



WATER POLLUTION OF RIVERS IN MAHARASHTRA : A REVIEW

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ABSTRACT:

Water resources and water quality affect the economic, social and political development of the society. When water becomes contaminated by unexpected substances, it is considered as harmful for human and aquatic lives. This water is termed as polluted water. Various causes are responsible for polluting water. Some natural causes are mixture of biodegraded portion of animal and plants to pure water, siltation by erosion of river banks etc. Domestic wastes, industrial wastes, fertilizers etc. are manmade pollutants of water. The state of surface water pollution in Maharashtra is alarming. Necessity of water for each and every living being needs no description. They intake water directly or indirectly for physiological activities. If this intaking water is polluted, it will do harm that is for sure. The worst part is, this transports to others through food chain. Therefore, we must be aware of the adverse influence polluted water may have on us. At present, we cannot prevent water being polluted cent percent, but minimization is very much needed. It is time we took some steps to start working on it.

KEYWORD: Water resources and water quality , Domestic wastes, industrial wastes.

INTRODUCTION:

The freshwater sources are facing pollution problem all over the world; Lakes are part of freshwater ecosystem, and useful to man. The survival of all life in and around lakes depends on the quantity & quality of water available. Lakes play a significant role in the ecological sustainability of the region. However, continuous inputs of various forms of chemical pollutants from a variety of human activities have seriously deteriorated the quality of many lake ecosystems in India. Lakes are under increasing threat due to point and nonpoint sources of pollution. Major degrading factors include excessive eutrophication due to nutrient and organic matter loading, construction and logging activities etc

The quality of water is affected by various factors like rate of precipitation, flow rate of water, high evaporation rate during the summers, sporadic pollution loads from various anthropogenic activities and so on. Hence, there could be varied fluctuations in the quality of water at the same monitoring location leading to seasonal and monthly variations. Thus to eliminate this shortcoming an interbasin analysis for the occurrence and share of water quality index across the basins has been developed without averaging any values. As seen in Figure No. 1, it is interesting to note that the Godavari Upper, Middle and Manjra sub basins recorded the most number of observations, more than 60% of the observations in 'Good to Excellent' category as compared to any other sub basins in Maharashtra. As one travels downstream to the sub basins, namely the sub basins of Wardha, Weinganga and Pranhita the water quality is increased namely in Weinganga which recorded about 58% of observations under 'Good to Excellent' category as compared to previous year. The WQI of Krishna Upper sub-basin was observed to be about 65%, less than 20% as compared to last year, under Good to excellent category. The Bhima sub basin also recorded similar profile in this year and more than 55% of the observations were under 'Bad' and 'Bad to Very Bad' category. Majority of the observations in Tapi basin were not recorded as the WQMS were found to be 'Dry' most of

the year. Sea/Creek samples recorded marginal increase of observations in Medium to Good category and decrease of observations in 'Bad' category by around 5% as compared to last year.

GROUND WATER QUALITY

Maharashtra Pollution Control Board (MPCB), monitors the ground water quality for 66 ground water monitoring stations with a frequency of twice a year for parameters like pH, Nitrate, TDS (Total Dissolved Solids), Hardness, Fluoride, Microbial content, Sulphates and so on. The ground water quality analysis for the year 2015-16 has been done for 66 monitoring stations. In the year 2016-17, out of the 66 WQMS, there were 49 active stations while 6 WQMS were reported to be closed, water samples from 4 WQMS were not collected and 7 WQMS were reported to be dry for both the sampling months (April and October). This year a total of 92 observations were collected for the active stations out of which 5 observations for the stations 215, 2819, 2822, 2834, and 2200 (Table No. 4) were recorded to be in the category 'Water Unsuitable for Drinking'. These stations recorded high level of TDS, Hardness, Calcium and chlorides levels were found to be high. A total of 27 WQMS recorded in the districts of Kolhapur, Nagpur, Aurangabad, Kalyan, Pune and Thane districts recorded average WQI in the polluted category in this year as depicted in Map No. 2. The pH levels for all ground WQMS were observed in the range of 6.5-9. The highest hardness and calcium level and of about 5960 (CaCO₃) mg/litre and 1320 (CaCO₃) mg/litre was recorded for the water sample collected from a bore well in Turbhe, Navi Mumbai (Station code 215). This station also recorded very high TDS levels of 43650 mg/litre. This was particularly observed in the month of April indicating peak summer (pre-monsoon) season.

Polluted Water Bodies In Mumbai, Pune, Thane

Trash in Mutha River close Omkareshwar sanctuary in Pune, India, on Tuesday, August 28, 2018. (Rahul Raut/HT Photo) Five water bodies in Maharashtra contain 'vigorously contaminated' water, and Mumbai's Mithi River is one of them, as per a water quality examination done by the Maharashtra Pollution Control Board (MPCB) in May.

