Thematics Journal of Geography

ISSN: 2277-2995
Vol-8-Issue-8-August-2019

River Pollution: Big Cost of Future (Light on Mumbai Metropolis Rivers)

,*Chinmay .M , Leena Muralidharan, Sangeeta Gaur

Department of Zoology.V. K. K. Menon College of Commerce and S.S. Dighe College of Science, Mumbai, India. *Thadomal Shahani college of engineering ,Bandra,Mumbai

Water is one of necessity of life without which it is not possible for life to sustain. Approximately 71% part of the earth is enclosed with water in which 97% seawater, 2% polar ice caps, and 1% is fresh water. Water quality is an indicator of environmental health and well being of society. The environment nearby river area are very productive, beside this they also have economically values for fisheries, tourism, and recreational activities (Donde and Patil, 2018). In India, approximately 1000 rivers are present which are source of livelihood for large number of population.

Rapid urbanization and industrialization has led to discharge of waste into the water bodies, which make them polluted and affects the water ecosystem. Agricultural, domestic sewage are main sources of water body pollutions besides Industrial waste such as toxic chemicals, pesticides, solvents and treated effluent are the main factor which pollute the river water (Jadhav and Singare, 2015; Haseena *et. al.*, 2017). Untreated industrial sewage water consists of heavy metal (arsenic, mercury, cadmium, lead, nickel, copper, chromium and zinc) (Singare *et. al.*, 2010). This heavy metal has an adverse impact on flora and fauna of river; they also enter into the food chain due to biomagnifications and ultimately affect the human's life (Jadhav and Singare, 2015). The waste products of industries are drained directly (without any treatment) into the river and are the main cause of surface and ground water pollution, because of these toxic metals the quality of water reduced severely (Kamble, 2014; Ho *et. al.*, 2012).

Increased population has also participated in water pollution. Solid and liquid wastes, human extra are discharged into the river which contaminates water. In this contaminated water many harmful bacteria are dominantly found and are harmful for human health (Desai and Vanitaben, 2014; Jabeen *et al.*, 2011). Polluted water of river can enter into the food chain and has adverse / lethal impact on animals, fishes and bird population (Janhit Foundation, 1998; Kamble, 2014; Ebenstein *et. al.*, 2008). Plastic also play an important role in water pollution. According to Desai (2014) Chennai is top metro city followed by Kolkata

ISSN: 2277-2995
Vol-8-Issue-8-August-2019

on the basis of water pollution due to plastic and then Mumbai, Bangalore and Delhi are listed, respectively. According to WHO (1996), "Pollution of the aquatic environment refers to the introduction by man, directly or indirectly, of substances or energy which results in such deleterious effects as harm to living resources, hazards to human health, hindrance to aquatic activities including fishing, impairment of water quality with respect to its use in agricultural, industrial and often economic activities, and reduction of amenities."

Mumbai is the commercial capital and biggest metropolis of India and is located on the coast of Arabian Sea. There are four main rivers in Mumbai: Dahisar, Poisar, Oshiwara, and Mithi. These rivers begin from Sanjay Gandhi National Park and ultimately they merge in to the Arabian Sea.

