

Monitoring, Sampling and Analysis for Ambient Air Quality, Surface Water Quality and Ground Water Quality in Critically/Severely/Other Polluted Industrial Areas of Maharashtra

AURANGABAD

Pre-Monsoon (April 2023 to June 2023)



LIFE
Lifestyle for
Environment

Maharashtra Pollution Control Board

Kalptaru Point, Sion East, Mumbai – 400 022

Index

ABBREVIATIONS	3
1. Executive Summary	4
2. Introduction	5
3. Scope of Work	8
Table 3.1 Sampling Details of Aurangabad.....	8
Table 3.2 Frequency of Sampling.....	10
4. Methodology	11
5. Air Environment	13
Table 5.1 MIDC Shendra - Details of Sampling Location of Ambient Air Quality Monitoring.....	13
Table 5.2 MIDC Shendra - Details of Sampling Location of VOCs Monitoring.....	13
Table 5.3 MIDC Shendra - Ambient Air Quality Monitoring Results.....	15
Table 5.4 MIDC Shendra - Volatile Organic Compounds (VOCs) in Ambient Air Results.....	15
Table 5.5 MIDC Chikalthana - Details of Sampling Location of Ambient Air Quality Monitoring ...	21
Table 5.6 MIDC Chikalthana - Details of Sampling Location of VOCs Monitoring.....	21
Table 5.7 MIDC Chikalthana - Ambient Air Quality Monitoring Results.....	23
Table 5.8 MIDC Chikalthana - Volatile Organic Compounds (VOCs) in Ambient Air Results.....	23
Table 5.9 MIDC Waluj - Details of Sampling Location of Ambient Air Quality Monitoring.....	29
Table 5.10 MIDC Waluj - Details of Sampling Location of VOCs Monitoring.....	29
Table 5.11 MIDC Waluj - Ambient Air Quality Monitoring Results.....	31
Table 5.12 MIDC Waluj - Volatile Organic Compounds (VOCs) in Ambient Air Results.....	31
Table 5.13 MIDC Paithan - Details of Sampling Location of Ambient Air Quality Monitoring.....	37
Table 5.14 MIDC Paithan - Details of Sampling Location of VOCs Monitoring.....	37
Table 5.15 MIDC Paithan- Ambient Air Quality Monitoring Results.....	39
Table 5.16 MIDC Paithan- Volatile Organic Compounds (VOCs) in Ambient Air Results.....	39
6. Water Environment	46
Table 6.1 MIDC Shendra - Details of Sampling Location of Surface Water.....	46
Table 6.2 MIDC Shendra - Results of Surface Water.....	47
Table 6.3 MIDC Chikalthana - Details of Sampling Location of Surface Water.....	56
Table 6.4 MIDC Chikalthana - Results of Surface Water.....	57
Table 6.5 MIDC Waluj - Details of Sampling Location of Surface Water.....	65

Table 6.6 MIDC Waluj - Results of Surface Water	66
Table 6.7 MIDC Paithan - Details of Sampling Location of Surface Water	74
Table 6.8 MIDC Paithan - Results of Surface Water	75
6. Land Environment	84
Table 7.1 MIDC Shendra - Details of Sampling Location of Ground Water	84
Table 7.2 MIDC Shendra - Results of Ground Water	85
Table 7.3 MIDC Chikalthana - Details of Sampling Location of Ground Water	92
Table 7.4 MIDC Chikalthana - Results of Ground Water	93
Table 7.5 MIDC Waluj - Details of Sampling Location of Ground Water	99
Table 7.6 MIDC Waluj - Results of Ground Water.....	100
Table 7.7 MIDC Paithan - Details of Sampling Location of Ground Water.....	106
Table 7.8 MIDC Paithan - Results of Ground Water	107
8. Health Related Data	113
9. CEPI Score	114
Table 8.1 CEPI score of the Pre monsoon season 2023 is given below:.....	114
Table 8.2 Comparison of CEPI Scores.....	114
10. Conclusion.....	118
11. Efforts taken by MPCB to control and reduce Environmental Pollution Index	120
12. Photographs.....	122

ABBREVIATIONS

APHA	American Public Health Association
ASTM	American Society for Testing and Materials
BIS	Bureau of Indian Standards
BLQ	Below the Limit of Quantification
CAAQMS	Continuous Ambient Air Quality Monitoring Station
CEMS	Continuous Emission Monitoring System
CEPI	Comprehensive Environmental Pollution Index
CETP	Common Effluent Treatment Plant
CPA	Critically Polluted Area
CPCB	Central Pollution Control Board
EPA	Environmental Protection Act, 1986
GDP	Gross Domestic Product
MIDC	Maharashtra Industrial Development Corporation
MPCB	Maharashtra Pollution Control Board
NAAQS	National Ambient Air Quality Standard
NWMP	National Water Quality Monitoring Program
SPA	Severely Polluted Area
VOCs	Volatile Organic Compounds
WHO	World Health Organisation
ZLD	Zero Liquid Discharge

1. Executive Summary

Aurangabad CEPI area includes four Maharashtra Industrial development Corporations (MIDCs) namely, MIDC Shendra, MIDC Chikalthana, MIDC Waluj and MIDC Paithan were monitored for Ambient Air Quality, Ground and Surface Water quality. Based on the data collected by monitoring, a Comprehensive Environmental Pollution Index (CEPI) Score [as per latest directions 120 of Letter No. B-29012/ESS (CPA)/2015-16 dated 26th April 2016 of Central Pollution Control Board (CPCB)] was calculated. Maharashtra Pollution Control Board (MPCB) has carried out monitoring at CPCB locations with the additional locations of sampling for ambient air, surface and ground water in consideration with the previous CEPI monitoring and covering the entire CEPI Impact Zone. The pre-monsoon monitoring was carried out during the period of April 2023 to June 2023 to assess the ambient air quality, surface water quality and ground water quality.

The Ambient Air Quality stations were identified considering the upwind and cross wind direction in the CEPI impact area. Ambient Air Quality was monitored at sixteen locations. The concentration of all ambient air parameters was found well within the limits prescribed by NAAQS. Twenty-three locations for surface water and twelve for ground water were monitored for the study. Concentration values of BOD, Total Phosphate (TP) and Total Kjeldahl Nitrogen (TKN) were found above the standard limits in few of the surface water samples. Land index is represented by groundwater in the CEPI. Most of the groundwater parameters were found to be within the permissible limits when compared with IS 10500:2012 drinking water standards.

Based on the study conducted by CPCB during the period January 2018, the CEPI score of Aurangabad region as per the revised guidelines of CEPI (2016) was 69.85 (Air Index-45, Water Index-65.38 and Land Index-28.75). However, the present study reports aggregated CEPI score of Aurangabad region of pre-monsoon season (June 2023). Based on the study, the present CEPI score is 59.6 (Air Index-24, Water Index-54.5 and Land Index-46.4). The CEPI score is the combination of A, B, C and D factors. Here, C factor represents the health data and D factor represents the initiatives taken by MPCB in the past few years to mitigate the pollution. The regional office of MPCB has taken various initiatives like installation of CAAQMS, CETPs, online VOC analysers etc. in the past few years to control and mitigate the air and water pollutants. This has contributed to the factor D, hence reducing the CEPI score of the region over the years.

The analysis of the aggregated CEPI score shows that the pollution in Aurangabad industrial clusters has reduced in the last three years. Approximately 15% decrease in CEPI score is observed from 69.85 in 2018 to 59.6 in 2023.

2. Introduction

Industries play a pivotal role in a country's economic development, contributing to GDP growth, job creation, and technological advancement. However, in recent years, the environmental pollution caused by industries has emerged as a formidable challenge for authorities worldwide. The impact of these industrial activities on the environment is severe, affecting the quality of the water we drink, the air we breathe, and the soil that nurtures our plants. Industries releasing untreated wastewater have contaminated drinking water with hazardous substances, posing risks to human, animal, and aquatic life. Exposure to air pollutants has been linked to various respiratory and cardiovascular diseases, particularly in early human life, leading to infant mortality or chronic health issues in adulthood. According to the World Health Organization (WHO), environmental pollution is responsible for an estimated 9 million premature deaths worldwide each year. It also estimates that over 90% of the global population is exposed to air pollution levels that exceed WHO guidelines, causing serious health risks. Around 2 billion people worldwide use drinking water contaminated with faeces leading to infectious diseases such as cholera and dysentery.

Hence, addressing these pollution sources is crucial to achieving significant environmental and health benefits. Additionally, the widespread nature of industrial pollution requires extensive monitoring systems and resources to collect reliable data and assess the full extent of the environmental impacts. The complexities associated with monitoring and identifying pollution sources make it a daunting task for authorities to develop targeted strategies and enforce regulations effectively. Striking a balance between economic growth and environmental protection requires delicate negotiations and innovative policy approaches. Overcoming these challenges demands robust regulatory frameworks, international collaboration, advanced monitoring technologies, and a commitment to sustainable practices from industries and governments alike.

In view of this, Central Pollution Control Board (CPCB) has evolved the concept of the Comprehensive Environmental Pollution Index (CEPI) during 2009-10 as a tool for comprehensive environmental assessment of prominent industrial clusters and formulation of remedial Action Plans for the identified critically polluted areas. Later in 2016, the revised concept of CEPI was formulated by eliminating the subjective factors but retaining the factors which are monitorable CEPI bridges the perceptive gap between experts, public, and government departments by simplifying the complexity of environmental issues. It aims at categorizing critically polluted industrial areas based on scientific criteria, so as to ascertain various dimensions of pollution. This is a combined framework used to evaluate the impacts caused by industrial clusters on the nearby environment, as a numerical value.

The present CEPI study includes Aurangabad region, which is a place of great importance due to its location on the famous Silk Route that traversed across the breadth of Asia to reach Europe. Aurangabad city typifies the landscape and the climatic conditions of the entire Marathwada region and is the Divisional Head Quarters of the Marathwada Region. The city is situated on the bank of river Kham a tributary of the Godavari River. s situated on the bank of river Kham a tributary of the

Godavari River. The city is surrounded by hills of the Vindhya Ranges and the river Kham passes through it.

Aurangabad accounts for 4 MIDCs about with 1045 red category industries, 596 orange category industries and 3058 green category industries of various category engaged in the manufacturing of chemicals, dyes, dye-intermediates, Bulk drugs, pharmaceuticals, Textile auxiliaries, Pesticides, Petrochemicals, Iron and steel, Textile processors, Engineering units etc. Besides the industries, there are other sources which are major contributors of pollution like emissions by transport and construction activities etc.

The present report is also based on the revised CEPI version 2016. The results of the application of the Comprehensive Environmental Pollution Index (CEPI) to selected industrial clusters or areas are presented in this report. The main objective of the study is to identify polluted industrial clusters or areas in order to take concerted action and to centrally monitor them at the national level to improve the current status of their environmental components such as air and water quality data, ecological damage, and visual environmental conditions. The index captures the various dimensions of environment including air, water and land. Comprehensive Environmental Pollution Index (CEPI), which is a rational number to characterize the environmental quality at a given location following the algorithm of source, pathway and receptor have been developed.

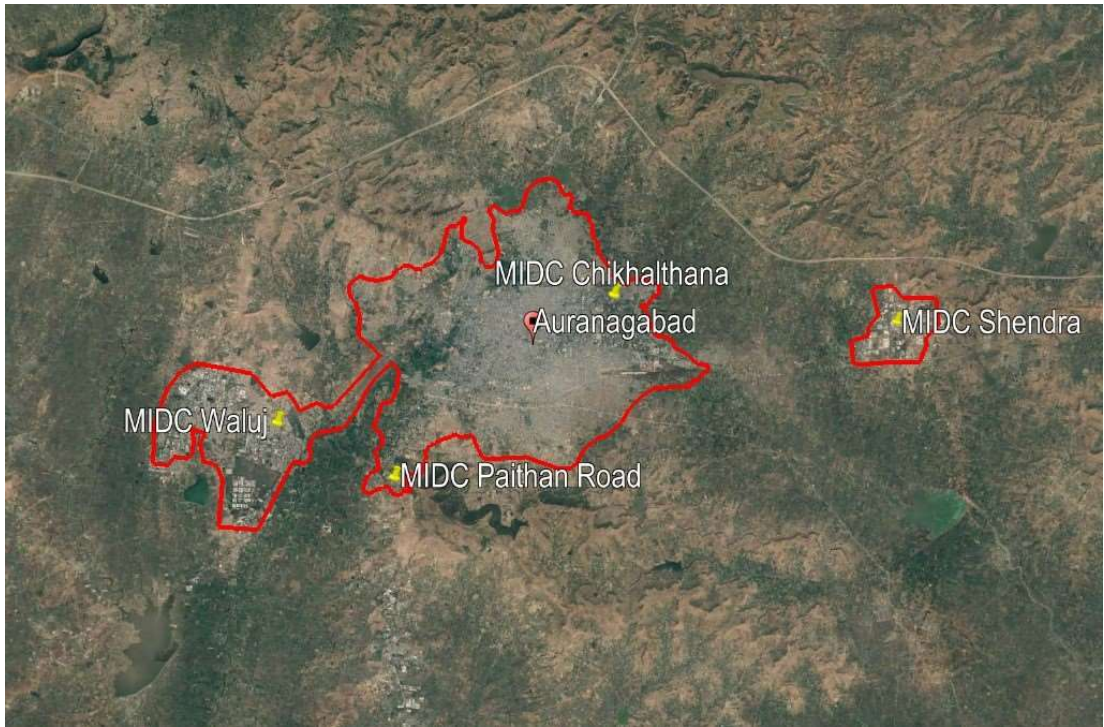


Fig: Aurangabad region CEPI monitoring zone

3. Scope of Work

The major scope of work includes:

- I. The scope of the present study is to perform three (3) rounds of "Monitoring, Sampling and Analysis for Ambient Air Quality, VOCs in Ambient Air, Surface Water Quality & Ground Water Quality in the selected Pollution Industrial Areas (PIAs) of Aurangabad, Maharashtra" with a gap of one or two days. The analysis of the collected samples was carried out by the standard methods (CPCB, BIS, APHA, USEPA).
- II. To Collect health-related data in the CEPI region.
- III. To calculate the Comprehensive Environmental Pollution Index (CEPI) Score as per Revised CEPI-2016 issued by Central Pollution Control Board (CPCB).

The sampling details and frequency of sampling in Ambient Air, VOCs, Surface Water and Ground Water are given in Table 3.1 and Table 3.2 respectively.

Table 3.1 Sampling Details of Aurangabad

Sampling Criteria	Number of sites	Total Sites	Monitoring Parameters
Ambient Air Quality	<ul style="list-style-type: none"> • MIDC Shendra-04 • MIDC Chikalthana - 04 • MIDC Waluj - 04 • MIDC Paithan Road - 04 	16	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , NH ₃ , O ₃ , C ₆ H ₆ , CO, BAP, Pb, Ni, As
Volatile Organic Compounds (VOCs)	<ul style="list-style-type: none"> • MIDC Shendra-02 • MIDC Chikalthana - 02 • MIDC Waluj - 02 • MIDC Paithan Road - 02 	08	Dichloromethane, Chloroform, Carbon Tetrachloride, Trichloroethylene, Bromodichloromethane, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,3-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dibromo-3-Chloropropane, Naphthalene, Bromobenzene, 1,2,4-Trimethylbenzene, 2-Chlorotoluene, Tert-Butylbenzene, SEC-Butylbenzene, P-Isopropyltoluene, M-Xylene, P-Xylene, Styrene, Cumene 1,2,3-Trichloropropane, N-Propylbenzene, Dibromochloromethane, 1,2-Dibromoethane, Chlorobenzene, 1,1,1,2-Tetrachloroethane, Ethylbenzene, 1,1-Dichloropropylene, 1,2-Dichloroethane, 1,2-Dichloropropane, Trans-1,3-Dichloropropene, CIS 1,3-Dichloropropene, 1,1,2-

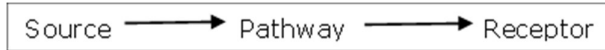
Sampling Criteria	Number of sites	Total Sites	Monitoring Parameters
			Trichloroethane, Tetrachloroethylene, 1,3,5-Trimethylbenzene, N-Butylbenzene, 1,2,3-Trichlorobenzene, Hexachlorobutadiene, 1,2,4-Trichlorobenzene, 2,2-Dichloropropane, Dibromomethane, Toluene, O-Xylene, Bromoform, 1,1,2,2-Tetrachloroethane, 4-Chlorotoluene, 1,1-Dichloroethylene, Trans-1,2-Dichloroethylene, 1,1-Dichloroethane, CIS-1,2-Dichloroethylene, Bromochloromethane, 1,1,1-Trichloroethane
Water Quality Monitoring	Surface water <ul style="list-style-type: none"> • MIDC Shendra-06 • MIDC Chikalthana -06 • MIDC Waluj - 06 • MIDC Paithan Road - 06 	24	(i) Simple Parameters Sanitary Survey, General Appearance, Colour, Smell, Transparency and Ecological (ii) Regular Monitoring Parameters pH, O & G, Suspended Solids, DO, COD, BOD, TDS, Electrical Conductivity, Total Dissolved Solids, Nitrite-Nitrogen, Nitrate-Nitrogen, (NO ₂ +NO ₃) total nitrogen, Free Ammonia, Total Residual Chlorine, Cyanide, Fluoride, Chloride, Sulphate, Sulphides, Total Hardness, Dissolved Phosphates, SAR, Total Coliforms, Faecal Coliform
	Ground water <ul style="list-style-type: none"> • MIDC Shendra-03 • MIDC Chikalthana - 03 • MIDC Waluj - 03 • MIDC Paithan Road - 03 	12	(iii) Special Parameters Total Phosphorous, TKN, Total Ammonia (NH ₄ +NH ₃)-Nitrogen, Phenols, Surface Active Agents, Anionic detergents, Organo-Chlorine Pesticides, PAH, PCB, Zinc, Nickel, Copper, Hexavalent Chromium, Chromium (Total), Arsenic (Total), Lead, Cadmium, Mercury, Manganese, Iron, Vanadium, Selenium, Boron (iv) Bio-assay (zebra Fish) Test – For specified samples only.

