra safety of potable water. The method is cheap and can be affordable to even poor people. The country is facing 80% disease from available potable water. So it is easy for all to follow-up the cited approach to get germ free water for keeping sound health.

Preamble:- Since the genesis of organism on this planet, water has been one of the natural resources for sustaining life, next to air. The earth is said to be blue planet due to its 360x106 sq. km area occupied with water out of 570x106 sq. km total area which is 70% of total earth area. Out of this 70% area 97.24% is resting in sea, and remaining 2.76% is resting in glaciers, under ground, rivers, lakes, soil moisture and atmospheric moisture. The saline water resting in seas & oceans is un-usable however various flora & fauna are there and they have their own ecosystem. This saline water is un-fit for human activities. Fresh water available in the world is in the form of ground water, glaciers, rivers and lakes for human consumption. Initially on the on set of human, their activities were limited and they were unaware of consumption of water in other fields. By gradual development in culture & technology, use and misuse of water in various purposes like in domestic, industrial, commercial, public, hydrogenation, steam-generation, gardening, irrigation and other related areas have taken place. Due to this water available to every person per decade is decreasing. It is an alarming situation. If no attention be paid there will be draught. Since the observance below indicates roughly that water

scarcity is successively reducing with increasing population:

1951-1961=4000 lacs (peoples)-4800 cubic meter/capita/year (water available)

1961-1971=5000 lacs (peoples)-3900 cubic meter/capita/year (water available)

2011-2021=12000 lacs (peoples)-1500 cubic meter /capita / year (water available)

2041-2051=16000 lacs (people)-1000 cubic meter /capita / year (water available)

Since observance scarcity would lead to an end of available water by the year 2100 if some steps would not be taken to manage water resources this would deprive us for water available. That time all activities would be dead

We would have to pay attention by following rainwater harvesting, water management, limited consumption of water and drip irrigation otherwise a day would come when there will be no organism on earth. At present approximately 45 crore people of 31 countries are away from water approach and approximately 110 crore people of world are unapproachable to the fresh water. Those who are getting any how water, loosing their life due to un-safe drinking water by approximately 74,20,000 No's per year of the world.

I INTRODUCTION

Drinking water is safe when it is fit for our body and does not claim any harm and disease. The water should be free from physical, chemical and microbial impurities. Because water has its basic characteristic of dissolving things on its contact. This phenomenon has caused water pollution. Water being liquid it easily spreads and gets contacted to the surfaces and try to dissolve the surroundings. Hence water should be treated safely and freshly supplied to the consumer. In the traveling media like pipe water supply some effective contaminants are usually mixed in the water, certainly up to some extent which makes water unsafe. But this change may serve slow leading diseases in the body. However every ones body is having different

immunize potency. Some people easily proclaim disease even on little change while others remain unaffected even for many changes. If we observe water in tumbler we observe its clarity. Physically color, temperature, smell, turbidity and taste are adjudged and bit change in these parameters has no acute effect on consumer. Similarly chemical parameters have pH, Cl₂, & dissolved solids. More value to the standards may harm the consumer but can be detected and controlled. Lastly Biological parameters have pathogens and causes severity. So detection of these pathogens is must because these grow in groups and develop colonies to the entire water shortly in favorable conditions.

Most people are away and out of reach of water. At this stage they usually consume dirty water. This dirty water holds more bacterial activity. So use of such water causes diseases. Hence pathogens must be killed/ removed from this water, when pipe water supply is made it is ensured that clear and unharmed water will be supplied and consumed. But in long run due to corrosion, leakage and other causes the pathogens may mix into water and that may cause diseases like typhoid, dysentery, gastro-enteritis, cholera, viral fever, T.B. etc. Approximately 80% diseases are caused due to un-potable water. Hence it is important to drink safe water for avoiding diseases.

Approach:- Presently people are using mineral R.O. and other purifier for additional safety of drinking water. But this is un-approachable. For common people, new and easy method to get pure water for drinking purpose directly and indirectly has been discussed below. Commercially various methods are used to remove or kill bacteria (i.e. disinfection) but here an approachable in-house method has been additionally added to protect bacteria to enter into the body. The solar light is radiating spectrum bends in the form of energy waves. These waves are spreaded on the earth and even reach at every remote part of the earth. These radiations have a property to kill pathogens keeping in contact for some time. This method of disinfection is used in theory of personal use but here as far as the theme is taken a cheaper way has been chosen and analyzed. Before going to simple procedure of disinfection an additional way of spectral bends effect is being highlighted.

The spectral bands of various wave length i.e. 0.03 to 14000 nano meters are in the form of x-ray, gamma ray, ultra violet, infra-red and thermal rays incident on earth, where ultraviolet radiation disinfect the water and infra-red radiation increase

temperature. In morning U.V. rays are effective and in noon time I.R. rays serve effectively. So their combination between morning to noon is very effective to kill germs in the water.

To boil water is concept of doctors while medicinaling or sterilizing because by boiling all pathogens are killed. But during water supply system this cannot be followed up due to wastage of energy. While cooling, contaminants may go in the water, while running in the pipe and also if not safely stored. Hence as far as topic is concerned to the dwellers residing remote area of the country where water is out of reach and people usually collect the water from near by sources and consume. This nearby water may be of large pond where washing bathing activities usually continue for which they bore shallow hand pump as it is easily and cheaply driven in the land. By consuming such water they suffer from diseases. The suitable and appropriated method has been designed and revealed here that keeping the water into the 2.0 litter glass bottle doing half blacken along its length and putting in the solar rays incident perpendicular for six hour i.e. by 9:00 am, to 3:00 pm the maximum bacterial removal will be there than plastic bottle. Glass bottles are usually available in all houses. They are required to put in the inclined position perpendicular to the in coming radiation by doing its half blacken by paint and filling it with water then up keeping in exposure by six hours will prove the water more additionally safe from disease causing agents.

Most of dwellers are having inclined roof of G.I. sheet or A.C. sheet. By doing some of its portion with black paint and also doing glass bottle half black along its length and keeping for four hours will give same safe of water as cited above. 300 ml bottle of glass or plastic (pearl pet) may be taken however their efficiency is lower. The thought behind this is that the radiation falling on 2.0 ltr. Of glass bottle is serving as convex lens whose curve surface focuses incident rays centrally and finally focus spreads on its dia. Hence maximum intensity of radiation falls on the water resting inside the bottle which kills microbes/pathogens by the contact of six hours period in sunny days.

II CONCLUSION

The method is best one and every one not only specially living in out reach areas of water but also heaving supply water, should follow the same. In-view of extra safety 2.0 ltr. half black glass bottle is

better resulting than glass bottle for removal of bacteria. Glass bottles are comparatively better than plastic bottle, when tilted towards the sun changing direction. Initially in morning to noon hrs. removal is faster than 12:00 noon to 3:00 pm. Partially draw back exists during rainy season but presently rainy days are limited, hence this constrain is unconsiderable however better performance remains during day hrs

As far as our country is concerned which has spaced 120 rank out of 122 countries for an un-approach of water. The question is not only unavailable water which is going to be scared but the available water should be quite potable while consuming and free from every type of microbes causing diseases. So as consumers could be unaffected with available water. Here the topic concerns to have an extra precautionary measure to safe the in coming water for drinking purpose.