Maharashtra Pollution Control Board

महाराष्ट्र प्रदूषण नियंत्रण मंडळ

E- Bulletin of Water Quality

National Water Monitoring Programme

(NWMP)

Water Quality Index Summary of 250 Stations in Maharashtra

WATER QUALITY

The Maharashtra Pollution Control Board (MPCB)regularly monitors the water quality across 250 Water Quality Monitoring Stations (WQMS) for both surface (155 on rivers, 34 on sea/creeks, 10 on drains, 1 dam) and ground water (24Borewells, 24Dugwell, 1 Handpumps, 1 Tubewell) under two programs of NWMP (National Water Monitoring Programme) project titled GEMS (Global Environment Monitoring System) and MINARS (Monitoring of Indian National Aquatic Resources). Surface water samples are monitored every month whereas the ground water samples are monitored every six months.

The quality of water is affected by various factors like rate of monsoon, dilution during monsoon, high evaporation rate during the summers, sporadic pollution loads from various anthropogenic activities, flow rate of water and so on. Hence, there could be varied fluctuations in the quality of water at the same monitoring location leading to seasonal variations.

Water Pollution

Any change in the physical, chemical and biological properties of water that has a harmful effect on living things is termed as ‘water pollution’ (WHO 1997)

Water pollution results from various point sources such as industrial effluents and domestic waste, and non-point sources such as fertilizer and pesticide run-offs in rural areas from the agricultural fields. Along with human activities, various micro-biological agents like bacteria, viruses and protozoa also cause water pollution which may cause various water-borne diseases.

When toxic substances enter lakes, streams, oceans, and other water bodies, they get dissolved or lie suspended in water or get deposited on the bed. This results in the pollution of water whereby the quality of the water deteriorates, affecting aquatic ecosystems. Further the pollutants can also seep down and affect the groundwater deposits and aquifers.

The effects of water pollution are not only devastating to humans but also to flora and fauna. Water pollution can also significantly increase the rate of algal blooms which can cause depletion of oxygen in the water affecting the aquatic life. The consumption of water contaminated with pesticides can result in cellular and Deoxyribonucleic Acid (DNA) damage, suppression on immune system, cancers, tumours and lesions on fish and animals. Physical deformaties such as hooked beaks in birds and thinning of egg shell can occur in avifauna. The consumption of polluted water may lead to not only poisoning of humans, animals, birds, but also disturbs the fragile aquatic and riparian ecosystem.

Dumping of solid wastes is also an important factor resulting in deterioration of the groundwater quality. Solid waste includes all the discarded solid materials from commercial, municipal, industrial, and agricultural activities.

WATER QUALITY INDEX FOR 250 LOCATIONS OF MAHARASHTRA

Monthly Bulletin of Water Quality

A water quality index provides a single number (like a grade) that expresses overall water quality of a certain water sample (location and time specific) for several water quality parameters. The objective of developing an index is to simplify the complex water quality parametric data into comprehensive information for easy understanding. A water index based on important parameters provides a simple indicator of water quality and a general idea on the possible problems with the water in the region.

WQI for surface water

The National Sanitation Foundation, USA developed the Water Quality Index (NSFWQI), a standardized method for comparing the water quality of various water bodies. It is one of the most respected and utilized water quality index.

Given the parameters monitored in India under NWMP and to maintain the uniformity while comparing the WQI across the nation,the NSF WQI has been modified and relative weights have been assigned by CPCB. Four parameters (pH, Dissolved Oxygen, Biochemical Oxygen Demand, Fecal Coliform) are used for calculating WQI for surface water.

Upon determining the Water Quality Index, the water quality is described for easy understanding and interpretation.

Water Quality Index – Surface Water				
WQI	**Quality Classification**	**Class by CPCB**	**Remarks**	**Colour Code**
63 - 100	Good to excellent	A	Non Polluted	
50 - 63	Medium to Good	B	Non Polluted	
38 - 50	Bad	C	Polluted	
38 and less	Bad to Very Bad	D, E	Heavily Polluted	

WQI for ground water

MPCB monitors ground water quality once in six months. Based on the stringency of the parameters and its relative importance in the overall quality of water for drinking purposes each parameter has been assigned specifc weightage by CPCB. Theseweights indicate the relative harmfulness when present in water. Nine parameters (pH, Total Hardness, Calcium Hardness, Magnesium Hardness, Chloride, Total Dissolved Solids, Fluoride, Nitrate, Sulphate) are considered for calculating Water Quality Index of ground water.