Table 3.2 Frequency of Sampling

	Parameter	Round of Sampling	Frequency in Each Round
A	Ambient Air Quality Monitoring		
1.	Particulate Matter (size less than 10 µm) or PM ₁₀	03	3 Shifts of 8 hrs each
2.	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	03	1 Shift of 24 hrs
3.	Sulphur Dioxide (SO ₂)	03	6 Shifts of 4 hrs each
4.	Nitrogen Dioxide (NO ₂)	03	6 Shifts of 4 hrs each
5.	Ammonia (NH ₃)	03	6 Shifts of 4 hrs each
6.	Ozone (O ₃)	03	24 Shifts of 1 hr each
7.	Benzene (C ₆ H ₆)	03	1 Shifts of 24 hrs
8.	Carbon Monoxide (CO)	03	24 Shifts of 1 hr each
9.	Benzo (a) Pyrene (BaP) – particulate phase only	03	3 Shifts of 8 hrs each
10.	Lead (Pb)	03	3 Shifts of 8 hrs each
11.	Arsenic (As)	03	3 Shifts of 8 hrs each
12.	Nickel (Ni)	03	3 Shifts of 8 hrs each
B	Volatile Organic Compounds (VOCs)		
	As mentioned in Table 3.1	03	3 Shifts of 24 hrs each
C	Ground Water		
	As mentioned in Table 3.1	03	01 sample at each round
D	Surface Water		
	As mentioned in Table 3.1	03	01 sample at each round

4. Methodology

The present report is based on the revised Comprehensive Environmental Pollution Index (CEPI) version 2016. The index captures the various dimensions of the environment including air, water and land. Comprehensive Environmental Pollution Index (CEPI) is a rational number, which is used to characterize the environmental quality at a given location. It is three-step process based on the algorithm of Source, pathway and Receptor.



Ambient air stations, Surface water locations and Ground water locations were decided by the respective regional officers. The sampling was done in 3 rounds with an interval of one or two days at each location. Sampling has been done at the potential polluted areas so as to arrive at the CEPI. This will further help the authorities to monitor the areas in order to improve the current status of their environmental components such as air and water quality data, ecological damage and visual environmental conditions.

Methodology for sampling, preservation and analysis have been done according to the CPCB/ EPA/ APHA/ IS/ ASTM standard methods for the samples.

AIR ENVIRONMENT

5. Air Environment

For studying the Air Environment of Aurangabad area, monitoring stations were identified considering the upwind and cross wind direction and all 12 parameters as per the notification of National Ambient Air Quality Standards (NAAQS) were carried out.

**Kindly note: Volatile Organic Compounds (VOCs) concentration is not detected in most of the Air samples collected; hence it is not shown in the graphs here.*

1. MIDC Shendra: In MIDC Shendra, four locations have been monitored to check the Ambient Air Quality (AAQ) in triplicate from 24th May 2023 to 28th May 2023. All the 12 AAQ parameters were monitored as per National Ambient Air Quality Standards (NAAQS, 2009). Results of analysis show that the concentration of most the parameters at all studied locations is observed well within the limits. VOCs were monitored at 2 locations namely Radico NV Distillery and Glenmark Pharmaceuticals Ltd.

Table 5.1 MIDC Shendra - Details of Sampling Location of Ambient Air Quality Monitoring

S.No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Skoda Auto	19.872345N	75.489701E	24.05.2023	26.05.2023	28.05.2023
2.	Outside of Radico NV Distillery	19.883362N	75.502107E	24.05.2023	26.05.2023	28.05.2023
3.	Outside of Glenmark Pharmaceuticals Ltd.	19.872756N	75.502835E	24.05.2023	26.05.2023	28.05.2023
4.	Outside of Wockhardt Biotech Ltd.	19.873311N	75.491763E	24.05.2023	26.05.2023	28.05.2023

Table 5.2 MIDC Shendra - Details of Sampling Location of VOCs Monitoring

S.No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Outside of Radico NV Distillery	19.883362N	75.502107E	24.05.2023	26.05.2023	28.05.2023
2.	Outside of Glenmark Pharmaceuticals Ltd.	19.872756N	75.502835E	24.05.2023	26.05.2023	28.05.2023



Fig: Geographical Locations of Ambient Air Quality Monitoring MIDC Shendra



Fig: Geographical Locations of VOCs Monitoring MIDC Shendra

Table 5.3 MIDC Shendra - Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Skoda Auto	Outside of Radico NV Distillery	Outside of Glenmark Pharmaceuticals Ltd.	Outside of Wockhardt Biotech Ltd.
Sulphur Dioxide (SO ₂)	µg/m ³	16.15	13.49	15.85	15.65
Nitrogen Dioxide (NO ₂)	µg/m ³	12.30	13.80	11.63	12.03
Particulate Matter (size less than 10 µm) or PM ₁₀	µg/m ³	68	50	52	66
Particulate Matter (size less than 2.5 µm) or PM _{2.5}	µg/m ³	19	13	14	19
Ozone (O ₃)	µg/m ³	27.60	27.00	26.00	27.00
Lead (Pb)	µg/m ³	BLQ	0.02	BQL	0.02
Carbon Monoxide (1 h)	mg/m ³	1.49	1.49	1.46	1.43
Carbon Monoxide (8 h)	mg/m ³	1.60	1.79	1.82	1.73
Ammonia (NH ₃)	µg/m ³	62.60	73.80	64.95	53.15
Benzene (C ₆ H ₆)	µg/m ³	1.68	2.10	2.21	1.76
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m ³	BLQ	BLQ	BQL	BQL
Arsenic (As)	ng/m ³	BLQ	BLQ	0.64	0.41
Nickel (Ni)	ng/m ³	BLQ	BLQ	BQL	BQL

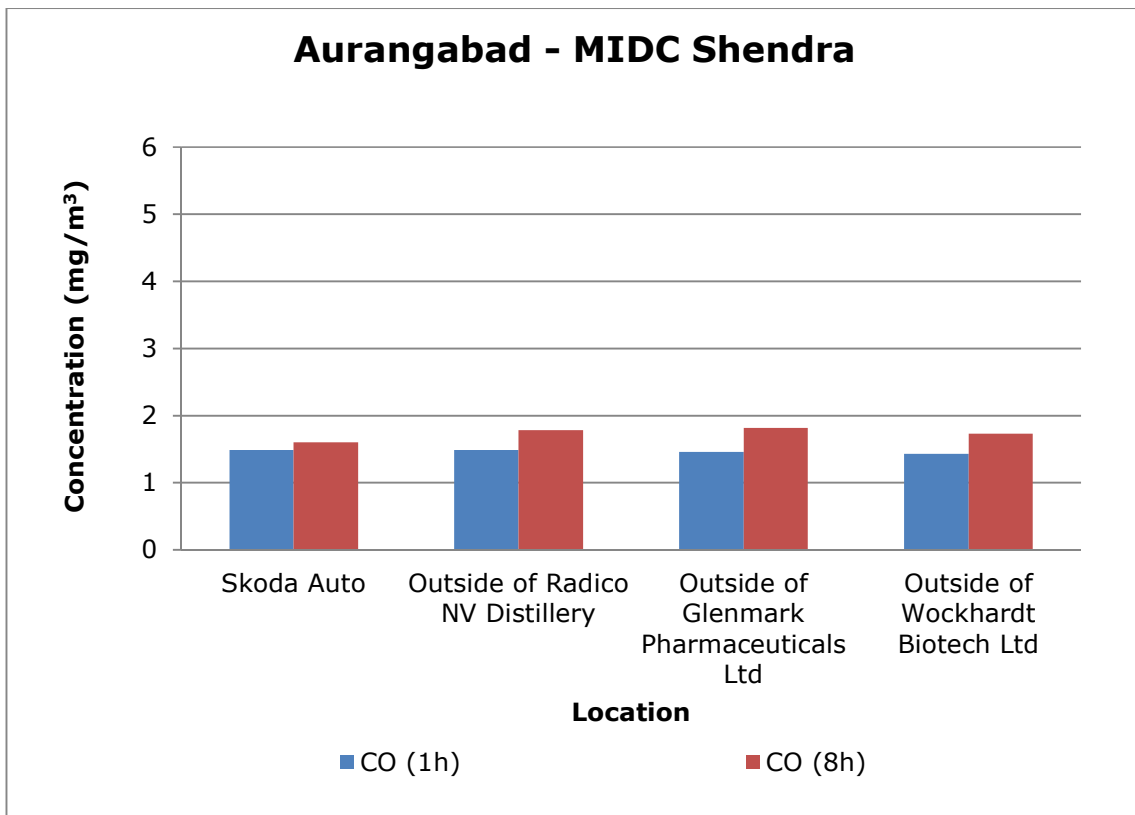
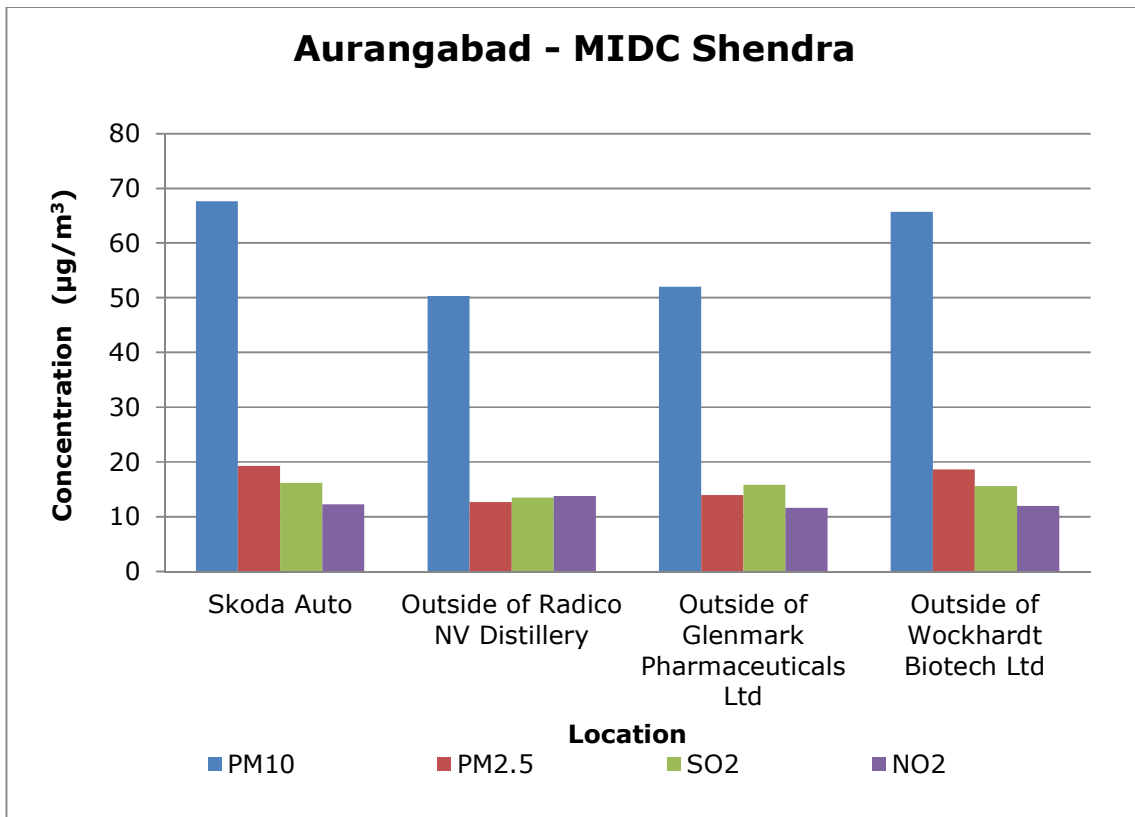
Table 5.4 MIDC Shendra - Volatile Organic Compounds (VOCs) in Ambient Air Results

Parameters	Unit	Results	
		Outside of Radico NV Distillery	Outside of Glenmark Pharmaceuticals Ltd.
Dichloromethane	µg/m ³	1.36	0.99
Chloroform	µg/m ³	0.96	BQL
Carbon Tetrachloride	µg/m ³	BLQ	BQL
Trichloroethylene	µg/m ³	3.05	1.19

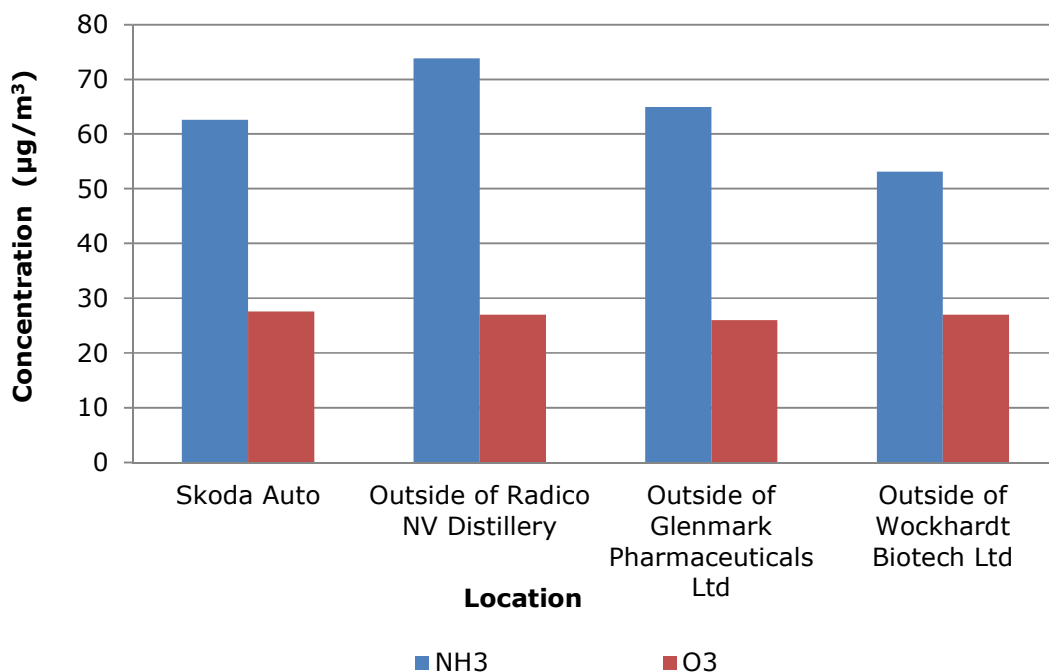
Parameters	Unit	Results	
		Outside of Radico NV Distillery	Outside of Glenmark Pharmaceuticals Ltd.
Bromodichloromethane	µg/m ³	BLQ	BQL
1,3-Dichloropropane	µg/m ³	BLQ	BQL
1,4-Dichlorobenzene	µg/m ³	BLQ	18.80
1,3-Dichlorobenzene	µg/m ³	BLQ	BQL
1,2-Dichlorobenzene	µg/m ³	BLQ	BQL
1,2-Dibromo-3-Chloropropane	µg/m ³	BLQ	BQL
Naphthalene	µg/m ³	BLQ	BQL
Bromobenzene	µg/m ³	BLQ	5.15
1,2,4-Trimethylbenzene	µg/m ³	4.02	BQL
2-Chlorotoluene	µg/m ³	BLQ	BQL
Tert-Butylbenzene	µg/m ³	BLQ	BQL
SEC-Butylbenzene	µg/m ³	BLQ	BQL
P-Isopropyltoluene	µg/m ³	BLQ	2.37
M-Xylene	µg/m ³	11.00	4.47
P-Xylene	µg/m ³	9.23	BQL
Styrene	µg/m ³	BLQ	BQL
Cumene	µg/m ³	BLQ	BQL
1,2,3-Trichloropropane	µg/m ³	BLQ	BQL
N-Propylbenzene	µg/m ³	BLQ	BQL
Dibromochloromethane	µg/m ³	BLQ	BQL
1,2-Dibromoethane	µg/m ³	BLQ	BQL
Chlorobenzene	µg/m ³	BLQ	BQL
1,1,1,2-Tetrachloroethane	µg/m ³	BLQ	BQL
Ethylbenzene	µg/m ³	2.76	2.00
1,1-Dichloropropylene	µg/m ³	BLQ	BQL
1,2-Dichloroethane	µg/m ³	7.70	5.40
1,2-Dichloropropane	µg/m ³	BLQ	BQL