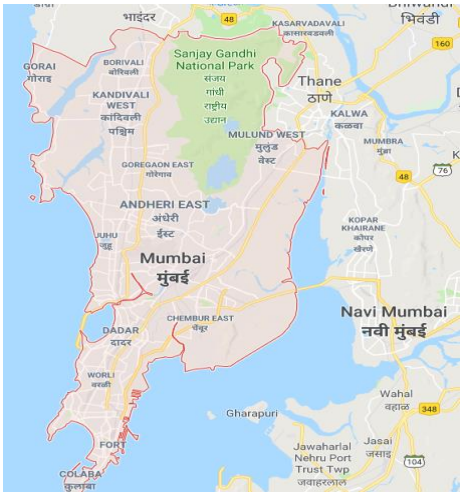

Figure 1: Mumbai region in India map

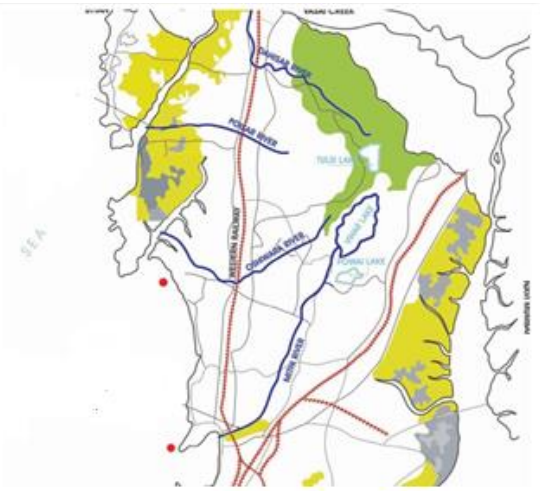

Figure 2: Map showing major four rivers Dahisar, Poisar, Oshiwara, and Mithi.

The Dahisar and Mithi rivers are on Salsette Island, Mumbai, India. Dahisar river originate from Tulsi lake in Sanjay Gandhi National Park and flows thoroughly North-West approximately 12 kilometer through the localities before meeting the Arabian Sea via Manori Creek. Mithi River is the joining of the water discharge of Powai and Vihar lakes. This river flow 17.84 km before it meets the Arabian Sea. It's a seasonal river and level rises during the monsoon. Poisar River begins with Sanjay Gandhi National Park and pours into the Marve Creek and then it finally reaches into the Arabian Sea. Oshiwara River starts in the Aarey Milk Colony and emptying into the Malad Creek.

Hule and Emos (2018) reported 8.6 NTU Turbidity in water of Dahisar River which is higher than 5 NTU and indicates bacterial contamination in water.

ISSN: 2277-2995
Vol-8-Issue-8-August-2019

High level of heavy metal contamination was observed by Singare *et. al.*, (2012) in Mithi River. A high level of nitrogen and toxic metal contamination was observed in Mithi River by Korgaonkar and Ukarande in (2016). More and Chabul reported high level of cadmium in River. They also found high number of coliform which may be due to mixing of sewage in the water. Same findings observed by Nagarsekar and Kakde in year 2014. They also suggested that this contaminated water should not be used for domestic and industrial purpose. It also has an adverse impact on aquatic and mangrove ecosystem of river and Arabian Sea. Findings of Shah and Bhave suggest high amount of BOD and biodegradable organic matter and zero concentration of dissolved oxygen in Mithi River. This indicates that the water of Mithi River is highly polluted this may be due to garbage dump in the River.

Due to negligence the waste products of dye making factories and cattle shed are disposed directly in to this river. Developing housing colonies and construction material on the site are also responsible to squeezing the river area (Arijit Sen, 2014). According to Chandrashekhar (2016) approximately 74.85% increase in built up area during 1966-2009. The flora and fauna diversity of mangrove forest near Oshiwara river is drastically decreasing and scavenging birds are swapping flamingos (Arijit Sen, 2014).

According to Ronald Rodrigues (2017) Poisar River has turned into an unhygienic nullah this is due to debris, garbage and by encroachments by slum dwellers.

There is an urgent need to control the increasing water pollution is these rivers as they are one of the source of balancing the ecosystem and also a large number of people depend on these rivers directly or indirectly for their livelihood. In our view following measures should be immediately taken in order to control the further damage.

a) Strict controls need to be introduced on the disposal of domestic sewage by housing societies and residential units. There are many sewage lines which dispose the sewage in the river. The sewage should be treated and then only allow to dispose off.
b) Dumping of garbage into the river should be strictly prohibited.
c) Strict implementation of all the environmental laws to be followed.
d) Modern sanitation systems should be adopted. Proper lavatories need to be built at different locations to prevent open defecation.
e) The width of the Mithi River needs to be widened by relocating residential, commercial units, slums which obstruct the course of the river (Nagarsekar and Kakde, 2014).