Water Quality Index - Ground Water		
WQI	**Water Quality**	**Colour Code**
<50	Excellent	
50-100	Good Water	
100-200	Poor Water	
200-300	Very Very Poor Water	
>300	Water Unsuitable for drinking	

Water Quality Index for 200 locations during June - 2018

WQI Category	WQI	Number of WQI values in different category	
		No. of WQI	% of WQI
Good to Excellent	63-100	100	59.88
Medium to Good	50-63	33	19.76
Bad	38-50	28	16.77
Bad to Very Bad	38 and less	6	3.59
Total WQI values		167	100

Summary :

1) 133 WQI values or 79.64% values are in category of Good to Excellent and Medium to Good.

2) 28 WQI values or 16.77 % are in category of Bad.

3) 6 WQI values or 3.59 % are in category of Bad to Very Bad.

Note: Coastal Water Quality Index has been calculated considering the fresh water quality criteria of National Sanitation Foundation with weightages given for parameters by Central Pollution Control Board.

Pune Region

(Bad)

1190 - Bhima River at Pune, D/s of Bundgarden. Village -Yerwada,Taluka-Haweli,District-Pune.
2193 - Mula river at Aundh bridge,Aundgaon.Vil. - Aundgaon, Tal.- Haweli, District - Pune.
2194 - Mula River at Harrison Bridge near Mula-Pawana sangam. Vil.- Bopodi,Tal.- Haweli, Dist.- Pune.
2678 - Mutha River near Veer Savarkar Bhavan, Pune.
2679 - Mutha River at Deccan Bridge, Pune.
2690 - Pawna River at Kasarwadi, Haweli, Pune.
2693 - Pawna river at Chinchwadgaon, Pune.
2694 - Pawna River at Pimprigaon, Pune.

Mumbai Region

(Bad)

1317- Thane creek at Elephanta Island. Village- ElephantaTaluka- Mumbai District-Mumbai
1318 - Mahim creek at Mahim Bay.Village- Mahim Taluka- MumbaiDistrict- Mumbai.
2165 - Sea water at Gateway of India. Village - Colaba, Taluka- Colaba, District-Mumbai.
2166 - Sea water at Charni road Choupathy. Village- Girgaon, Tal. & Dist.- Mumbai,
2167 - Sea Water at Worli Seaface.Vill. Worli, Tal. -Worli, Dist. - Mumbai.
2169 - Sea Water at Versova. Vill. Versova, Tal. - Andheri, Dist. - Mumbai.
2808 - Sea Water at Narimen Point.Vill. Colaba, Tal. Colaba, Dist. - Mumbai.
2809 - Sea Water at Malabar Hill, Vill. - Walkeshwar, Tal. - Mumbai, Dist. -Mumbai.
2810 - Sea Water at Haji Ali, Vill. - Worli, Tal. -Worli, Dist. -Mumbai.
2811 - Sea water at Shivaji Park. (Dadar Choupathy)
2812 - Sea water at Juhu beach.

(Bad to Very Bad)

2168 - Mithi River, Vill- Mahim, Tal- Bandra, Dist. - Mumbai.

Thane Region

(Bad)

1316 - Bassein Creek at Vasai Fort, Thane.
2795 - Ulhas creek at Gaimukh at Nagla bunder on Ghod bunder Road.
2798 - Kharekuran Murbe creek.
2799 - Dandi Creek
2800 - Sarwali Creek
2802 - Dahanu Creek at Dahanu Fort.
2806 - Uttan Sea
2807 - Navapur Sea.

(Bad to Very Bad)

2782 - Rabodi Nalla
2783 - Colour Chem. Nalla.
2784 - Sandoz Nalla
2785 - BPT Navapur (discharge from MIDC Tarapur), Vill. - Navapur, Tal. - Palghar, Dist. - Thane.

Amravati Region

(Bad)

2675 - Morna river at D/s of Railway bridge at Akola.

(Bad to Very Bad)

2695 - Pedhi river near ad bridge at Dadhi- Pedhi village, Bhatkuli, Amravati.