Parameters	Unit	Results	
		Outside of Radico NV Distillery	Outside of Glenmark Pharmaceuticals Ltd.
Trans-1,3-Dichloropropene	µg/m ³	BLQ	BQL
CIS 1,3-Dichloropropene	µg/m ³	BLQ	BQL
1,1,2-Trichloroethane	µg/m ³	BLQ	1.51
Tetrachloroethylene	µg/m ³	6.13	6.68
1,3,5-Trimethylbenzene	µg/m ³	BLQ	BQL
N-Butylbenzene	µg/m ³	BLQ	BQL
1,2,3-Trichlorobenzene	µg/m ³	BLQ	BQL
Hexachlorobutadiene	µg/m ³	BLQ	BQL
1,2,4-Trichlorobenzene	µg/m ³	BLQ	BQL
2,2-Dichloropropane	µg/m ³	BLQ	BQL
Dibromomethane	µg/m ³	BLQ	BQL
Toluene	µg/m ³	BLQ	BQL
O-Xylene	µg/m ³	0.87	0.99
Bromoform	µg/m ³	BLQ	BQL
1,1,2,2-Tetrachloroethane	µg/m ³	BLQ	BQL
4-Chlorotoluene	µg/m ³	BLQ	BQL
1,1-Dichloroethylene	µg/m ³	BLQ	BQL
Trans-1,2-Dichloroethylene	µg/m ³	BLQ	BQL
1,1-Dichloroethane	µg/m ³	BLQ	BQL
CIS-1,2-Dichloroethylene	µg/m ³	BLQ	BQL
Bromochloromethane	µg/m ³	BLQ	BQL
1,1,1-Trichloroethane	µg/m ³	BLQ	BQL

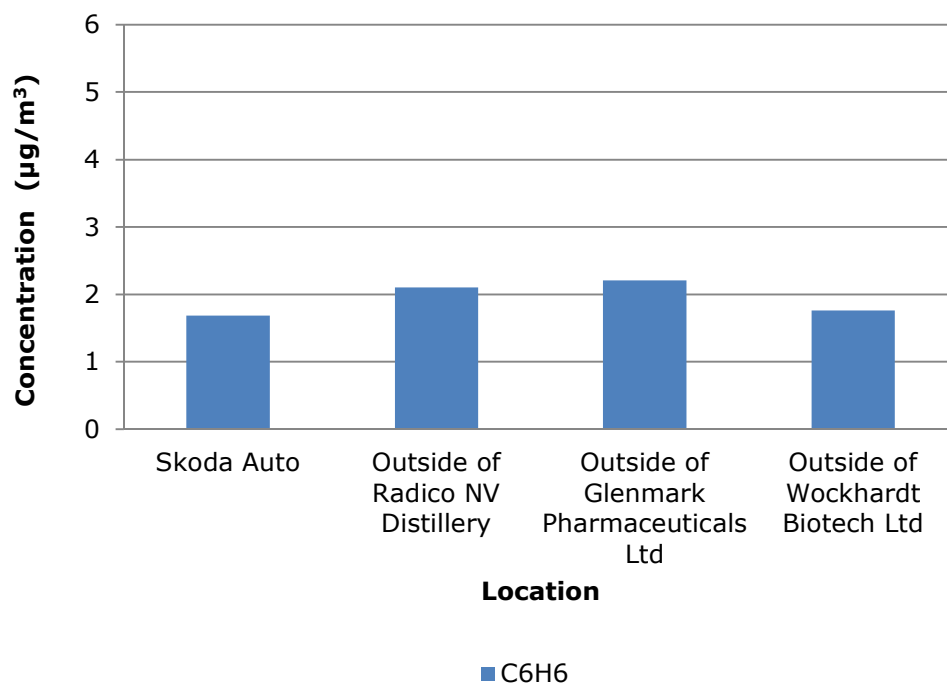
Graphs - Ambient Air Quality Monitoring - MIDC Shendra



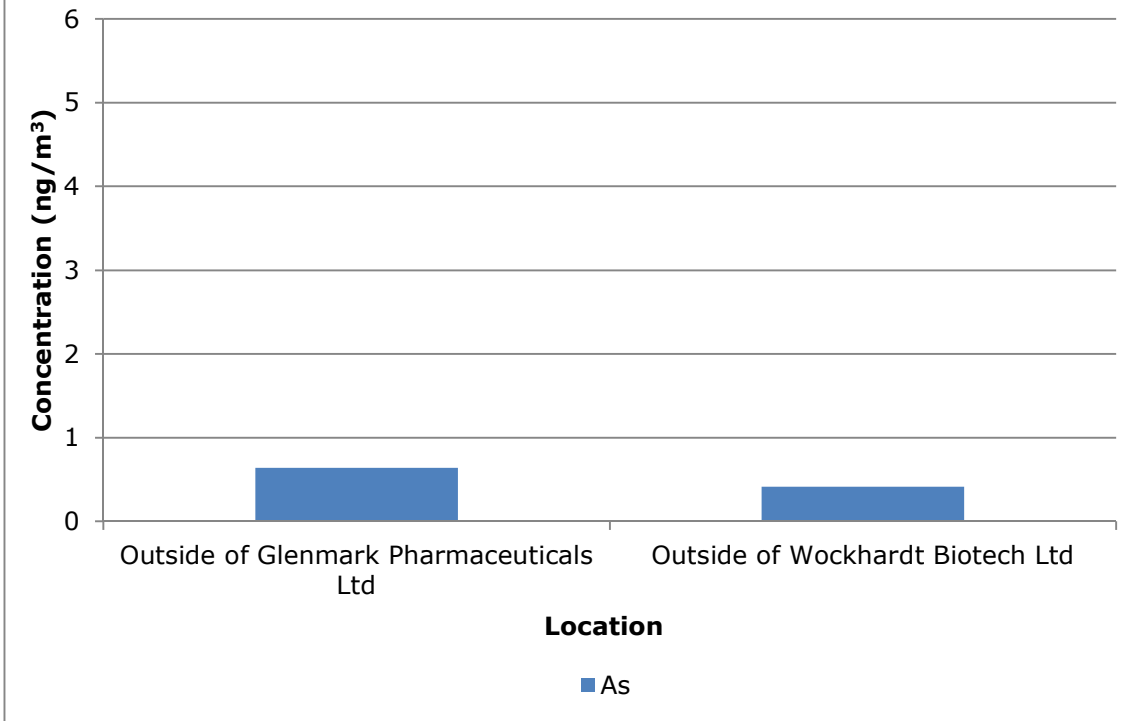
Aurangabad - MIDC Shendra



Auranagabad - MIDC Shendra



Auranagabad - MIDC Shendra



2. MIDC Chikalthana: In MIDC Chikalthana, 4 locations were monitored from 23rd may to 27th May 2023 to check the Ambient Air Quality (AAQ) as per the NAAQS, 2009. Concentration of all the parameters at all studied locations is observed well within the limits.

Table 5.5 MIDC Chikalthana - Details of Sampling Location of Ambient Air Quality Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Wockhardt Biotech Ltd. (R&D)	19.879034N	75.375937E	23.05.2023	25.05.2023	27.05.2023
2.	Harman Finochem Ltd.	19.878172N	75.383236E	23.05.2023	25.05.2023	27.05.2023
3.	ABD Distillery	19.873087N	75.388674E	23.05.2023	25.05.2023	27.05.2023
4.	Jolly Board Ltd.	19.895694N	75.378577E	23.05.2023	25.05.2023	27.05.2023

Table 5.6 MIDC Chikalthana - Details of Sampling Location of VOCs Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
5.	Concept Pharma	19.875251N	75.376492E	23.05.2023	25.05.2023	27.05.2023
6.	ABD Distillery	19.873087N	75.388674E	23.05.2023	25.05.2023	27.05.2023



Fig: Geographical Locations of Ambient Air Quality Monitoring MIDC Chikalthana

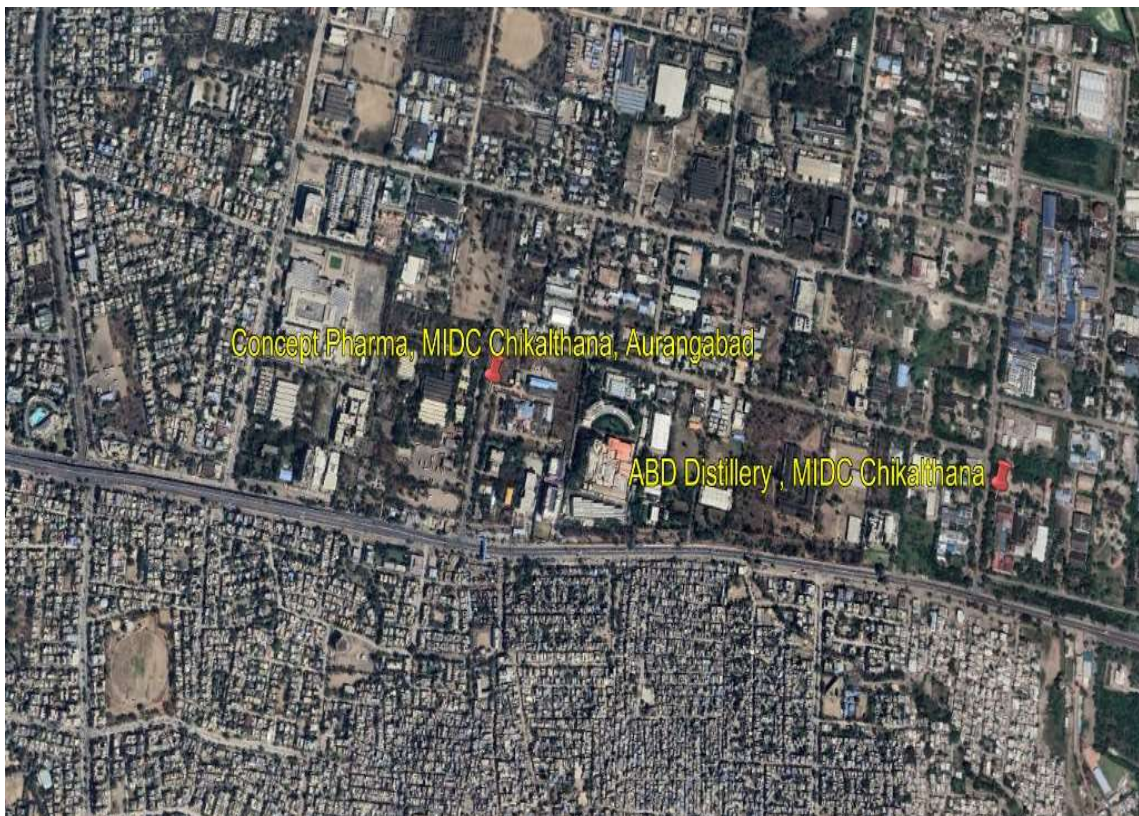


Fig: Geographical Locations of VOCs Monitoring MIDC Chikalthana

Table 5.7 MIDC Chikalthana - Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Wockhardt Biotech Ltd. (R&D)	Harman Finochem Ltd.	ABD Distillery	Jolly Board Ltd.
Sulphur Dioxide (SO ₂)	µg/m ³	17.40	15.90	18.10	17.50
Nitrogen Dioxide (NO ₂)	µg/m ³	15.34	22.30	37.30	16.77
Particulate Matter (size less than 10 µm) or PM ₁₀	µg/m ³	47	48	50	60
Particulate Matter (size less than 2.5 µm) or PM _{2.5}	µg/m ³	12	12	14	17
Ozone (O ₃)	µg/m ³	43.83	53.17	39.10	50.60
Lead (Pb)	µg/m ³	BQL	0.02	0.03	0.04
Carbon Monoxide (CO) (1h)	mg/m ³	1.48	1.05	1.44	1.34
Carbon Monoxide (CO) (8h)	mg/m ³	1.86	1.69	1.79	1.72
Ammonia (NH ₃)	µg/m ³	79.10	66.70	80.15	56.90
Benzene (C ₆ H ₆)	µg/m ³	1.92	2.47	2.15	2.42
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m ³	BQL	BQL	BQL	BQL
Arsenic (As)	ng/m ³	BQL	BQL	0.36	BQL
Nickel (Ni)	ng/m ³	BQL	4.68	4.26	3.92

Table 5.8 MIDC Chikalthana - Volatile Organic Compounds (VOCs) in Ambient Air Results

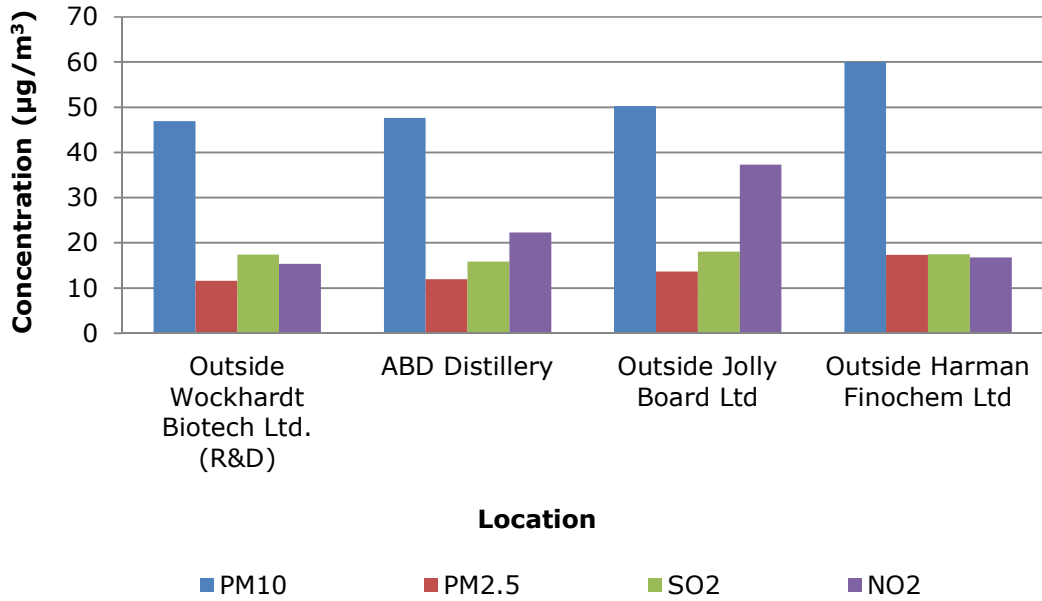
Parameters	Unit	Results	
		ABD Distillery	Outside Concept Pharma
Dichloromethane	µg/m ³	0.80	0.55
Chloroform	µg/m ³	3.11	0.73
Carbon Tetrachloride	µg/m ³	BQL	BQL
Trichloroethylene	µg/m ³	0.87	1.28
Bromodichloromethane	µg/m ³	44.20	BQL
1,3-Dichloropropane	µg/m ³	BQL	BQL

Parameters	Unit	Results	
		ABD Distillery	Outside Concept Pharma
1,4-Dichlorobenzene	µg/m ³	BQL	BQL
1,3-Dichlorobenzene	µg/m ³	BQL	BQL
1,2-Dichlorobenzene	µg/m ³	BQL	BQL
1,2-Dibromo-3-Chloropropane	µg/m ³	BQL	BQL
Naphthalene	µg/m ³	BQL	BQL
Bromobenzene	µg/m ³	BQL	BQL
1,2,4-Trimethylbenzene	µg/m ³	5.61	BQL
2-Chlorotoluene	µg/m ³	BQL	BQL
Tert-Butylbenzene	µg/m ³	6.77	BQL
SEC-Butylbenzene	µg/m ³	BQL	BQL
P-Isopropyltoluene	µg/m ³	3.09	BQL
M-Xylene	µg/m ³	BQL	BQL
P-Xylene	µg/m ³	2.87	12.70
Styrene	µg/m ³	BQL	BQL
Cumene	µg/m ³	BQL	BQL
1,2,3-Trichloropropane	µg/m ³	BQL	BQL
N-Propylbenzene	µg/m ³	10.70	BQL
Dibromochloromethane	µg/m ³	BQL	BQL
1,2-Dibromoethane	µg/m ³	BQL	BQL
Chlorobenzene	µg/m ³	BQL	BQL
1,1,1,2-Tetrachloroethane	µg/m ³	BQL	BQL
Ethylbenzene	µg/m ³	BQL	BQL
1,1-Dichloropropylene	µg/m ³	BQL	BQL
1,2-Dichloroethane	µg/m ³	4.85	4.07
1,2-Dichloropropane	µg/m ³	BQL	BQL
Trans-1,3-Dichloropropene	µg/m ³	BQL	BQL
CIS 1,3-Dichloropropene	µg/m ³	BQL	BQL
1,1,2-Trichloroethane	µg/m ³	BQL	BQL
Tetrachloroethylene	µg/m ³	2.03	5.57
1,3,5-Trimethylbenzene	µg/m ³	BQL	BQL
N-Butylbenzene	µg/m ³	BQL	BQL
1,2,3-Trichlorobenzene	µg/m ³	BQL	BQL