The MPCB's discoveries were arranged in the wake of checking water quality at 250 areas in Mumbai, Thane, Pune and Nagpur, under the National Water Monitoring Program. These included streams, ocean coasts and springs, depletes, dams and wells. While 81%, or 139 of these destinations had 'non-dirtied' water, 28 locales (16%) contained 'contaminated' water, and five (3%) were 'vigorously dirtied'.

Most destinations where the MPCB recorded poor water quality were in the urban territories of Mumbai, Thane, Pune and Nagpur. In Mumbai, nine areas, the vast majority of which are well known places of interest, had 'contaminated water' Juhu, Worli Sea Face, Nariman Point, Gateway of India, Girgaum Chowpatty, Versova, Malabar Hill, Haji Ali and Dadar' Shivaji Park. Aside from the Mithi, Rabodi Nallah, Color Chem Nallah, Sandoz Nallah all in Thane and which get sewage and mechanical waste, had 'intensely dirtied' or 'terrible' water.

The MPCB said the explanation more areas in Mumbai were distinguished as having dirtied water was on the grounds that it gathered examples close to marine outfalls, which discharges both treated and untreated sewage into the ocean, specialists brought up how this indicated insufficient was being done to prevent enterprises from discharging untreated waste into the ocean.

"These areas are being changed now and will associate with 15 meters seaward," said YB Sontakke, joint executive, water quality, MPCB, including, "The Brihanmumbai Municipal Corporation (BMC) has presented an extensive activity intend to improve water quality. Tenders have been given to set up sewage treatment plants and we anticipate that an improvement in the days should come."

Dilip Boralkar, tree hugger and previous part secretary, MPCB, in any case, said the board had neglected to control modern contamination. "In different pieces of the state, MPCB has neglected to control mechanical contamination entering streams. Ample opportunity has already past the state thinks of creative plans to cooperate, moving from direction and control to being proactive," Boralkar said.

MPCB said it has cautioned ventures releasing untreated sewage into channels. "While many have been given conclusion sees, these channels are on the whole being occupied to shut pipelines of regular affluent treatment plants. We will expel the nullah water from this checking stretch," said Sontakke.

In Pune, nine stream extends, including Bhima, Mula, Mutha, Mula-Mutha, and Pawna, had 'contaminated' water. Thane had eight.

"The Pune metropolitan enterprise is chipping away at treating each drop of water, be it at streams or lakes, in view of a task granted to the Japan International Cooperation Agency (JICA)," Sontakke said. Thane's significant issue is local sewage entering springs. "It should be treated at source and gathered before release," he said. "In Nagpur, a few areas are confronting issue with modern and local sewage, bearings have been given to the region organization to determine the contamination."

Incomparable Court promoter and condition legal counselor Sanjay Upadhyay said it was time the state creates programs like the Ganga restoration plan for contaminated streams in Maharashtra, and set up a Coastal Management Act to guarantee overseeing bodies are punished for water contamination. "Except if a vigorous system, which is known and easy to comprehend, is out set up, these issues will proceed. The institutional conveyance system is poor and should be overhauled quickly," he said.

Wells, not dams, have been the temples of modern India

India is a groundwater economy. At 260 cubic km for each year, our nation is the most noteworthy client of groundwater on the planet we utilize 25 percent of all groundwater extricated all around, in front of USA and China.

At the point when we consider water in any case, our cerebrums have been customized to consider huge dams and waterways, and not wells. This, in spite of the way that India has at any rate four crore water system wells and a large number of ranchers who utilize well water in farming.

India was not the most noteworthy extractor of groundwater during the 1960s and 70s; the Green Revolution changed that. At autonomy the portion of groundwater in farming was 35 percent; today it is a surprising 70 percent.

Looking at water as a common pool resource

People tend to think of groundwater only through an agriculture or urban water supply lens. This however, is just a supply-side perspective that lacks an understanding of what the resource is, and what we need to do to ensure better use of it.

"Agriculture alone cannot provide for our teeming millions."

We have to consider groundwater a typical pool asset; the test anyway is that this regular pool asset is practically imperceptible.

In towns, the observation frequently is, "This is my territory and henceforth the water beneath it is my water." But the inquiry we've been posing to networks to consider is, "How might you possess the water underneath your property, when the water in your well has originated from underneath another person's property and the water from under your territory is normally going to stream underneath your other neighbors' territories?"

When this has been expressly expressed and clarified, individuals rush to comprehend it particularly in the event that you use science got from information that has been gathered by networks themselves.

In any case, while the science is about hydrogeology and the mapping of water sources, the more significant viewpoint is the utilization of this science – which is compelling just on the off chance that it includes bringing the asset (springs) and networks and towns together in the procedures and arrangements – what we call Participatory Ground Water Management (PGWM).

