

DANGERS TO HEALTH FROM WATER SUPPLIES IN INDIA

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Abstract : Water serves every need of man. Drinking for quenching the thirst is, perhaps, the greatest use of water. Unsafe water drinking is associated with a variety of diseases besides other dangers to which the public is exposed. The use of polluted water can cause by lapses in administration before installation or, in the distribution system lapses and most importantly personal callousness. The article looks at these aspects in brief.

INTRODUCTION

Water is the elixir of life and there can be no life without water. The water serves every need of man. The water cleans man's environment to abate the spread of disease, gives aestheticity on the earth, provides all comforts and recreations to the man, serves the main in many beneficial ways such as in irrigation/ farming, fish cultivation, industrial (soft drinks production, processing of various products, cooling etc.) reception of huge amounts of water waters generated from the numerous human activities, and most importantly for drinking the great water use. The degree of usefulness for all uses is dependent on the quality status of the water. The public (literate the most) is most ignorant about the quality aspects of water and related direct or indirect impacts / implications. For example, the author has witnessed street eating shops (popularly called 'dhabas' in Delhi) using raw Hooghly river water (meant for street washings, fire fighting etc. in Kolkata) for dish washing etc. mistaking for culinary use the confused colour code of red and green painted taps carrying potable and raw river water many hotels of Kolkata (which had dual water supply system one for potable water and the other for a raw river water system) as a result the non kolkatians dwelling the Kolkata hotels invariably land up using the non potable water for culinary and drinking purposes and thus falling prey to the various water borne disease.

Almost 80% of the various diseases are caused through the use of unsafe water for drinking. The Indian public is almost totally ignorant of the dangers from the use of unsafe, contaminated and polluted waters. The public generally rely upon the aestheticity or palatability of the water, that is, a water that looks clean (turbidity free), that is at a comfortable temperature and that gives no feeling of any kind of taste and / or odour. But the concept of safety or wholesomeness is entirely different. The term wholesomeness applies to waters which do not contain any pathogens (disease causing organisms) or toxicants or excessive amounts of organic matter. It is therefore, the prime duty of environmental engineers to make public water supplies both palatable and wholesome. Apart from this, they should also ensure that the public water supplied do not become unsafe while flowing through the water distribution systems including the overhead service reservoirs. This paper discusses the many dangers to which the public is exposed so that appropriate awareness is created in the present situation.

HEALTH HAZARDS OF WATER

POLLUTION

The various dangers to which the public is exposed while deciding about any water's safety, can broadly be classified in to three

categories. Viz. (i) public administrative (ii) private and (iii) personal

Administrative lapses

These include those dangers which are caused due to the neglect of safety precautions by the various public officials at various places. The following is an account of such dangers.

- 1) The drinking water collected from a sources is made both palatable as well as wholesome at the water treatment plants. This involves several units including sedimentation, flocculation system (channel or mechanical flocculation tank), secondary sedimentation, filtration, clear water reservoir (where contact time is provided for chlorination to inactivate the pathogens) etc. All these units are open and generally constructed separately as individual units. In most situations, they do not have any security and one can easily have an uninterrupted entry in to them (on the pretext of having a look at them to know how their water gets treated) and easily add or throw some soluble poison or pathogen containing capsules in to any of the said water treatment units or at the water intake points. A terrorist act can not be ruled out. This can easily result in a mass killing of the population served by the said water treatment plant. Therefore the water treatment plants should have a very strict type of security arrangements preferably by well trained ferocious dogs as they can not be influenced (or bribed) through dubious means. Likewise the huge service reservoirs or clear water reservoirs (such as the one at the "Hanging Gardens" at Mumbai (Bombay) used also as picnic spots should have adequate foolproof security arrangements
2. From the service reservoirs the water is conveyed through distribution system to reach the various consumers. The stated distribution system has many joints all along the way to the consumers and many of them, in India, remain leaking due to the poor and neglected maintenance. Such leaking points also become the places where poison can be injected in to the water resulting in the mass killing of the consumers. The defaulting officers, engineers and / or water analysis keeping track of the desired water quality should be legally held responsible and answerable apart from being tried for mass murder.
3. The services pipe leading to individual houses in India, most often have leaking joints and the author has personally seen such joints occurring right in the middle of some open drains carrying the town's wastewater. In such situations, when the

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water supply is suspended for any reason, a partial vacuum would result and the wastewater (containing pathogens) of the drain would enter the service pipe to directly reach the consumer. The danger is obvious. The responsible officials should be booked for mass murder in such cases. A surprise random water sampling at the various consumer points and treatment units should routinely be carried out faithfully and regularly.