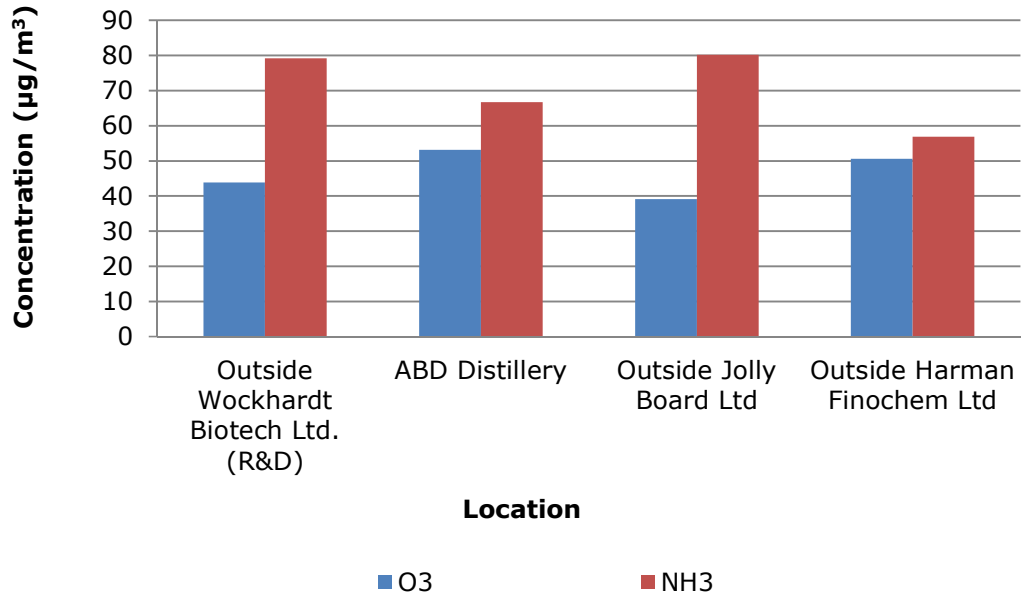
Parameters	Unit	Results	
		ABD Distillery	Outside Concept Pharma
Hexachlorobutadiene	µg/m ³	BQL	BQL
1,2,4-Trichlorobenzene	µg/m ³	BQL	BQL
2,2-Dichloropropane	µg/m ³	BQL	BQL
Dibromomethane	µg/m ³	BQL	BQL
Toluene	µg/m ³	BQL	4.06
O-Xylene	µg/m ³	BQL	1.09
Bromoform	µg/m ³	2.29	1.06
1,1,2,2-Tetrachloroethane	µg/m ³	BQL	BQL
4-Chlorotoluene	µg/m ³	BQL	BQL
1,1-Dichloroethylene	µg/m ³	BQL	BQL
Trans-1,2-Dichloroethylene	µg/m ³	BQL	BQL
1,1-Dichloroethane	µg/m ³	BQL	BQL
CIS-1,2-Dichloroethylene	µg/m ³	BQL	BQL
Bromochloromethane	µg/m ³	BQL	BQL
1,1,1-Trichloroethane	µg/m ³	BQL	BQL

Graphs - Ambient Air Quality Monitoring - MIDC Chikalthana

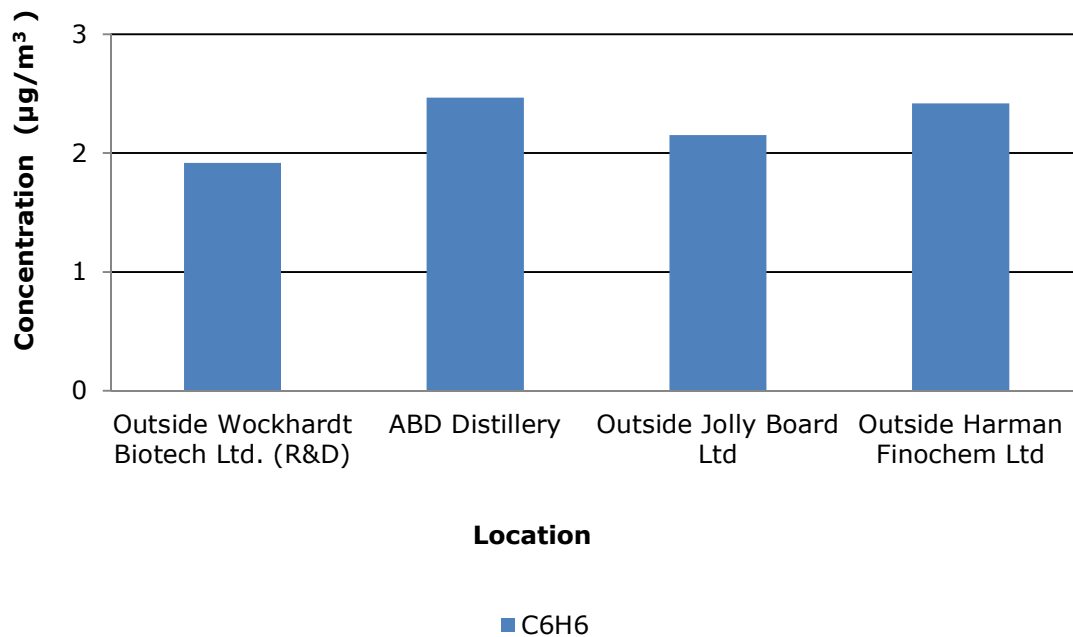
Aurangabad - MIDC Chikalthana



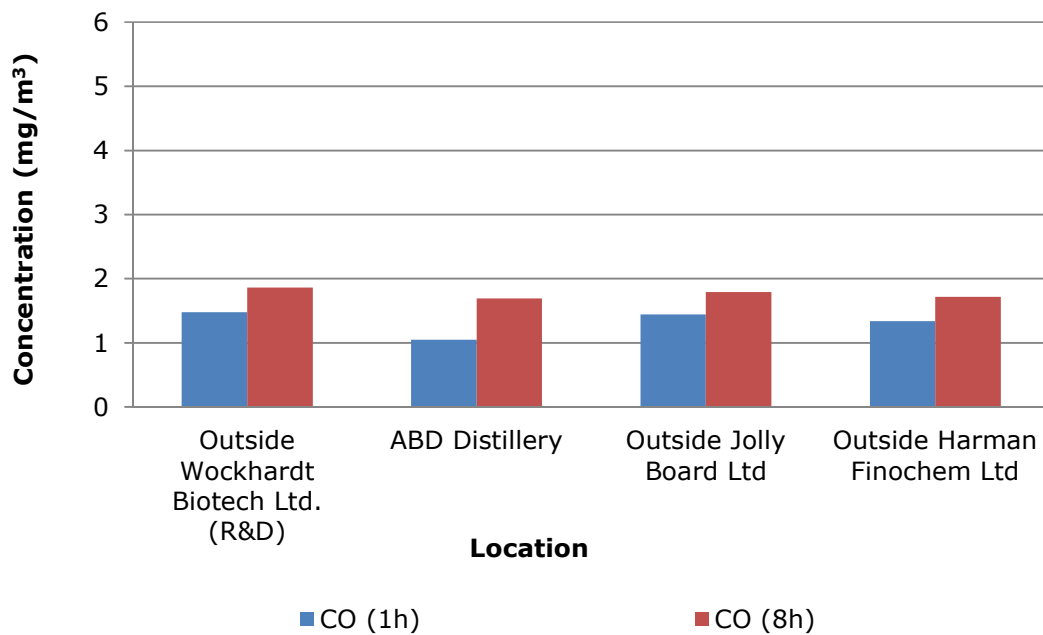
Aurangabad - MIDC Chikalthana



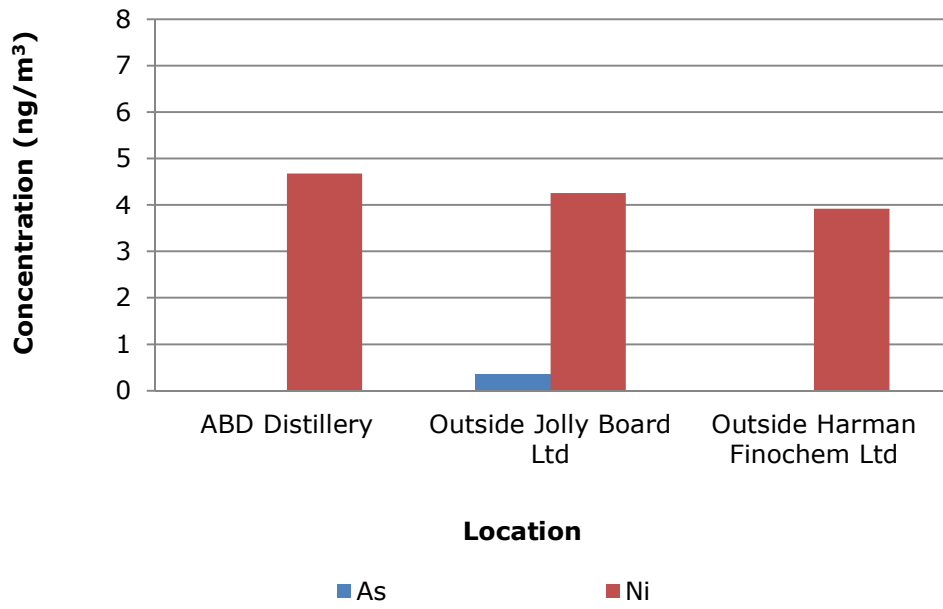
Aurangabad - MIDC Chikalthana



Aurangabad - MIDC Chikalthana



Aurangabad - MIDC Chikalthana



3. MIDC Waluj: In MIDC Waluj, at all 4 locations monitored, the concentration of all the ambient air parameters was found within the limits of NAAQS, 2009. The monitoring of was carried out from 29th May to 2nd June 2023. All the samples were collected in triplicate on an interval of one day.

Table 5.9 MIDC Waluj - Details of Sampling Location of Ambient Air Quality Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Goodyear South Asia tyres	19.855897N	75.207807E	29.05.2023	31.05.2023	02.06.2023
2.	DIPL	19.85722N	75.227666E	29.05.2023	31.05.2023	02.06.2023
3.	Varroc Plant VIII, Jogeshwari	19.830828N	75.20329E	29.05.2023	31.05.2023	02.06.2023
4.	IPCA Laboratory Pvt Ltd.	19.862256N	75.218847E	29.05.2023	31.05.2023	02.06.2023

Table 5.10 MIDC Waluj - Details of Sampling Location of VOCs Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Outside of Endurance Tech.	19.852291N	75.206165E	29.05.2023	31.05.2023	02.06.2023
2.	DIPL	19.85722N	75.227666E	29.05.2023	31.05.2023	02.06.2023



Fig: Geographical Locations of Ambient Air Quality Monitoring MIDC Waluj



Fig: Geographical Locations of VOCs Monitoring MIDC Waluj

Table 5.11 MIDC Waluj - Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Goodyear South Asia Tyres	DIPL	Varroc Plant VIII, Jogeshwari	IPCA Laboratory Pvt Ltd.
Sulphur Dioxide (SO ₂)	µg/m ³	14.00	14.95	14.10	13.65
Nitrogen Dioxide (NO ₂)	µg/m ³	15.43	14.93	13.27	13.52
Particulate Matter (size less than 10 µm) or PM ₁₀	µg/m ³	68	72	69	71
Particulate Matter (size less than 2.5 µm) or PM _{2.5}	µg/m ³	18	20	21	20
Ozone (O ₃)	µg/m ³	BLQ	BLQ	BLQ	BLQ
Lead (Pb)	µg/m ³	BLQ	BLQ	0.02	0.08
Carbon Monoxide (CO) (1 h)	mg/m ³	1.48	1.60	1.52	1.55
Carbon Monoxide (CO) (8 h)	mg/m ³	1.72	1.83	1.79	1.63
Ammonia (NH ₃)	µg/m ³	107.77	119.23	128.50	137.50
Benzene (C ₆ H ₆)	µg/m ³	2.33	2.61	2.49	2.49
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m ³	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m ³	0.76	BLQ	BLQ	BLQ
Nickel (Ni)	ng/m ³	3.31	BLQ	BLQ	BLQ

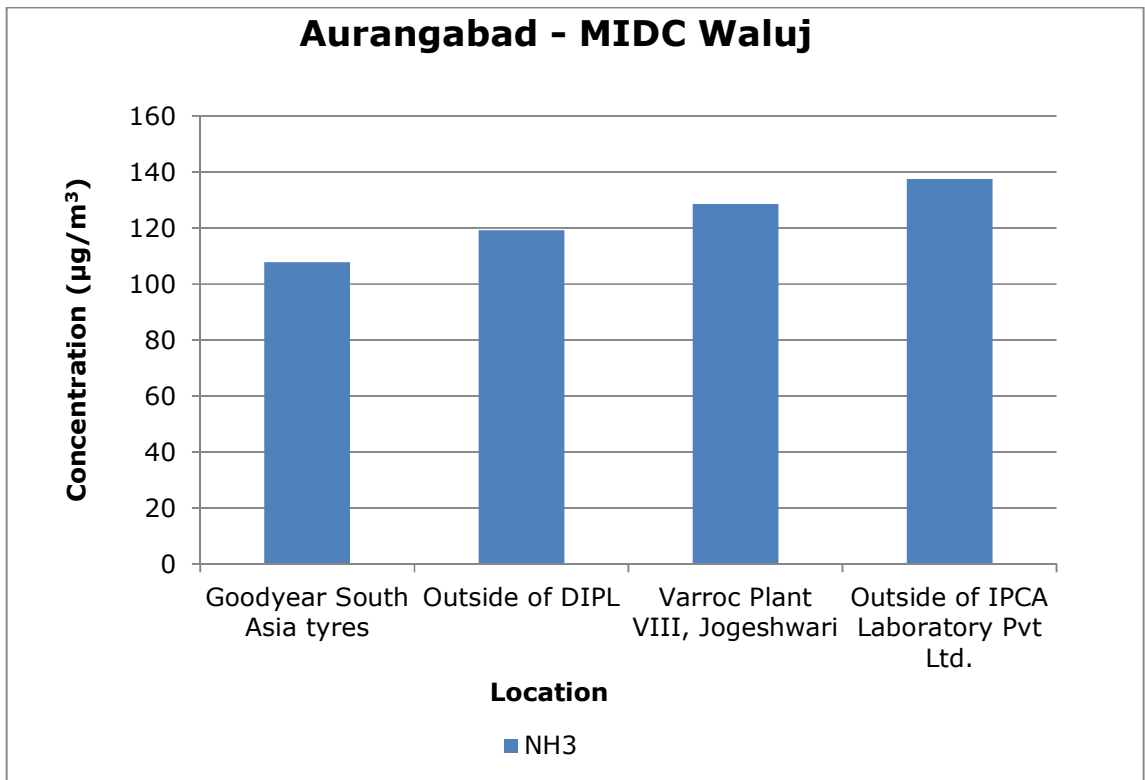
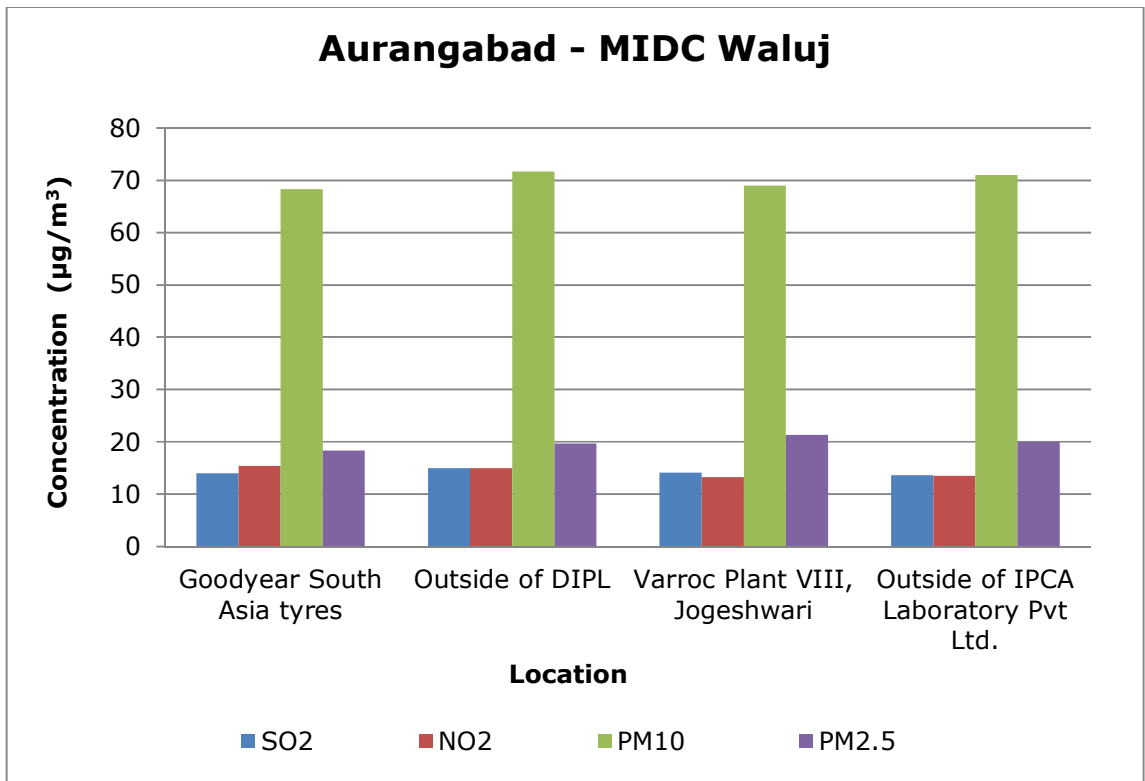
Table 5.12 MIDC Waluj - Volatile Organic Compounds (VOCs) in Ambient Air Results

Parameters	Unit	Results	
		DIPL	Endurance Tech, K-120
Dichloromethane	µg/m ³	1.08	1.41
Chloroform	µg/m ³	0.52	BLQ
Carbon Tetrachloride	µg/m ³	BLQ	BLQ
Trichloroethylene	µg/m ³	BLQ	0.551
Bromodichloromethane	µg/m ³	BLQ	BLQ
1,3-Dichloropropane	µg/m ³	BLQ	BLQ
1,4-Dichlorobenzene	µg/m ³	BLQ	BLQ