References:

ISSN: 2277-2995
Vol-8-Issue-8-August-2019

A. Sen. (2014): Oshiwara river, Mumbai. Strategies to revitalize the rivers urban corridor. DCRP, UC Berkelley.

Donde S.S. and Patil A.L. (2018): Study of fish diversity in Vaitarna River of Wada Taluka of Palghar District in Maharashtra, India. International Journal of Current Microbiology and Applied Sciences, 7 (5)

Jadhav A.M. and Singare P.U. (2015): Studies on water pollution due to toxic metals in Ulhas River flowing along the Dombivli City of Mumbai, India. International Letters of Natural Sciences. International Letters of Natural Sciences.

Singare P.U. Lokhande, R.S. and Pathak P.P. (2010): Study on physico-chemical properties and heavy metal content of the soil samples from Thane Creek of Maharashtra, India. Interdisciplinary Environmental Review,11 (1) :38 - 56

Kamble SM.(2014): Water pollution and public health issues in Kolhapur city in Maharashtra. International journal of scientific and research publications. 4(1):1-6.

Ho Y.C., Show K.Y., Guo X.X., Norli, I., Alkarkhi Abbas F.M., and Morad N.(2012). Industrial discharge and their affects to the environment. Industrial waste, InTech. :1-32

Desai N, Smt Vanitaben. A study on the water pollution based on the environmental problem. Indian Journal of Research. 3(12):95-96.

Jabeen SQ, Mehmood S, Tariq B, et al. Health impact caused by poor water and sanitation in district Abbottabad. J Ayub Med Coll Abbottabad. 2011;23(1):47-50.

Ebenstein AY. Water pollution and digestive cancer in China. Institutions and governance programs. 2008:1-45.

WHO (1996): Water Quality Assessments - A Guide to Use of Biota, Sediments and Water in Environmental Monitoring - Second Edition. Edited by Deborah Chapman. Published by E&FN Spon, an imprint of Chapman & Hall . pp 1-609.

Hule, R. and Emos S. (2018): Assessment and evaluation of water quality of Dahisar River. International Advanced Research Journal in Science, Engineering and Technology. 5(3), 158-160.

Korgaonkar, P. and Ukarande S.K.(2016): Conservation of natural ecosystem of Mithi River. International Journal of Recent Advances in Engineering & Technology (IJRAET). 4 (4): 2347 - 2812.

Singare P.U., Mishra R.M., and Trivedi M.P. (2012): Heavy Metal Pollution in Mithi River of Mumbai. Frontiers in Science. 2(3): 28-36.

ISSN: 2277-2995
Vol-8-Issue-8-August-2019

More R.S. and Chabul S.S. (2016): Studies on the present status of Mithi River, Mumbai. Journal of Global Biosciences. 5 (4): 3921-3927.

Nagarsekar and Umesh B. Kakde (2014): A bacteriological study of mithi river water in mumbai metropolis. International Jourtional Journal of Researches In Biosciences, Agriculture & Technology. 2(2): 362-374.

Shah A. and Bhave P. (2014): Pollution status of Mithi River. International Journal of Innovative Research in Advanced Engineering (IJIRAE). 1(6), 12-14.

Ronald Rodrigues (2017): Mumbai: Locals turn Poisar river into a nulla. The Free Press Jouirnal. (https://www.freepressjournal.in/mumbai/mumbai-locals-turn-poisar-river-into-a-nullah/1017286)

Janhit Foundation (1998): River Pollution: Causes, Actions and Revival.

Chandrashekhar V. (2016): Urban growth in Oshiwara river areas ups flood risk. https://timesofindia.indiatimes.com/city/mumbai/Urban-growth-in-Oshiwara-river-areas-ups-flood-risk/articleshow/53055588.cms