Thinking about water as a resource and not just a source

The customary reasoning is that check dams—which are basically permeation tanks—will gather water that will permeate and energize the groundwater. A typical misinterpretation among both the networks just as associations working in watershed the board is that the wells are being energized.

Be that as it may, wells are just the wellsprings of water and an instrument to get to water and disperse it as per needs and frequently, request. Wells are not the asset; springs are the asset. (Springs are underground layers of permeable and porous shale equipped for putting away groundwater and transmitting it to wells and springs.)

In the event that you can recognize your spring, at that point you know unequivocally where to put your energize structure (or, check dam). So now, rather than four checkdams that you would put in regions where 'water gathers', you could manage with two precisely situated check dams where the springs are, along these lines diminishing expenses considerably while additionally guaranteeing ideal energize.

Ordinarily, when the watershed program is executed, nobody thinks about what befalls the water in the spring. Ranchers will in general burrow further, make bigger wells with the assumption that boundless water is presently accessible for the taking. Such activities are not really supportable.

It is in this way essential to move the concentration from wells (sources) to springs (assets). By changing this focal point, the concentrate at that point shifts from just seeing what is going in and turning out to an assortment of viewpoints: How would you balance employments and biological system needs, or what befalls financial comes back from groundwater and how does the drinking water security get influenced when a spring drains.

Communities need to have this knowledge

Having comprehended the hypothesis and suggestions behind springs and ground water, networks and towns have been excited about getting prepared in these regions. Giving these key hydrogeological abilities to philanthropies and provincial professionals is in this way key to improving decentralized water the board in India.

In the course of the most recent 20 years, we at ACWADAM, have prepared para laborers inside networks. These people are presently ready to insightfully structure the watersheds, converse with their networks, screen progress, and guarantee better basic leadership and the board of groundwater.

Thus, people group are increasingly mindful of the employments of check dams – why they are worked in explicit areas, what their motivation is, and what that will mean for the town.

Panchayats are likewise now requesting information and help. They are in any event, ready to pay for the expenses caused, which for us flag exactly how significant this is to the town overall.

The decisions on water should rest with the people

90 percent of country India's drinking water originates from groundwater and 75 percent of agribusiness is groundwater based. In urban India, 50 percent of the water supply is groundwater based.

Given this high reliance on groundwater it is critical that we bring vote based procedures to groundwater the board. At the point when we share our hydrogeology results with networks, we at ACWADAM don't impact the choices, we don't instruct them.

We share the outcomes – this is saline and is a bigger spring; this other one has new water and gets utilized quicker. What's more, we give them 'conventions' – a menu of potential alternatives to settle on. We tell the residents that these are the impediments, and these are the potential outcomes.

This data fills in as a beginning stage for an exchange. The people group at that point chooses what they ought to do and what they ought to maintain a strategic distance from.

At the point when networks gather information and you get information from that information, they will confide in the information. Also, they are bound to change their conduct and practices. At the point

when you move the basic leadership and capacity to the individuals themselves, change isn't as troublesome as we describe it.

It likewise then becomes change that depends on logically educated choices; there is only occasionally absolute disappointment from such choices.

Since it's about water, there are always power dynamics at play

The science of groundwater is not only about hydrology; it's sociology, psychology, politics, economics and ecology as well. The power dynamics around sharing are about people as well as the stakes involved—who has how much stake in what. The landless have more stake in ecology, the large farmers have a stake in economics, the small marginal farmers in sociology.

The first step towards getting people to even think about sharing is to have them cooperate in some formal-informal capacity. Unless people and communities cooperate, you can't protect the resource, you can't make it sustainable.

Photo Courtesy: ACWADAM

It therefore needs good governance

Surface water is regularly described by struggle who's getting what water, how much, where is it coming from, would we like to bring it from further and further away. Being over the ground and noticeable, individuals rush to battle about it!

With groundwater there is constrained clash; rather, individuals rival each other in light of the fact that one can contend interminably over imperceptible assets; you can go further, and you can have the same number of water sources as you need on your territory.

Our social stories, infact, are worked around groundwater. The lady of the house who oversees drinking water and her better half who handles agribusiness are regularly overseeing water from two unique hotspots for two distinct exercises. Frequently, these sources tap a similar spring. Subsequently, the couple are in unsaid challenge without staying alert that they are; both their needs are met by the equivalent fundamental spring. In this way, in the event that you go through an excessive amount of water for horticulture, at that point drinking water is an issue and shortage results. How would you handle this?

The entirety of this thusly needs great administration and great administration. Furthermore, administration itself depends on science, interest the board and establishments in the town. The panchayat, which ordinarily settles on these choices, is accordingly basic to the accomplishment of this methodology. We don't proceed to work in a region except if we have formal authorization from the panchayat.