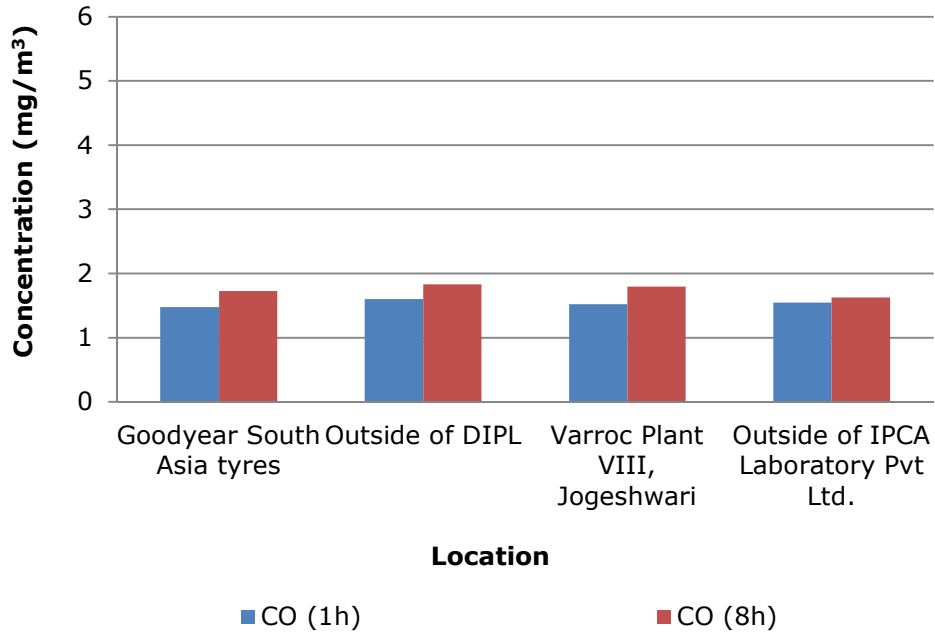
Parameters	Unit	Results	
		DIPL	Endurance Tech, K-120
1,3-Dichlorobenzene	µg/m ³	10.60	BLQ
1,2-Dichlorobenzene	µg/m ³	BLQ	BLQ
1,2-Dibromo-3-Chloropropane	µg/m ³	BLQ	BLQ
Naphthalene	µg/m ³	BLQ	BLQ
Bromobenzene	µg/m ³	BLQ	BLQ
1,2,4-Trimethylbenzene	µg/m ³	BLQ	BLQ
2-Chlorotoluene	µg/m ³	BLQ	BLQ
Tert-Butylbenzene	µg/m ³	BLQ	BLQ
SEC-Butylbenzene	µg/m ³	BLQ	BLQ
P-Isopropyltoluene	µg/m ³	BLQ	4.2
M-Xylene	µg/m ³	BLQ	BLQ
P-Xylene	µg/m ³	BLQ	2.18
Styrene	µg/m ³	BLQ	BLQ
Cumene	µg/m ³	BLQ	BLQ
1,2,3-Trichloropropane	µg/m ³	BLQ	BLQ
N-Propylbenzene	µg/m ³	6.92	BLQ
Dibromochloromethane	µg/m ³	BLQ	BLQ
1,2-Dibromoethane	µg/m ³	BLQ	BLQ
Chlorobenzene	µg/m ³	BLQ	BLQ
1,1,1,2-Tetrachloroethane	µg/m ³	BLQ	BLQ
Ethylbenzene	µg/m ³	1.13	0.638
1,1-Dichloropropylene	µg/m ³	BLQ	BLQ
1,2-Dichloroethane	µg/m ³	4.13	4.18
1,2-Dichloropropane	µg/m ³	BLQ	BLQ
Trans-1,3-Dichloropropene	µg/m ³	BLQ	BLQ
CIS 1,3-Dichloropropene	µg/m ³	BLQ	BLQ
1,1,2-Trichloroethane	µg/m ³	BLQ	BLQ
Tetrachloroethylene	µg/m ³	0.92	0.581
1,3,5-Trimethylbenzene	µg/m ³	BLQ	BLQ
N-Butylbenzene	µg/m ³	BLQ	BLQ
1,2,3-Trichlorobenzene	µg/m ³	BLQ	BLQ
Hexachlorobutadiene	µg/m ³	BLQ	BLQ

Parameters	Unit	Results	
		DIPL	Endurance Tech, K-120
1,2,4-Trichlorobenzene	µg/m ³	BLQ	BLQ
2,2-Dichloropropane	µg/m ³	BLQ	BLQ
Dibromomethane	µg/m ³	BLQ	BLQ
Toluene	µg/m ³	BLQ	3.895
O-Xylene	µg/m ³	3.72	2.39
Bromoform	µg/m ³	1.26	1.9
1,1,2,2-Tetrachloroethane	µg/m ³	BLQ	BLQ
4-Chlorotoluene	µg/m ³	BLQ	BLQ
1,1-Dichloroethylene	µg/m ³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m ³	BLQ	BLQ
1,1-Dichloroethane	µg/m ³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m ³	BLQ	BLQ
Bromochloromethane	µg/m ³	BLQ	BLQ
1,1,1-Trichloroethane	µg/m ³	BLQ	BLQ

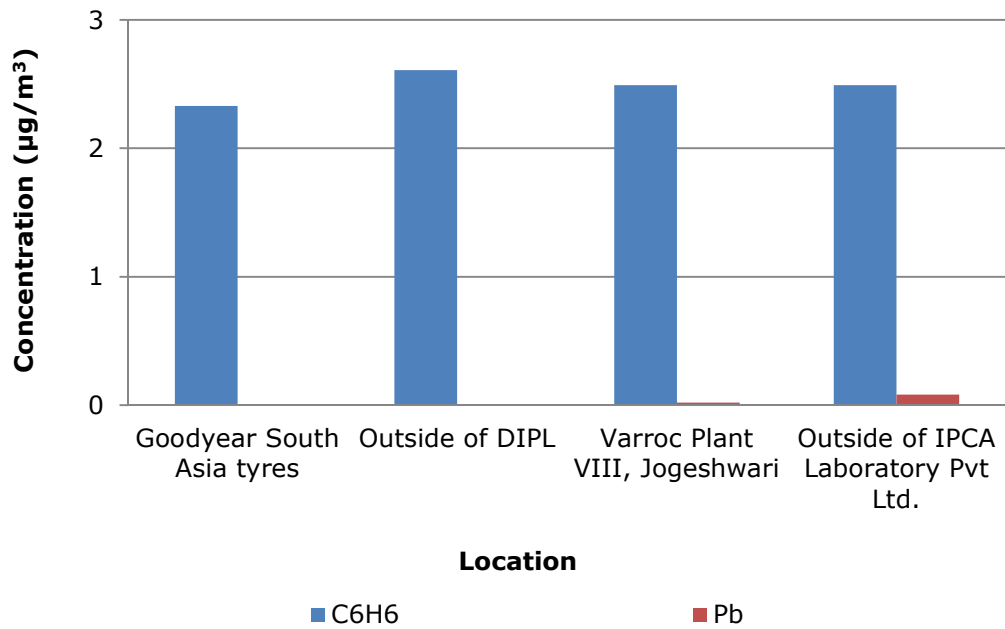
Graphs - Ambient Air Quality Monitoring - MIDC Waluj



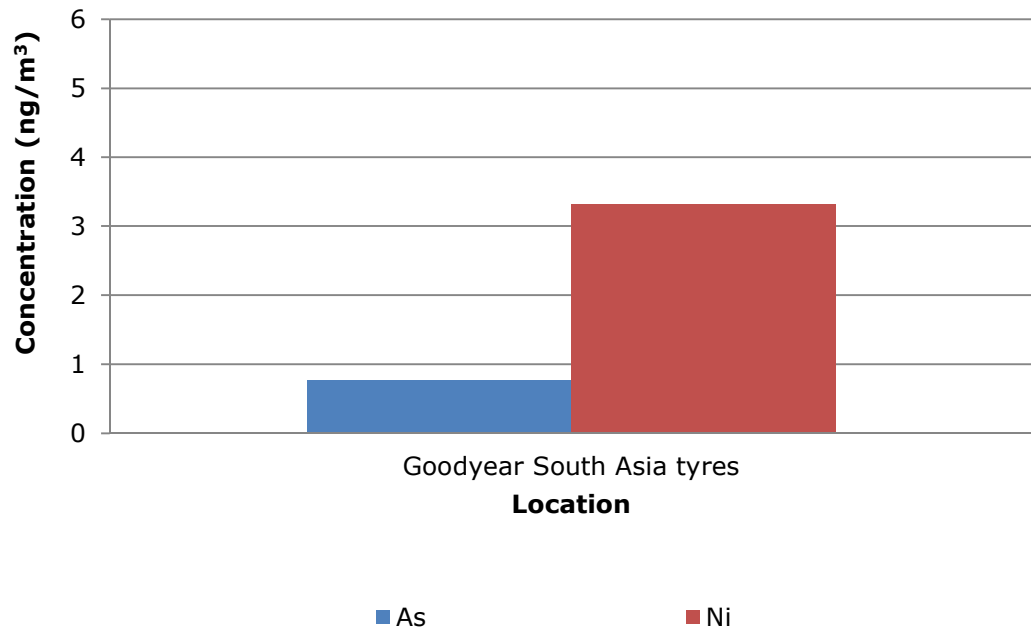
Aurangabad - MIDC Waluj



Aurangabad - MIDC Waluj



Aurangabad - MIDC Waluj



4. MIDC Paithan: In MIDC Paithan, at all the 4 locations monitored, the concentration of all the ambient air parameters was found within the permissible limits of NAAQS.

Table 5.13 MIDC Paithan - Details of Sampling Location of Ambient Air Quality Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Outside of Badve Engineering	19.783535N	75.27903E	30.05.2023	01.06.2023	03.06.2023
2.	Aurangabad Electrical, Unit III	19.755292N	75.297828E	30.05.2023	01.06.2023	03.06.2023
3.	Allana Frigarifico	19.77544N	75.290826E	30.05.2023	01.06.2023	03.06.2023
4.	Outside of Machhar Packaging	19.741876N	75.295112E	30.05.2023	01.06.2023	03.06.2023

Table 5.14 MIDC Paithan - Details of Sampling Location of VOCs Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Outside of Badve Engineering	19.783535N	75.27903E	30.05.2023	01.06.2023	03.06.2023
2.	Aurangabad Electrical, Unit III	19.755292N	75.297828E	30.05.2023	01.06.2023	03.06.2023

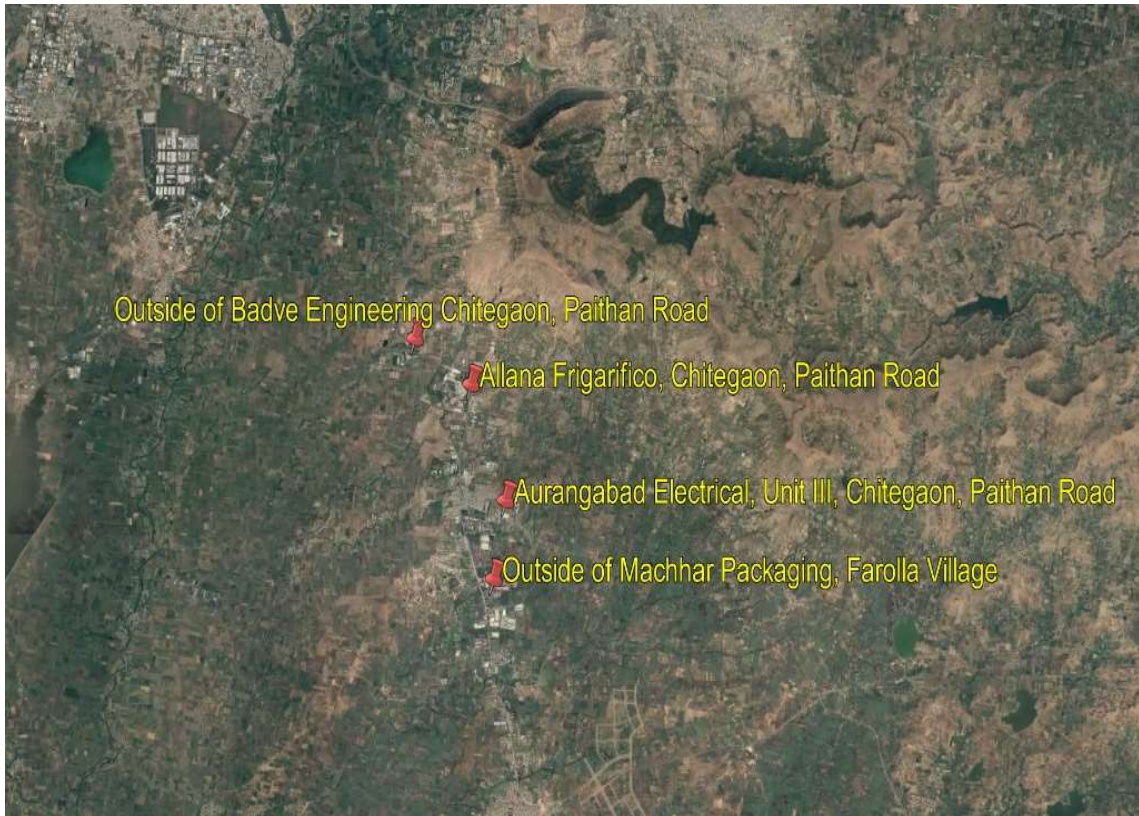


Fig: Geographical Locations of Ambient Air Quality Monitoring MIDC Paithan

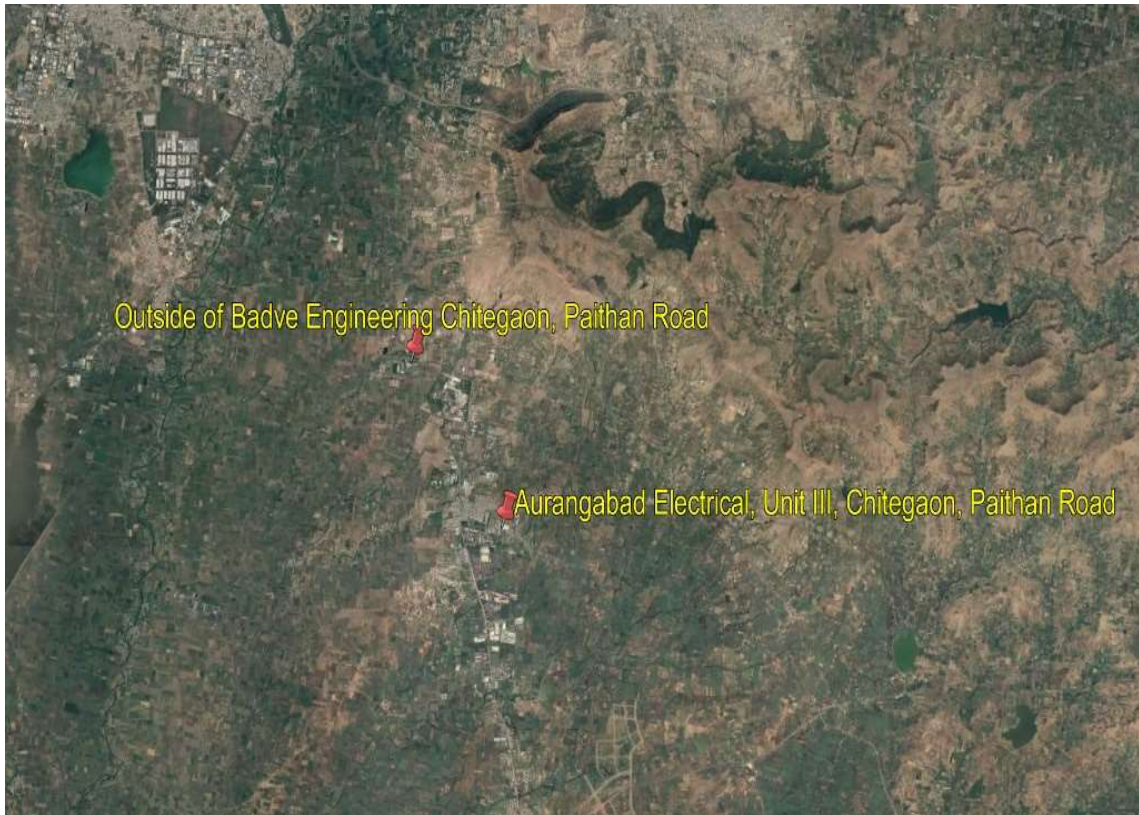


Fig: Geographical Locations of VOCs Monitoring MIDC Paithan

Table 5.15 MIDC Paithan- Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Outside of Badve Engineering	Aurangabad Electrical, Unit III	Allana Frigarifico	Outside of Machhar Packaging
Sulphur Dioxide (SO ₂)	µg/m ³	11.40	7.62	6.90	6.77
Nitrogen Dioxide (NO ₂)	µg/m ³	17.15	14.43	14.83	13.06
Particulate Matter (size less than 10 µm) or PM ₁₀	µg/m ³	70	67	66	67
Particulate Matter (size less than 2.5 µm) or PM _{2.5}	µg/m ³	19	19	17	19
Ozone (O ₃)	µg/m ³	33.90	20.60	34.55	34.45
Lead (Pb)	µg/m ³	0.04	BLQ	BLQ	0.04
Carbon Monoxide (CO) (1 h)	mg/m ³	1.54	1.51	1.39	1.43
Carbon Monoxide (CO) (8 h)	mg/m ³	1.86	1.89	1.79	1.66
Ammonia (NH ₃)	µg/m ³	111.97	58.33	88.73	209.33
Benzene (C ₆ H ₆)	µg/m ³	3.01	2.72	3.20	3.13
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m ³	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m ³	BLQ	BLQ	BLQ	BLQ
Nickel (Ni)	ng/m ³	7.26	BLQ	BLQ	BLQ

