

Status of Drinking Water Quality and its Contamination in Pakistan

Saba Saleem, Wasif Ali and Muhammad Sohail Afzal*

Department of Chemistry, School of Science, University of Management and Technology (UMT), Lahore, Pakistan

*Corresponding author: Muhammad Sohail Afzal, Department of Chemistry, School of Science, University of Management and Technology (UMT), Lahore, Pakistan, Tel: +92-321-5244808; E-mail: sohail.ncvi@gmail.com

Received: February 04, 2018; Accepted: March 22, 2018; Published: March 28, 2018

Citation: Saleem S, Ali W, Afzal MS (2018) Status of Drinking Water Quality and its Contamination in Pakistan. J Environ Res Vol.2: No.1: 6.

Description

Due to population pressure, sewerage disposal and increase number of industries, water quality situation of Pakistan is now becoming deteriorated. About 20% population of this country has safe drinking water while remaining 80% are unfortunate in this case. Water related diseases are the major cause of health problems. About 80% people hospitalized and one third of total deaths occurred each year is due to unsafe water. Anthropogenic activities are the core reason behind such catastrophes. Direct disposal of sewerage into groundwater is prime cause of water pollution as it penetrates into water resources and increased microbial growth. While discharge of toxic chemicals and fertilizers into water supplies are the secondary source. There is an instant demand to take some protective measures and use treatment technologies to overcome the water pollution and its possible health impacts.

For the endurance of human beings, water is supposed to be an indispensable component. Access to safe and healthy drinking water is a basic human right and a global challenge as well as a major objective for the sustainable development [1]. Approximately 884 million people worldwide do not have access to safe drinking water and about 1.8 billion people are drinking filthy water [2]. According to 2015 assessment report of Millennium Development Goals (MDGs), about 663 million people across the globe still do not have safe drinking water and among them eight out of ten people are belong to the rural community [3]. Pakistan is among few countries which has been blessed by natural water resources. But with the passage of time both quality and quantity of surface and groundwater is deteriorating. At this time Pakistan is one of the thirty states which are facing severe water deficiency and situation is becoming worse day by day [4].

From Independence Day to this time per capita water availability in Pakistan is reduced by more than 400 percent. Total water supply in regions of Pakistan is 1038 cubic meters that is not sufficient to fulfill the requirements of its all citizens [5]. Punjab, being the chief domain of Pakistan, contain about 60% of total population among which 84 million people are living in rural areas and 7% of all its population depend on dug wells and rivers for water supply. This ratio declare that only Punjab have good water supply system. While the ratio of water discharge from dug well and tube wells in Sindh, KPK and Baluchistan is 24%, 46% and 72% respectively [6].

Despite of this great number, water infrastructure and sanitation conditions in rural areas are very poor. In villages only 13% of households are using tap water while in urban areas it is 20 times greater [7]. In results to an official survey about 79% samples of drinking water from 12 different districts of Punjab, are found to be contaminated. While 88% of drinking water in rural areas is contaminated with different sort of microbes, heavy metals, fertilizers, sewage disposal and many other [8].

Main supplier of drinking water is groundwater and rivers. About 70% of water comes from aqua fires or groundwater resources. When flow of river is high then it creates solid suspensions that lead towards water contamination. Main cause of surface water or groundwater pollution is improper disposal of waste and sewerage in these resources [9]. Low level of groundwater also a major cause of water pollution as it decrease water table and increase the quantity of saline water. Drinking water quality is measured by the quality of its main sources, its level, treatment efficiency and quality of water supply lines [10]. Metallic pipes used in water supply line develop major corrosions with great public health concerns. Corrosion of these pipes leads to the pipe deterioration, increased microbial growth and enhance the number of contaminates that cause water pollution [11].

Water pollution means poor water quality that is not good for human health. Anthropogenic sources are the major cause of water pollution. It includes industrializations, urbanizations, excessive use of fertilizers and pesticides etc. Industrialization and increased amount of urban units deteriorating water quality by their direct discharge of waste into mainstreams and excessive extraction of groundwater to fulfil their desires [12].

Water borne disease are considered as most ubiquitous across the entire globe and also a major cause of mortality as well as morbidity of human beings [13]. About 58% of deaths occur each year due to poor sanitation and supply of unhealthy water. Main contaminants that damage public health are bacterial pathogens, untreated human waste and industrial effluents in supply line. Poor sanitation and unhygienic condition are also contributed a lot in developing water borne diseases. In Pakistan rate of infant deaths and fertility is 12.6% and 7% respectively. Hospital reports showed that most of these cases happened due to fecal contamination in drinking water. Chemical pollution is a 2nd most important cause of water pollution. Industrial effluents and excessive use

of fertilizers in fields leads to serious health damages. Contaminated water that used for irrigation supply also have indirect effects [14,15].

