Nature Environment and Pollution Technology
An International Quarterly Scientific Journal

Vol. 8	No. 2	pp. 307-308	2009

Short Communication

Bacteriological Examination of Drinking Water in Different Public Places with Reference to Coliforms

R. R. Kasar, R. T. Tidke, G. V. Kore and Masarrat Sultana*
MGM College of Agricultural Biotechnology, Aurangabad-431 003, Maharashtra, India
*Jawaharlal Nehru Engineering College, N-6, CIDCO, Aurangabad-431 003, Maharashtra

Key Words:
Drinking water
Coliforms
Pollution level

ABSTRACT

This study investigates the pollution level in drinking water in different public places. The bacteriological analyses performed were in accordance with standard procedures. Out of eight samples from different sites all had counts higher than the standards. Cinema theatres were the most polluted.

Water pollution is the contamination of water caused by human activities, which can be harmful to organisms and plants living in these water bodies or to the humans those use these waters. Organic wastes such as sewage impose high oxygen demand on the receiving water leading to oxygen depletion with potentially severe impacts on the whole ecosystem (Kudesia 1990, Ao Meren & Bordoloi 2003). Pathogens can produce waterborne diseases in either human or animal hosts. Water pollution has many sources. The most polluting of them are the city sewage and industrial waste discharged into the rivers (Prajapati & Mathur 2003). The coliform group consists of several genera of bacteria in the family Enterobacteriaceae that includes *E. coli*, which is a normal inhabitant of the intestinal tract of human and other warm blooded animals, and thus, regarded as the faecal type of coliform (Atlas & Bertha 1997). *E. coli* is regarded as the most sensitive indicator of faecal pollution (APHA 1998, Bonde 1977). The large numbers of *E. coli* are present in the gut of human and other warm-blooded animals. The fact that they are not generally present in other environment supports their continued use as the most sensitive indicator of faecal pollution available (Fresenives & Schneider 1988, Edberg et al. 2000). The present study was designed to detect the coliforms and to assess the quality of drinking water in various public places like bus-stop, railway station, and all six cinema theaters in the city of Jalgaon.

The detection and confirmatory test for *E. coli* was made by Most Probable Number (MPN) method using MacConkey's Broth (APHA 1998). Most probable number (MPN) of coliforms in case of water samples collected from Cinema theaters were estimated to be very high (220 per 100mL), and in case of waters from Bus Stand (63 per 100mL) and Railway Station (26 per 100mL) (Table 1). Water of these places is, thus, not potable as per WHO standards (WHO 1996). According to a regulation published in the Federal Register (1986), there should be 0 coliforms/100 mL drinking water, as determined by any method for any sampling frequency. The consumption of drinking water contaminated with pathogenic microbes of faecal origin is a significant risk to human health in the developing world, especially in remote rural areas and peri-urban 'shanty' communities. Over three million deaths per year are attributed to water-borne diarrhoeal diseases, especially among infants and young children in poor communities in Africa, Asia and South America (Anon 1997). Proper management is immediately required to maintain the water quality in public places.

Table 1: MPN of colifoems from different public places.

Source of sample	Sample taken			MPN/100mL
	Five of10 mL	Five of1 mL	Five of 0.1 mL	
Bus-Stand	5	1	2	63
Railway-Station	4	2	1	26
Cinema Theaters				
A	4	3	1	33
B	4	3	0	27
C	5	1	1	46
D	5	0	2	43
E	5	3	3	180
F	5	4	2	220

REFERENCES

Anon 1997. World Health Report. World Health Forum. 97: 181-188.

Ao Meren and Bordoloi, S. 2003. Amphibian distribution with respect to water chemistry in the wetlands of Kohima district, Nagaland, India. Aquacult., 4(2): 259-263.

APHA 1998. Standard Methods for the Examination of Water and Wastewater, 20th edition. American Public Health Association, Washington, DC.

Atlas, R. M. and Bertha, R. 1997. Microbial Ecology - Fundamentals and Applications. Benjamin/Commings Science Publishing, 01-694.

Bonde, G. J. 1977. Bacteriological indication of water pollution. In: Advances in Aquatic Microbiology. Eds. Droops, M. R. and Januas, H.W., Academic Press, London, New York, 273-364.

Edberg, S.C., Rice, E.W., Karlin, R. J. and Allen, M. J. 2000. *Escherichia coli***:** The best biological drinking water indicator for public health protection. J. Appl. Microbiol. Symp., Supplement., 88: 106-116.

Fresenives, Quentin W.K.E. and Schneider, W. 1988. Water Analysis. A Practical Guide to Physico-Chemical, Chemical and Microbiological Water Examination and Quality Assurance. Springer Verlag, Berling, Heidelberg, Germany. 0-804.

Kudesia, V. P. 1990. Water Pollution, 3rd revised edn. Pragati Parkashan, Meerut, 84-102.

Prajapati, R. and Mathur, R. 2003. Statistical studies on the quality of ground water. Nature Env. Polln. Technol., 2(2): 201-204.

WHO 1996. Guidelines for Drinking Water Quality. 2nd Edition, Geneva.