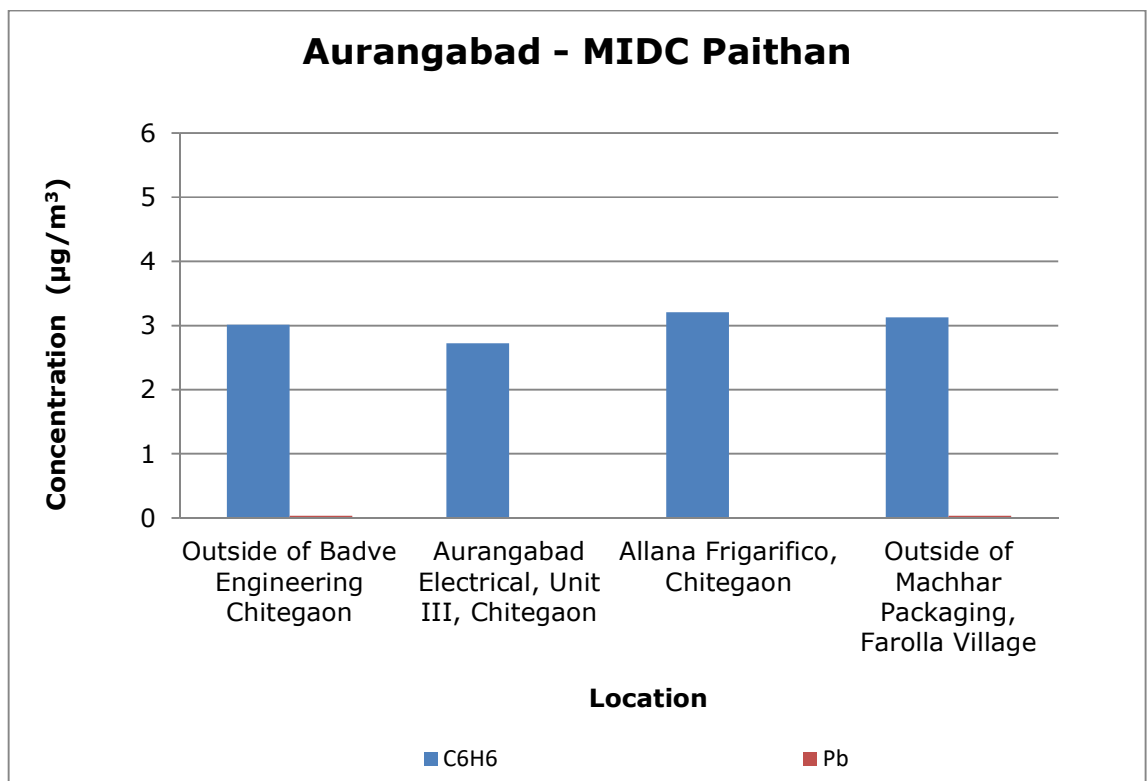
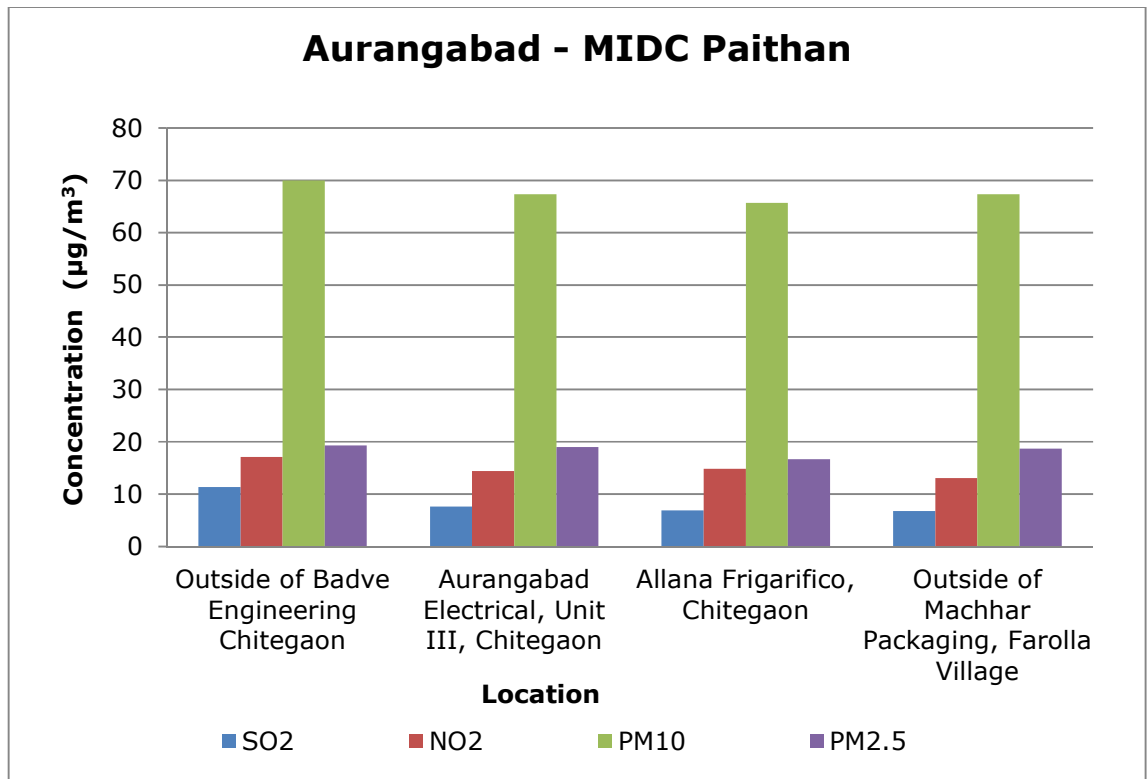
Table 5.16 MIDC Paithan- Volatile Organic Compounds (VOCs) in Ambient Air Results

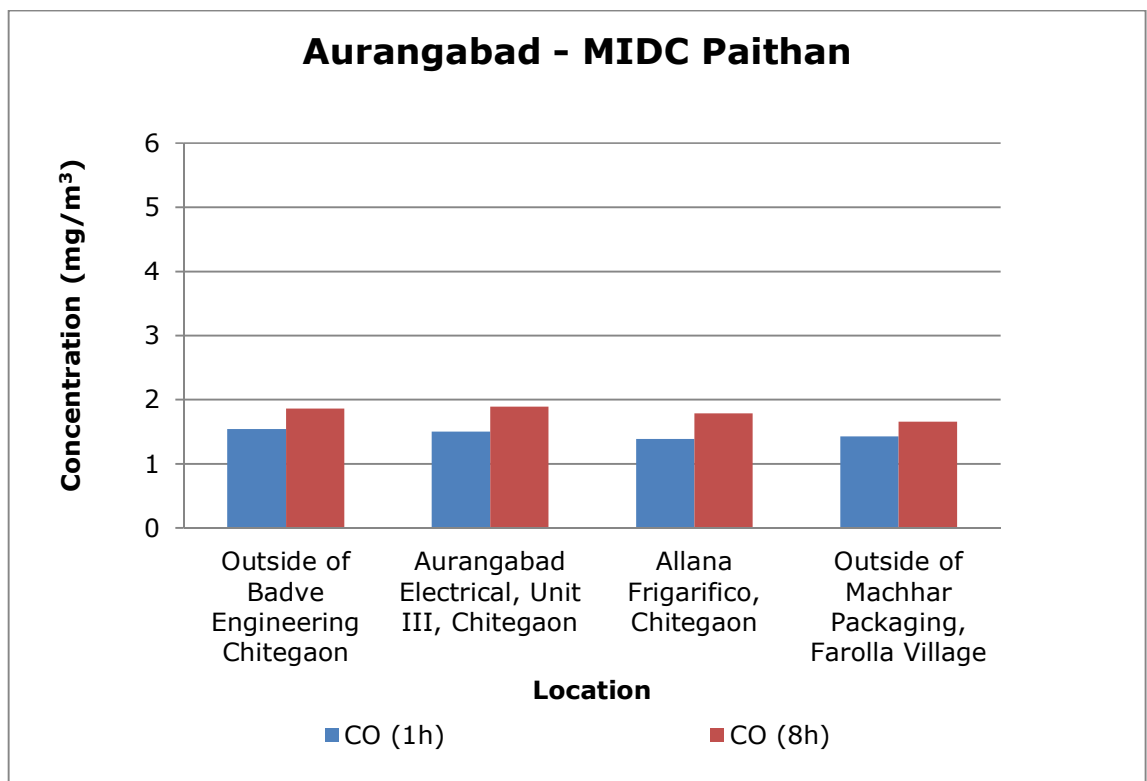
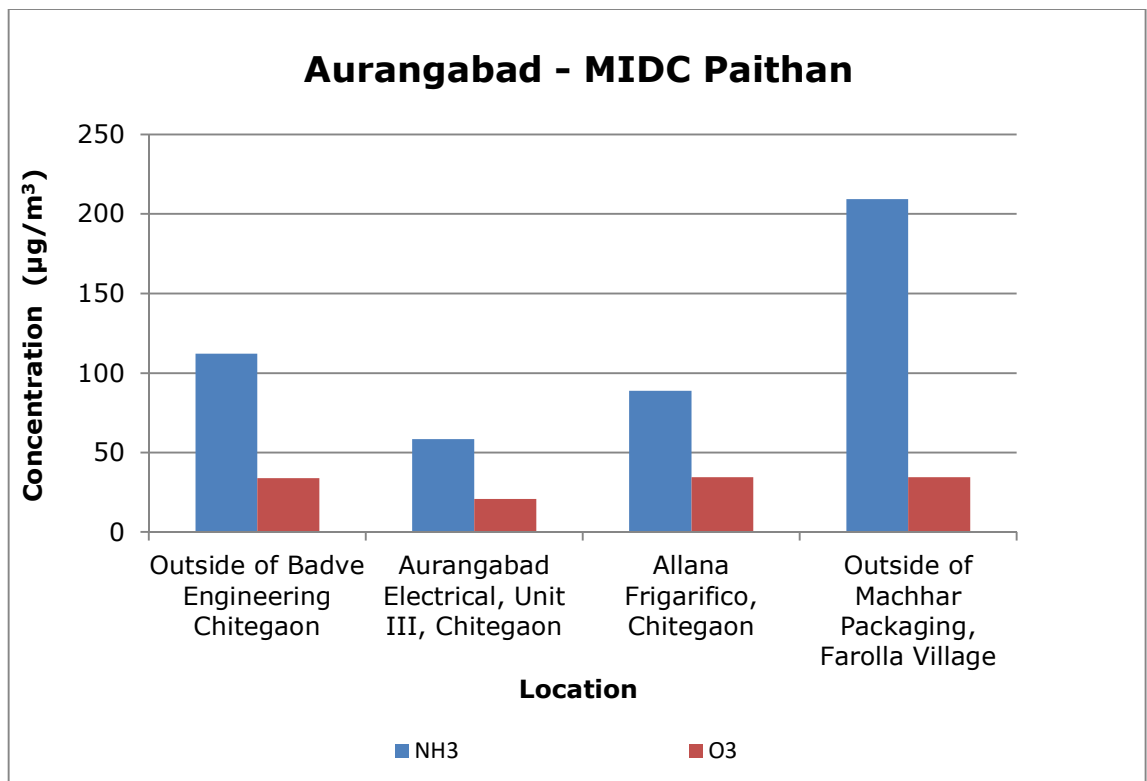
Parameters	Unit	Results	
		Outside of Badve Engineering	Aurangabad Electrical, Unit III
Dichloromethane	µg/m ³	1.32	0.72
Chloroform	µg/m ³	0.55	BLQ
Carbon Tetrachloride	µg/m ³	BLQ	BLQ
Trichloroethylene	µg/m ³	1.56	1.05
Bromodichloromethane	µg/m ³	BLQ	BLQ
1,3-Dichloropropane	µg/m ³	BLQ	BLQ
1,4-Dichlorobenzene	µg/m ³	6.42	BLQ

Parameters	Unit	Results	
		Outside of Badve Engineering	Aurangabad Electrical, Unit III
1,3-Dichlorobenzene	µg/m ³	12.03	17.40
1,2-Dichlorobenzene	µg/m ³	BLQ	BLQ
1,2-Dibromo-3-Chloropropane	µg/m ³	BLQ	BLQ
Naphthalene	µg/m ³	BLQ	BLQ
Bromobenzene	µg/m ³	BLQ	BLQ
1,2,4-Trimethylbenzene	µg/m ³	BLQ	BLQ
2-Chlorotoluene	µg/m ³	BLQ	BLQ
Tert-Butylbenzene	µg/m ³	BLQ	BLQ
SEC-Butylbenzene	µg/m ³	BLQ	BLQ
P-Isopropyltoluene	µg/m ³	BLQ	3.76
M-Xylene	µg/m ³	11.80	6.33
P-Xylene	µg/m ³	5.57	1.71
Styrene	µg/m ³	BLQ	BLQ
Cumene	µg/m ³	BLQ	BLQ
1,2,3-Trichloropropane	µg/m ³	BLQ	BLQ
N-Propylbenzene	µg/m ³	BLQ	BLQ
Dibromochloromethane	µg/m ³	BLQ	BLQ
1,2-Dibromoethane	µg/m ³	BLQ	BLQ
Chlorobenzene	µg/m ³	BLQ	BLQ
1,1,1,2-Tetrachloroethane	µg/m ³	BLQ	BLQ
Ethylbenzene	µg/m ³	11.50	1.85
1,1-Dichloropropylene	µg/m ³	BLQ	BLQ
1,2-Dichloroethane	µg/m ³	3.98	2.93
1,2-Dichloropropane	µg/m ³	BLQ	BLQ
Trans-1,3-Dichloropropene	µg/m ³	BLQ	BLQ
CIS 1,3-Dichloropropene	µg/m ³	BLQ	BLQ
1,1,2-Trichloroethane	µg/m ³	BLQ	BLQ
Tetrachloroethylene	µg/m ³	5.30	4.58
1,3,5-Trimethylbenzene	µg/m ³	BLQ	BLQ
N-Butylbenzene	µg/m ³	0.57	BLQ
1,2,3-Trichlorobenzene	µg/m ³	BLQ	BLQ
Hexachlorobutadiene	µg/m ³	BLQ	BLQ

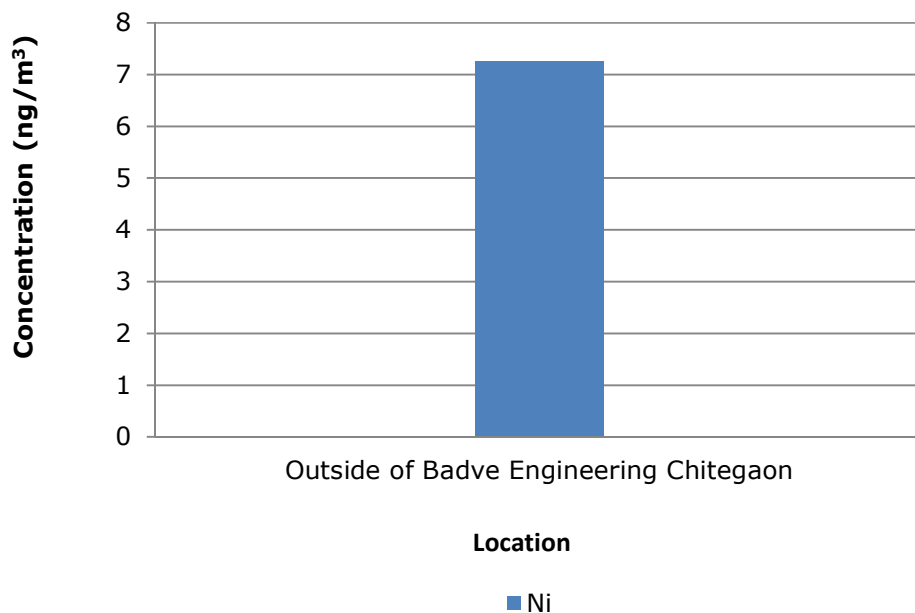
Parameters	Unit	Results	
		Outside of Badve Engineering	Aurangabad Electrical, Unit III
1,2,4-Trichlorobenzene	µg/m ³	BLQ	BLQ
2,2-Dichloropropane	µg/m ³	BLQ	BLQ
Dibromomethane	µg/m ³	BLQ	BLQ
Toluene	µg/m ³	BLQ	BLQ
O-Xylene	µg/m ³	0.68	1.41
Bromoform	µg/m ³	BLQ	BLQ
1,1,2,2-Tetrachloroethane	µg/m ³	BLQ	BLQ
4-Chlorotoluene	µg/m ³	BLQ	BLQ
1,1-Dichloroethylene	µg/m ³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m ³	BLQ	BLQ
1,1-Dichloroethane	µg/m ³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m ³	BLQ	BLQ
Bromochloromethane	µg/m ³	BLQ	BLQ
1,1,1-Trichloroethane	µg/m ³	BLQ	BLQ

Graphs - Ambient Air Quality Monitoring of MIDC Paithan





Aurangabad - MIDC Paithan



WATER ENVIRONMENT

6. Water Environment

For studying the water environment of Aurangabad area, six samples of surface water were collected from Nallah, Lake and River. A total of 23 samples were collected from all four MIDCs i.e. six samples from each MIDC except Chikalhana, from where five samples were collected. In comparison to the post monsoon season study, few of the water sources were found dried, hence those were replaced with another nearby source.

1. MIDC Shendra: Six surface water samples were collected from the MIDC Shendra region.

- General parameters like pH, dissolved oxygen (DO), electrical conductivity and suspended solids are also observed well within the limits in all the samples.
- Concentration of Biological Oxygen Demand (BOD) was observed to exceed the permissible limit at four locations. The highest concentration of BOD (1123mg/L) is observed in lake water near Radico Distillery.
- Concentration of Total Dissolved Solids (TDS) and Total Kjeldahl Nitrogen (TKN) was also found within the acceptable limits in all water samples except in lake water near Radico Distillery.
- In fish bioassay, 27-83% fish survival was observed in the water sample of MIDC Shendra.
- All metals like Arsenic, Nickel, Copper, Iron, Hexavalent Chromium (Cr⁶⁺) etc. are also observed either below the limit of quantification (BLQ) or below their standard limits.
- Parameters like Total Residual Chlorine, Nitrogen, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also meet the criteria as prescribed by CPCB in all the samples except in lake water near Radico Distillery.
- Organo Chlorine Pesticides, Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) are also observed below the limit of quantification in all the studied samples.