Several studies have been performed on water quality of Pakistan, results declared that almost all areas of Pakistan do not have safe drinking water. Major contaminants that are present here are microbes, metals especially arsenic and lead as well as saline contamination due to over extraction of water and decreased water table [7]. In Pakistan approximately 50% of deaths and 40% of hospitalized people are due to water related issues. Every 5th child under age of five y is suffering from water borne diseases. Diarrheal problems are the 2nd most serious cause of death among children and each year about 361,000 children die due to this issue [16,17].

Water quality is deteriorating day by day and no proper attention is giving to this critical issue. In Pakistan, state of local government to provide basic facilities to communities is depleting over years. Pakistan government needs an effective system to address the governance challenge. Government should take serious actions for the maintenance, availability and treatment of drinking water. Proper legislations should make for the control of water contamination and standards for drinking water should be established provisionally. Besides all of this a cognizance crusade should be started at local level. People should be aware about the importance of drinking water security and they should adopt mitigated measures for the control of water pollution and water scarcity.

Competing Interests

The authors declare that they have no competing interests.

Funding

There is no role of any funding agency in this study.

References

1. Water UN (2012) Managing water under uncertainty and risk, The United Nations world water development report 4, UN Water Reports, World Water Assessment Program.
2. Rosinger AY (2017) Household water insecurity after a historic flood: Diarrhea and dehydration in the Bolivian Amazon. *Social Science Medicine*.
3. Unicef (2010) Levels and trends in child mortality: Report 2010: Estimates developed by the UN Inter-Agency Group for Child Mortality Estimation. United Nations Children's Fund.
4. Arshad N, Imran S (2017) Assessment of arsenic, fluoride, bacteria, and other contaminants in drinking water sources for rural communities of Kasur and other districts in Punjab, Pakistan. *Environl Sci Pollut Res* 24: 2449-2463.
5. Akange SS (2016) Impact of potable water availability on economic development of North Benue State (Doctoral dissertation, Walden University).
6. Basharat M, Hassan D, Bajkani AA, Sultan SJ (2014) Surface water and groundwater nexus: groundwater management options for Indus Basin Irrigation System. IWASRI Publication.
7. Daud MK, Nafees M, Ali S, Rizwan M, Bajwa, RA, et al. (2017) Drinking water quality status and contamination in Pakistan. *Biomed Res Intl*.
8. Rasool A, Xiao T, Farooqi A, Shafeeque M, Liu Y, et al. (2017) Quality of tube well water intended for irrigation and human consumption with special emphasis on arsenic contamination at the area of Punjab, Pakistan. *Environ Geochem Health* 39: 847-863.
9. Nellyyat P (2016) Water pollution: Extent, impact, and abatement. In *Indian Water Policy at the Crossroads: Resources, Technology and Reforms*. Springer International Publishing.
10. Baig SA, Lou Z, Baig MA, Qasim M, Shams DF, et al. (2017) Assessment of tap water quality and corrosion scales from the selected distribution systems in northern Pakistan. *Environ Monit Assess* 189: 194.
11. Liu J, Chen H, Yao L, Wei Z, Lou L, et al. (2016) The spatial distribution of pollutants in pipe-scale of large-diameter pipelines in a drinking water distribution system. *J Hazard Mater* 317: 27-35.
12. Yang D (2013) Chinese research perspectives on the environment, Volume 1: Urban Challenges, Public Participation, and Natural Disasters. Brill.
13. Ghazanfar H, Saleem S, Naseem S, Ghazanfar A, Khattak UK (2017) Safe drinking water and sanitary measures: A cross-sectional study in peri-urban community of Islamabad. *J Pak Med Assoc* 67: 220-224.
14. Liu L, Oza S, Hogan D, Perin J, Rudan I, et al. (2015) Global, regional, and national causes of child mortality in 2000–13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 385: 430-440.
15. Zeitoun MM, Mehana ESE (2014) Impact of water pollution with heavy metals on fish health: overview and updates. *Global Veterinaria* 12: 219-231.
16. Nabeela F, Azizullah A, Bibi R, Uzma S, Murad W, et al. (2014) Microbial contamination of drinking water in Pakistan—a review. *Environ Sci Pollut Res Int* 21: 13929-13942.
17. Rizvi A, Bhatti Z, Das JK, Bhutta ZA (2015) Pakistan and the millennium development goals for maternal and child health: progress and the way forward. *Paediatr Int Child Health* 35: 287-297.