This approach needs more supporters

Participatory groundwater the board needs more help. Corporates regularly state that it is high hanging natural product – since it is subject to the yearly downpour cycle, it takes a year for the examination/hydro-topographical investigation, and at exactly that point can any of the real work start on building check dams or changing utilization designs. The outcomes set aside some effort to 'appear'.

Also, results are typically as totaled little changes—drinking water security, improved harvest yields, etc and given the imperceptible idea of the asset itself, these unmistakable changes are regularly hard to see. Be that as it may, such changes are longer enduring, trying maintainable and productive.

It is a lot simpler to put resources into the burrowing of bore wells and working of tanks. In any case, on the off chance that we as a country need to guarantee that the entrance to water is sufficient, fair, and supportable, we should take a gander at both science and network cooperation for answers, as opposed to building increasingly more foundation in quest for perceivability.

EXPERIMENTAL

To describe water quality all through the primary bowl of the lakes, four lasting stations for month to month examining were set up and set apart inside inflow, mid-lake, surge and corner districts. Standard examples were gathered in cleaned glass bottles for bacteriology and different physicochemical examination of test; the precleaned plastic polyethylene bottles were utilized. Preceding inspecting, the whole examining compartment's were washed and flushed altogether with lake water to be taken for examination. The examples were investigated for various physical, concoction and bacteriological parameters of water quality list (Electrical conductivity, TDS, Cl-, Total Hardness, BOD, DO, pH, Fecal Coliform) utilizing standard method¹⁵ In bacteriological assessment, all out coliforms and fecal coliforms were controlled by Membrane Filtration (MF) procedure and normal qualities were recorded.

RESULTS AND DISCUSSION

A water quality record (WQI) incorporates complex logical crude information and produces a solitary number (like an evaluation) that express emotionally the water quality. Such a rating scale considers straightforwardness and customer fathomability. A water quality list can be distinctive sort contingent upon its last planned reason. It very well may be exceptionally explicit for various waterways or could be a general one for a wide range of water implied for human utilization. A WQI can likewise be put together not simply with respect to readings at a solitary purpose of time yet in addition on readings gathered over some stretch of time (like a year). A WQI may likewise be landed at by figuring the quantity of target parameters not met, or by ascertaining the recurrence with which they are not met or the sum by which they surpass the standard. The WQI was determined utilizing NSF data software¹⁶ and contrasted and standard water quality rating, as demonstrated Table 2. The base, greatest and normal of qualities got for different pools of WQI rating for rainstorm, summer and winter season are spoken to in Table 2. The graphical portrayal of WQI rating in various season is given in Fig. 1. Fig. 2 shows area of Futala, Ambazari, Gandhisagar and Gorewada lakes. The defilement of surface water is a noteworthy natural concern and comprises a hazard to both water quality and sea-going biological system. People groups around

CONCLUSION

Water quality observing is of fundamental importance as it gives specific information about the idea of water. Various sorts of physical, substance and natural information are joined to decide at a varying characteristics list. The composite effect of colossal physical, engineered and normal parameters is reflected in the list. Assorted variety lists for water quality, observing can be utilized for assets designation, area positioning, standard implementation, pattern examination, open data and logical look into. The present work depicts the predominant physico-concoction factors and their connection with phytoplankton thickness and network along a contamination angle. Study was additionally done on the surfaceplankton masses in the maritime condition of Waghur and Tapi conduit water. The mechanical effluents from various business adventures in and around Jalgaon contain different noxious substances once went into the stream Waghur and Tapi affecting the water quality. As a result, the plankton population of the Waghur and Tapi River has been affected in wording of abundance and contrasting characteristics by evaluating the tiny fish document as the water quality criteria with reference to freshwater bodies dirtied by various mechanical and residential activities.

Water quality checking is of essential noteworthiness as it gives specific information about the idea of water. Various sorts of physical, substance and natural information are joined to decide at a contrasting characteristics list. The composite effect of colossal physical, manufactured and characteristic parameters is reflected in the record. Decent variety files for water quality, checking can be utilized for assets designation, area positioning, standard authorization, pattern investigation, open data and logical look into. The present work depicts the predominant physico-compound factors and their connection with phytoplankton thickness and network along a contamination inclination. Study was additionally done on the

surfaceplankton people in the maritime condition of Waghur and Tapi conduit water. The mechanical effluents from various business adventures in and around Jalgaon contain different toxic substances once went into the stream Waghur and Tapi affecting the water quality. As a result, the plankton population of the Waghur and Tapi River has been impacted in wording of abundance and contrasting characteristics by evaluating the tiny fish document as the water quality criteria with reference to freshwater bodies dirtied by various mechanical and residential activities.

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