Table 6.1 MIDC Shendra - Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Adgaon Lake	19.908202N	75.522819	25.05.2023	27.05.2023	23.05.2023
2.	Auric City CETP outlet	19.872893N	75.522819	25.05.2023	27.05.2023	23.05.2023
3.	Nallah Water Near Jyoti Industry	19.879482N	75.494655	25.05.2023	27.05.2023	23.05.2023
4.	Nallah Water Back side Perkins Shendra	19.880532N	75.513534	25.05.2023	27.05.2023	23.05.2023

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
5.	Pond Water in front of Auric City Office	19.908202N	75.493505	25.05.2023	27.05.2023	23.05.2023
6.	Nallah Water Behind Inox Air Product	19.876954N	75.524409	25.05.2023	27.05.2023	23.05.2023

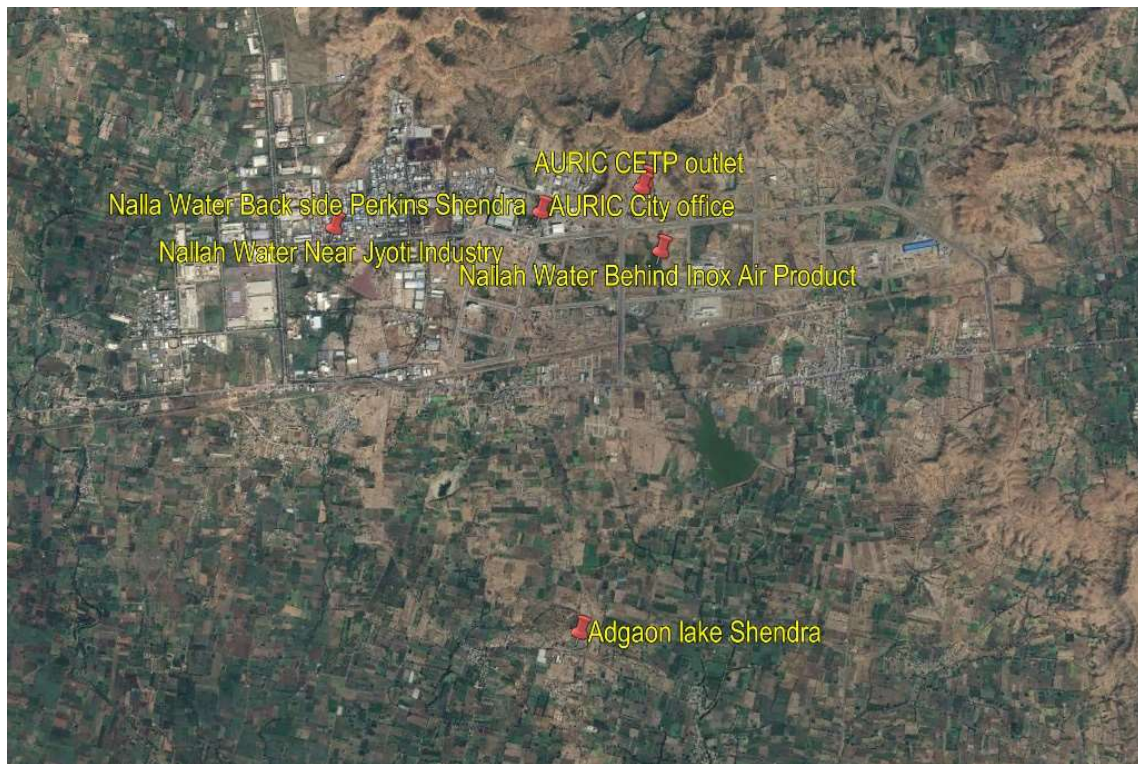


Fig: Geographical Locations of Surface Water Sampling MIDC Shendra

Table 6.2 MIDC Shendra – Results of Surface Water

Parameters	Unit	Results					
		Pond Water, Front of Auric City Office	Nallah Water, Back side of Perkins India Pvt Ltd	Nalla Water Near Jyoti Industry	Nalla Water Behind Inox Air Product	CETP Outlet Auric City	Adgaon Lake
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Very clean neighbourhood and catchment	Reasonably clean neighbourhood

Parameters	Unit	Results					
		Pond Water, Front of Auric City Office	Nallah Water, Back side of Perkins India Pvt Ltd	Nalla Water Near Jyoti Industry	Nalla Water Behind Inox Air Product	CETP Outlet Auric City	Adgaon Lake
General Appearance	-	Floating Matter Evident	Floating Matter Evident	Floating Matter evident	Floating Matter evident	No Floating Matter	Floating Matter evident
Transparency	m	0.20	0.30	0.10	0.40	2.50	0.47
Temperature	°C	28	26	27	26	25	26
Colour	Hazen	1	1	8	1	2	5
Smell	-	Agreeable	Agreeable	Not Agreeable	Agreeable	Not Agreeable	Not agreeable
pH	-	7.60	7.72	7.86	8.00	7.45	8.18
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	25	21	85	29	11	37
Total Dissolved Solids	mg/L	681	582	2577	465	1132	565
Dissolved Oxygen (% Saturation)	%	53.00	62.67	20.00	57.00	50.33	36.00
Chemical Oxygen Demand	mg/L	42	13	2667	25	55	111
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	11	3	1123	7	17	37
Electrical Conductivity (at 25 °C)	µmho/cm	1214	1036	4600	830	2020	1008
Nitrite Nitrogen (as NO ₂)	mg/L	0.02	0.03	BLQ	BLQ	0.47	BLQ

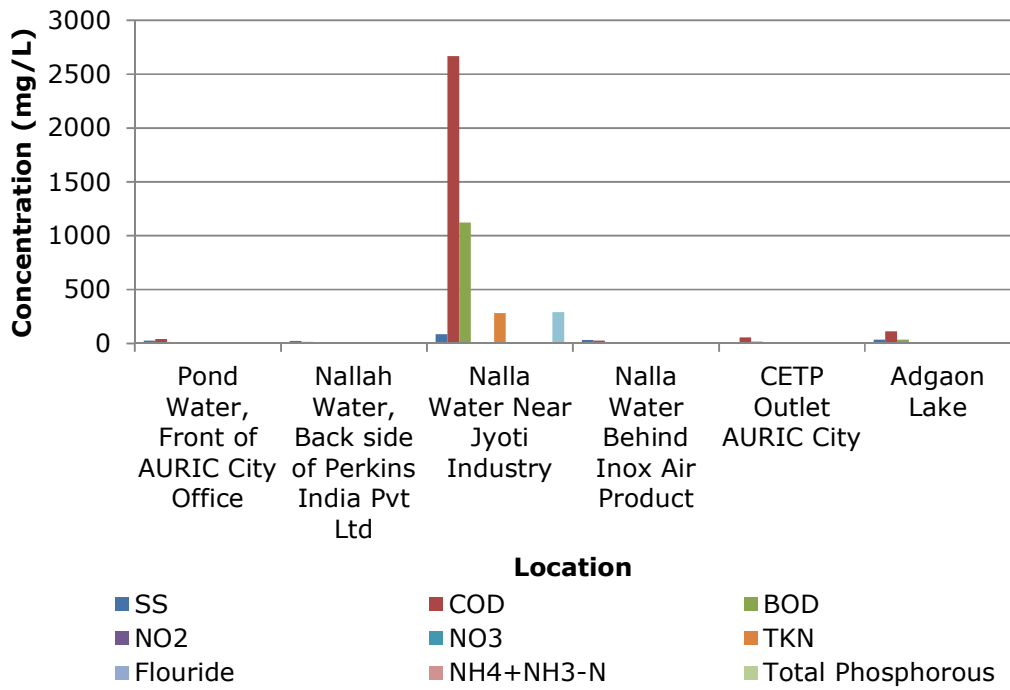
Parameters	Unit	Results					
		Pond Water, Front of Auric City Office	Nallah Water, Back side of Perkins India Pvt Ltd	Nalla Water Near Jyoti Industry	Nalla Water Behind Inox Air Product	CETP Outlet Auric City	Adgaon Lake
Nitrate Nitrogen (as NO ₃)	mg/L	BLQ	BLQ	8.27	BLQ	10.25	1.38
(NO ₂ + NO ₃)-Nitrogen	mg/L	BLQ	BLQ	8.27	BLQ	10.90	1.38
Free Ammonia (as NH ₃ -N)	mg/L	BLQ	BLQ	0.64	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	0.22	0.24	BLQ	0.24	0.25	0.23
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.73	0.97	3.27	0.70	1.53	0.97
Sulphide (as H ₂ S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.33	0.26	1.19	0.14	0.57	0.11
Sodium Adsorption Ratio	-	1.62	1.04	7.19	1.49	4.45	1.59
Total Coliforms	MPN Index/100 ml	65	106	579	155	94	327
Faecal Coliforms	MPN Index/100 ml	5	22	85	10	34	56
Total Phosphate (as P)	mg/L	0.32	0.29	1.42	0.19	0.68	0.41
Total Kjeldahl Nitrogen (as N)	mg/L	0.93	0.84	281.00	0.93	4.29	2.43

Parameters	Unit	Results					
		Pond Water, Front of Auric City Office	Nallah Water, Back side of Perkins India Pvt Ltd	Nalla Water Near Jyoti Industry	Nalla Water Behind Inox Air Product	CETP Outlet Auric City	Adgaon Lake
Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/L	0.40	0.45	11.32	0.37	0.17	1.11
Total Nitrogen	mg/L	1.69	1.28	289.33	1.60	11.61	5.86
Phenols (as C ₆ H ₅ OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	0.07	0.09	BLQ	0.07	0.09	0.09
Nickel (as Ni)	mg/L	0.02	0.02	BLQ	0.02	0.02	0.03
Copper (as Cu)	mg/L	0.08	0.08	BLQ	BLQ	0.08	0.08
Hexavalent Chromium (as Cr ⁶⁺)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	BLQ	BLQ	0.02	BLQ
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ

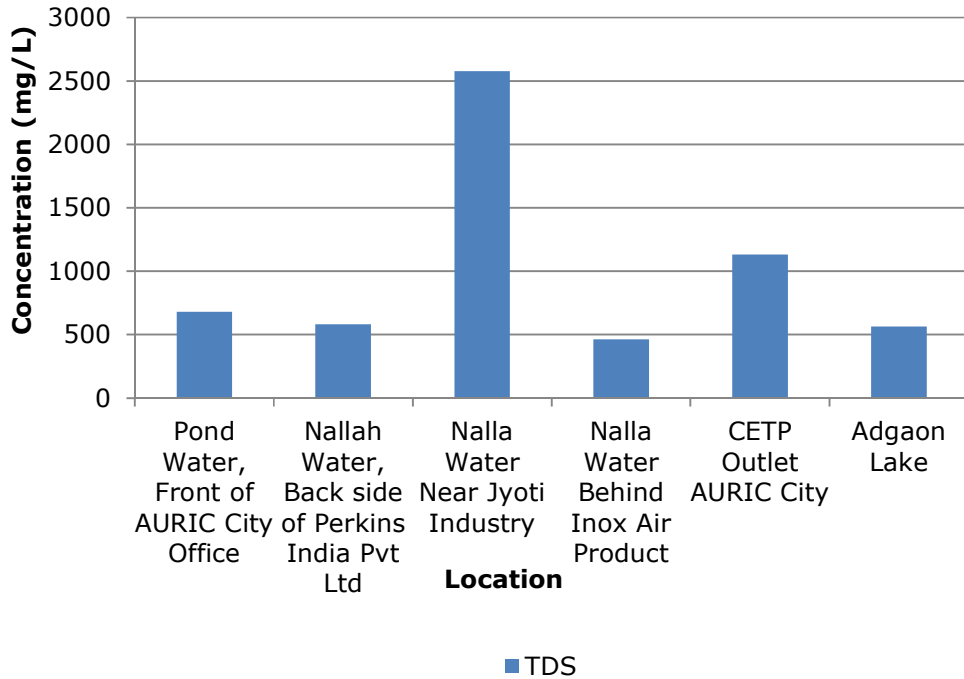
Parameters	Unit	Results					
		Pond Water, Front of Auric City Office	Nallah Water, Back side of Perkins India Pvt Ltd	Nalla Water Near Jyoti Industry	Nalla Water Behind Inox Air Product	CETP Outlet Auric City	Adgaon Lake
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.06	0.09	0.11	0.27	0.14	0.10
Iron (as Fe)	mg/L	0.63	0.52	0.39	0.70	1.56	0.46
Vanadium (as V)	mg/L	0.05	0.02	0.05	0.02	0.02	0.03
Selenium (as Se)	mg/L	0.01	0.01	0.01	0.01	0.01	0.01
Boron (as B)	mg/L	BLQ	0.12	0.20	BLQ	0.13	BLQ
Bioassay Test on fish	% survival	67	83	27	83	83	70