- All public water supplies are invariably disinfected with chlorine to make the water free of pathogens. A small residual of chlorine is always provided for taking care of any future contamination that may occur on the way to the consumers. Therefore, a chlorine odor is an index of safety against pathogens and the consumer invariably places all his trust and reliance on the residual chlorine. Due to the various corrupt practices most prevalent in India. One hardly notices any residual chlorine any where in India. The involved officials make money through bogus vouchers showing the purchase of chlorine and / or bleaching powder at the cost of the safety of the public. Such offences should be considered very serious and treated as mass murdering.

Private lapses

Due to the lack of confidence for safety of the public water supplies and inadequate public supply of water, the consumers very often manage to have their own private supply of water. Following are some of the situation where the stated consumers become exposed to dangers.

- The consumers for their water supply may install hand pumps, tube wells etc. in their private areas/ premises. But such consumers are most often ignorant about the quality status of the ground water. The groundwater appearing palatable can never be wholesome due to the continuous contamination from the seepage of polluted waters from the surface and open drains carrying domestic and other (also toxic in some cases) waste waters. It is well known that in some areas (such as Mayapuri in Delhi in India), most households private carry out 'Plating' activities generating lot of toxic wastes which flows in open drains only to seep in to the ground and / or reach the nearby stream / river. As part of sabotaging and / or terrorist activities, poisons can even be forced to seep / percolate in to the ground. These toxicants contained in the waters continuously accumulate in some selected organs (s) of the human body only to result in the malfunctioning of such organs (requiring a need for organ transplant) or even death. Such consumers should be educated about the said dangers and to disinfect their waters before consuming.
- The consumers have to have installed a plumbing system (system of pipes from entry of water to exist of waste water) in their houses along with an overhead tank (which are most often, not kept clean, and the author, as a student, once detected a dead foul smelling crow in the overhead tank in his hostel) for storing water for toilet uses. In India, such plumbing jobs are most often carried out by untrained / unlicensed plumbers, as a result, the wholesome public water supply gets mixed up with the overhead tank's unsafe water due to some cross connection s/ inter connections etc. This exposes the consumers to dangers of using their own household water supply. The consumers therefore need education and awareness to get the plumbing work done only by licensed plumbers.
- The advanced countries started the use of bottled mineral

water to supplement the body need for minerals. But, in India ordinary bottled waters started flooding the markets bearing numerous trade names and labels like ozoned / sterilized / etc. water. Duplication (for quick money making) became rampant in India. The Indian public totally unaware of the quality status of such bottled waters, made buying such bottles at Railway / Bus Stands / etc. a status symbol. Many times, the quality of the Railway station tap waters may be better than the so called Indian bottled waters. The various Non Governmental Organizations (such as Delhi's Centre for Science & Environment) should come forward to analyze the said bottled waters and make the public aware of the dangers of consuming the Indian bottled waters.

Personal Lapses

The hygiene of storing and serving of water also poses dangers to human health. The following situation need consideration.

- The hygienic storing of drinking water is often neglected in India. The storing of water in copper, silver and gold vessels makes the water pathogens free and safe. Gold is best, silver next best and copper in that order. The present practice of storing cold water in plastic vessels (as has become fashionable and status symbolic in parties) is dangerous and may some times convert wholesome water in to unsafe water. Unfortunately, the Indian traditional practice of storing drinking waters (at home and in parties) in copper vessels has lately been abandoned. The author feels that the Indian educated need the most awareness.
- The water in unknown situations, jungles, picnic spots, etc. can be disinfected with chlorine/bromine tablets, but unfortunately in India., one has to beware of spurious tablets sold in Indian markets (irrespective of the shop's status). People should be made aware to buy only those tablets which are marketed by government owned organizations such as by the National Environmental Engineering Research Institute, Nagpur. The government should exercise a very strictly punitive legislation for health protecting products.
- The serving of water should be hygienic oriented, for example, the server should avoid his / her fingers dipping in the water meant for drinking.
- The conviction that certain water (also the server) is always safe or unsafe also plays a role in modifying the internal human system to cause the appropriate effect. This however, will need scientific studies.

CONCLUSION

The best thing would be to look at where the water comes from?, who gives it? and how is it given?

RECOMMENDED READING

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