Graphs - Surface water of MIDC Shendra

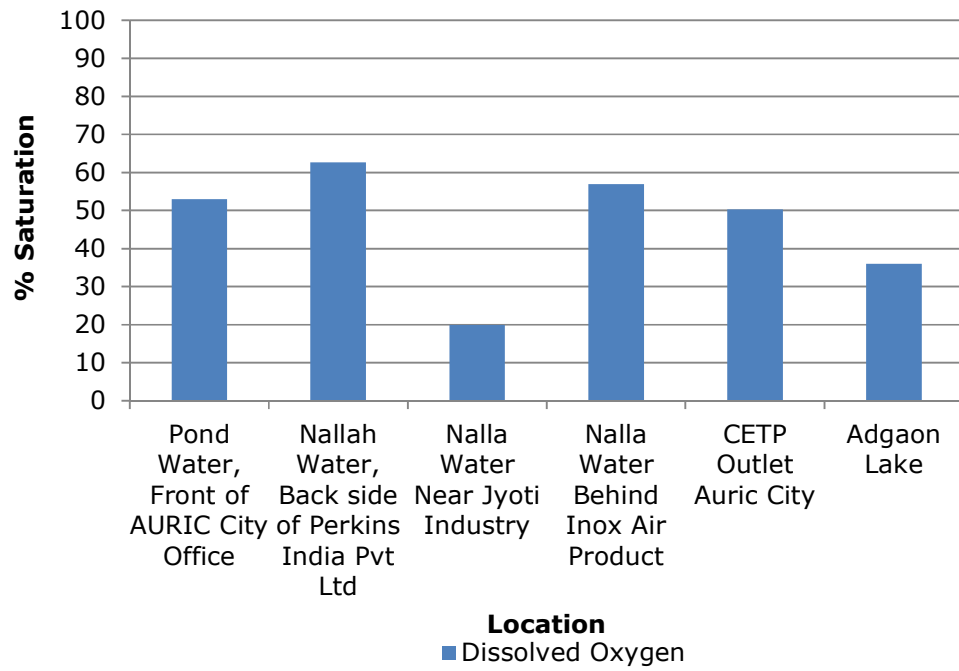
Waste water - MIDC Shendra



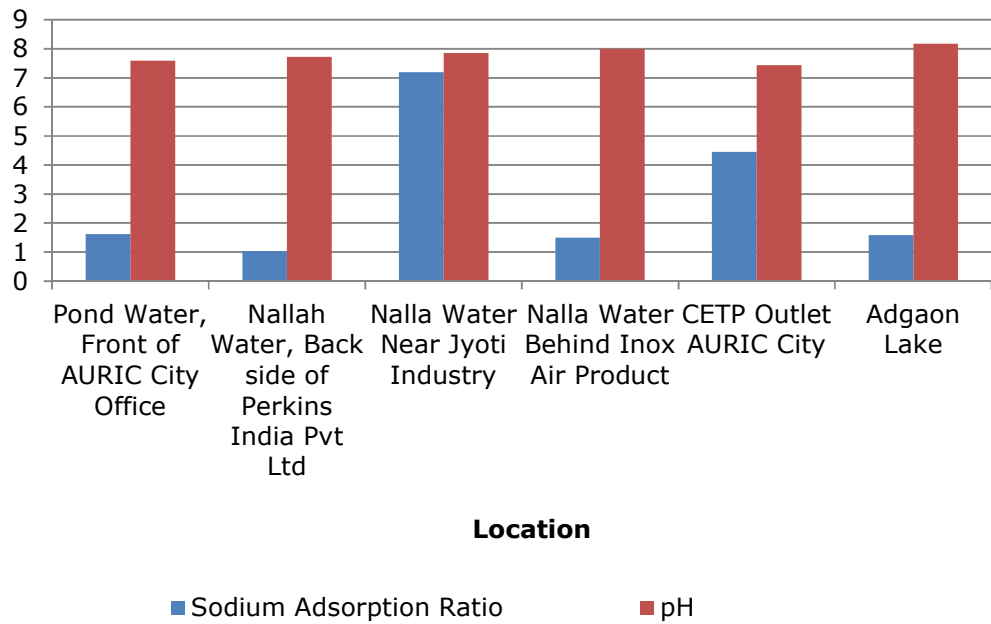
Waste water - MIDC Shendra



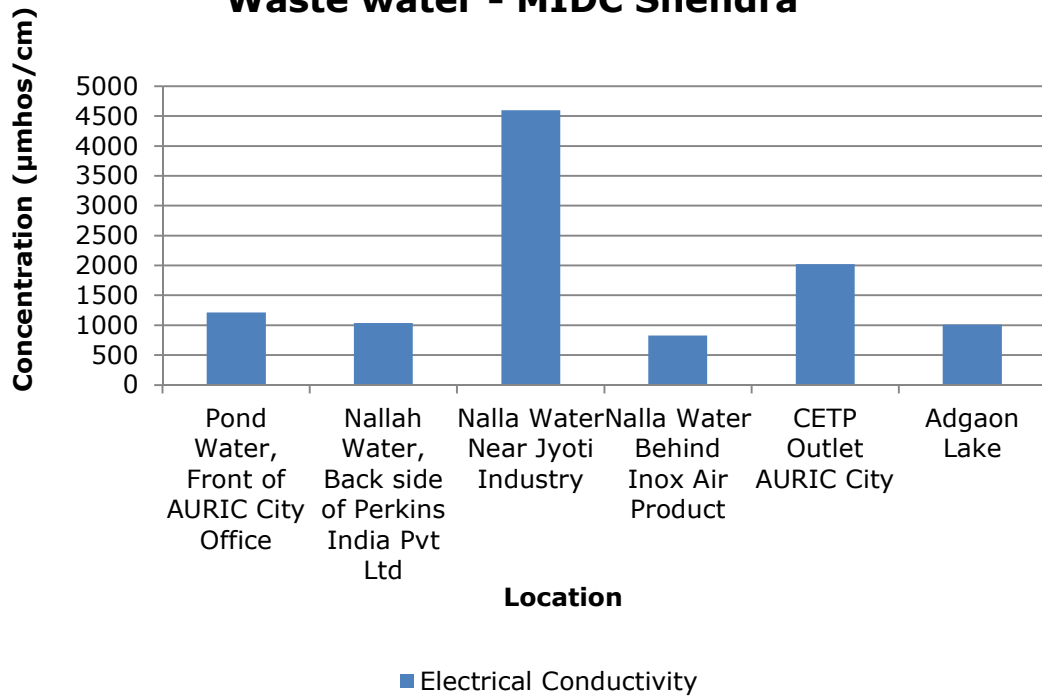
Waste water - MIDC Shendra



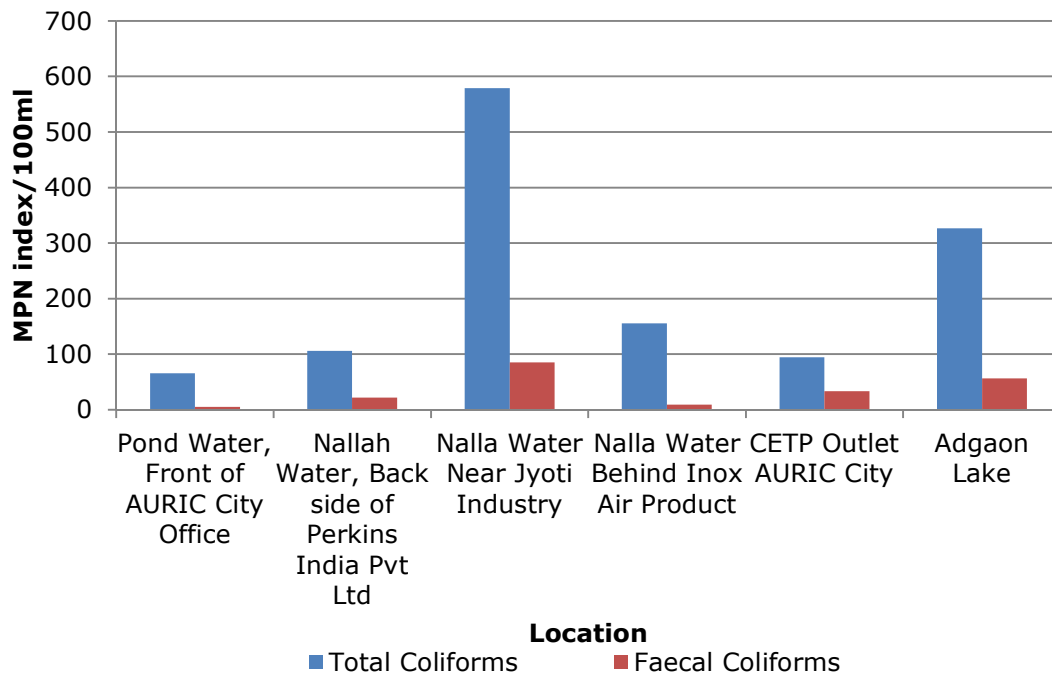
Waste water - MIDC Shendra



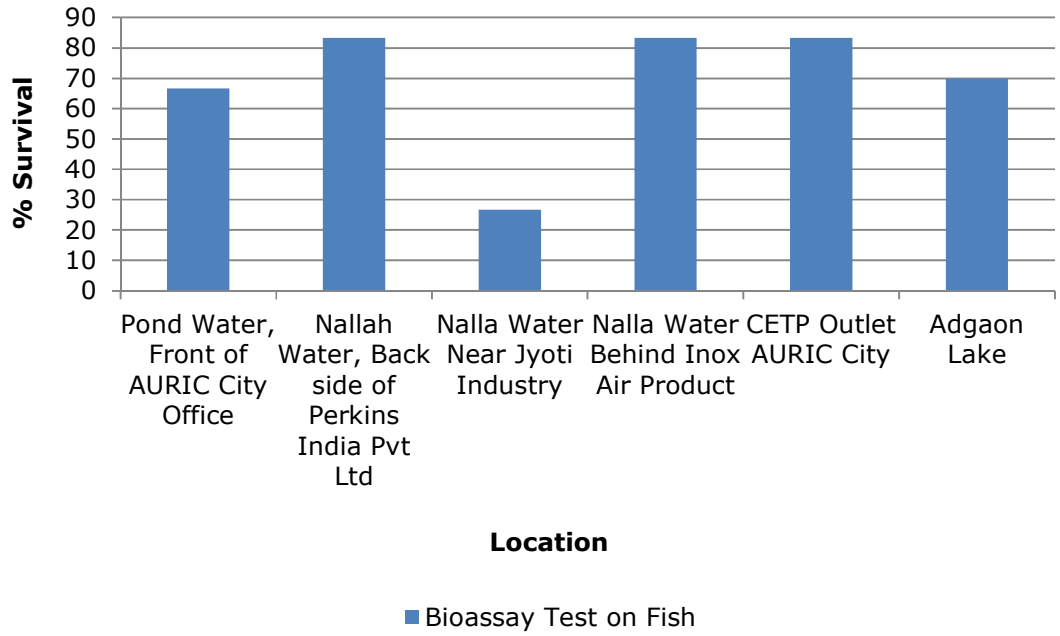
Waste water - MIDC Shendra



Waste water - MIDC Shendra



Waste water - MIDC Shendra



2. MIDC Chikalthana: From MIDC Chikalthana also, five surface water samples were collected.

- All the water samples collected were found acceptable in general appearance.
- Smell/odour of water samples collected from Sukhna Dam and Nallah water in front of Harman industries are found not agreeable/unpleasant odour
- General parameters like pH, electrical conductivity, suspended solids and Total Dissolved Solids (TDS) were also observed well within the limits in all the samples.
- Concentration of Biological Oxygen Demand (BOD) is found above acceptable limits in the water sample of Sukna Dam.
- Concentration of Fluoride is found to exceed the acceptable limit in the water samples of STP Outlet Zalta phata and Sukana River Near Shani Mandir.
- In fish bioassay, 100% survival of fishes was achieved in all the water samples.
- Metals such as Arsenic, Nickel, Copper, Hexavalent Chromium (Cr⁶⁺) etc. were also observed either below the limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Nitrogen, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also meet the criteria as prescribed by CPCB.
- Organo Chlorine Pesticides, Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) are also observed below the limit of quantification in all the studied samples.

Table 6.3 MIDC Chikalthana - Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Sukna Dam	19.807943N	75.5156E	24.05.2023	26.05.2023	28.05.2023
2.	Harsul lake	19.923124N	75.335116E	24.05.2023	26.05.2023	28.05.2023
3.	STP Outlet Zalta phata	19.855765N	75.43684E	24.05.2023	26.05.2023	28.05.2023
4.	Sukana River Near Shani Mandir	19.858852N	75.414729E	24.05.2023	26.05.2023	28.05.2023
5.	Lake Water, Salim Ali Sarovar	19.901671N	75.344171E	24.05.2023	26.05.2023	28.05.2023

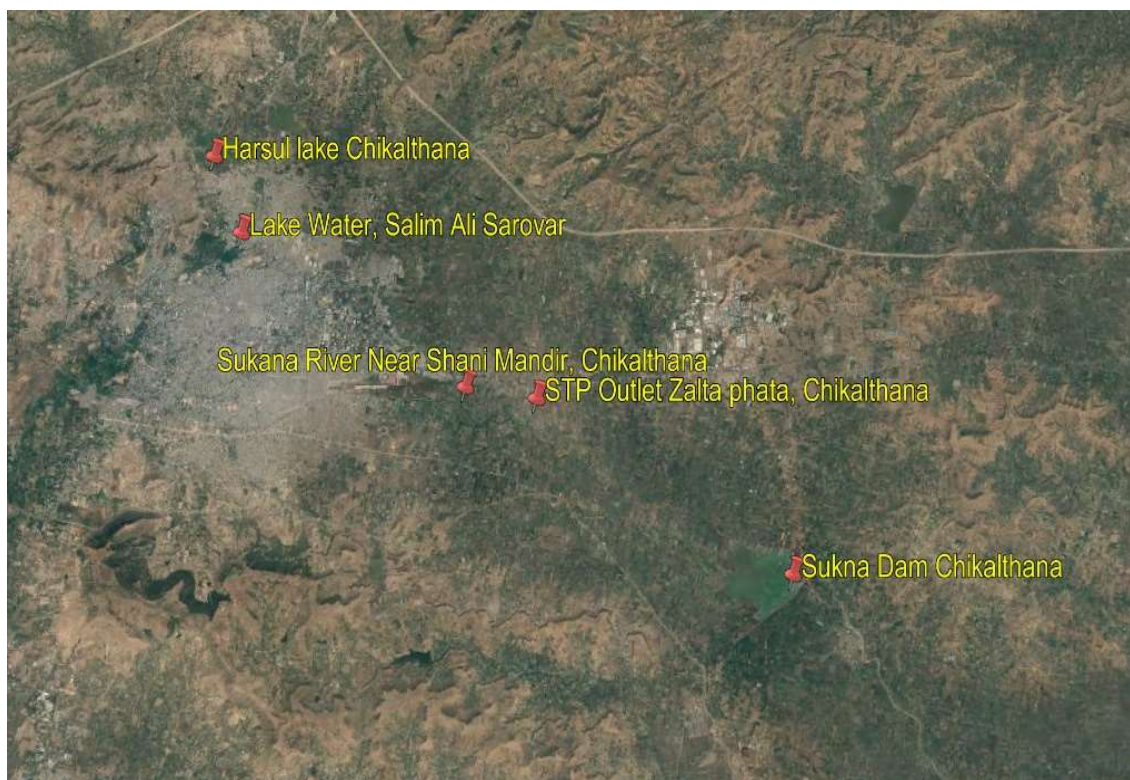


Fig: Geographical Locations of Surface Water Sampling MIDC Chikalthana

Table 6.4 MIDC Chikalthana - Results of Surface Water

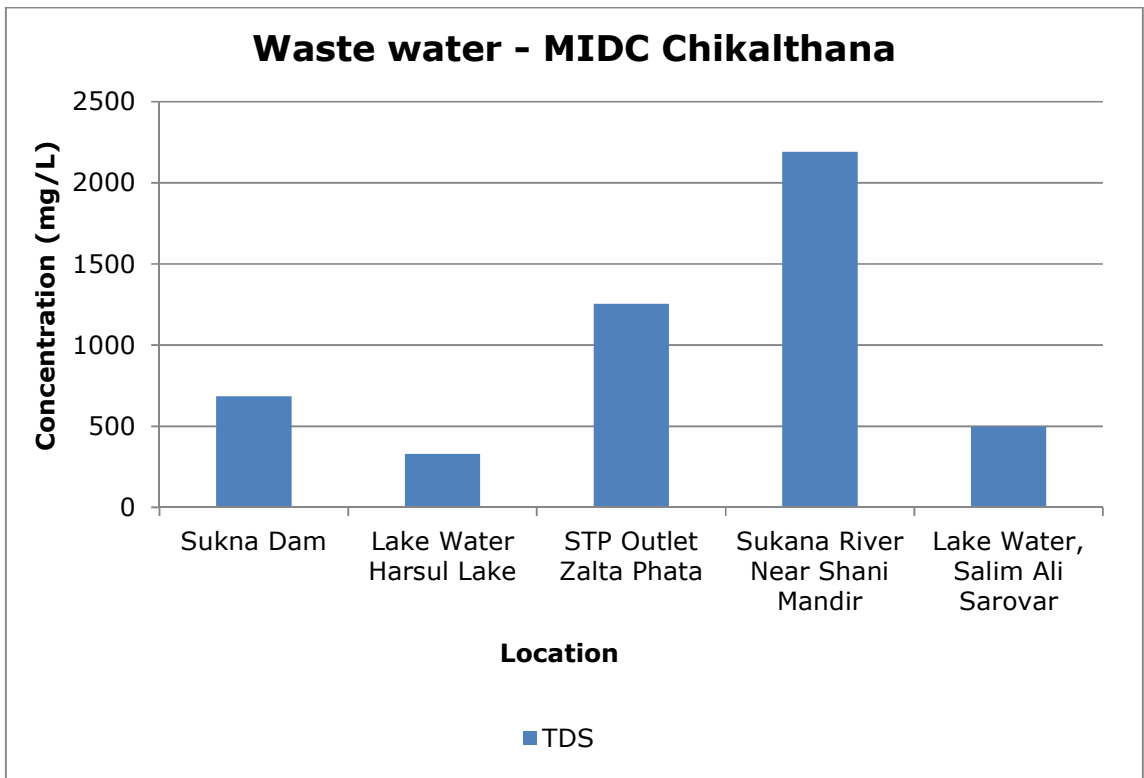
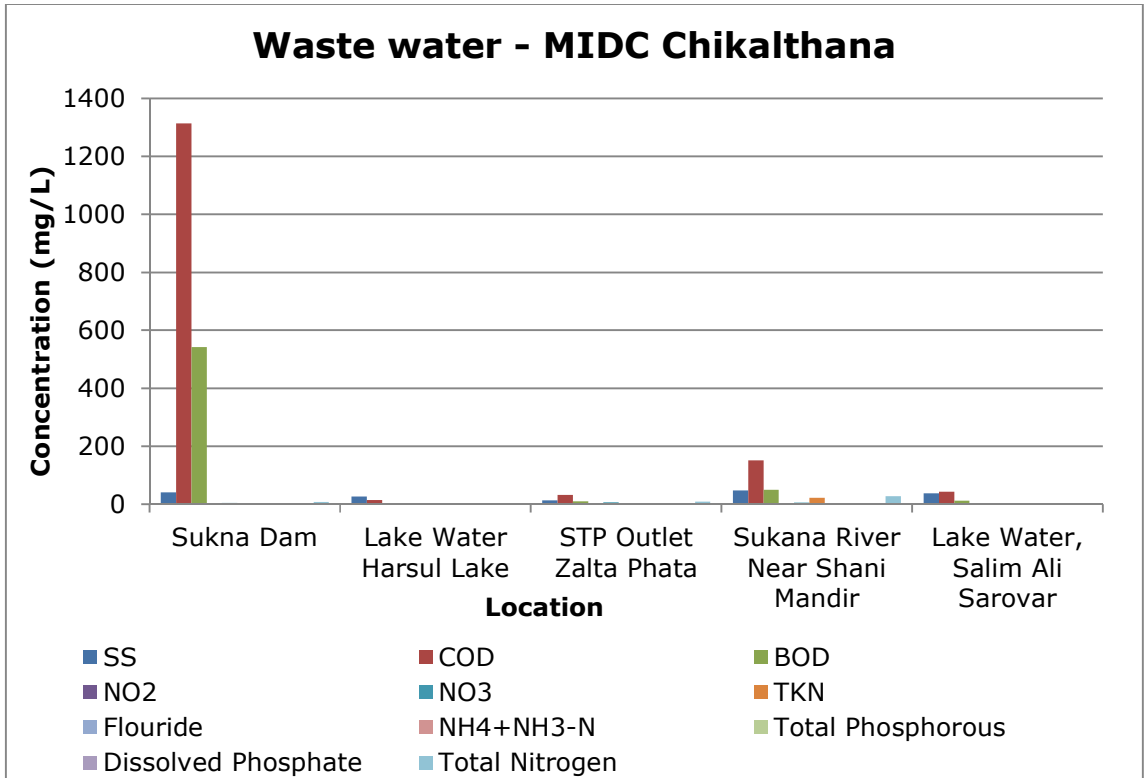
Parameters	Unit	Results				
		Sukna Dam	Lake Water Harsul Lake	STP Outlet Zalta Phata	Sukana River Near Shani Mandir	Lake Water, Salim Ali Sarovar
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	Floating Matter evident	Floating Matter Evident	Floating Matter Evident	Floating Matter Evident	Floating Matter Evident
Transparency	m	0.80	0.60	0.50	0.20	0.30
Temperature	°C	27	27	25	27	27
Colour	Hazen	5	17	17	6	1
Smell	-	Not Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
pH	-	7.53	8.17	7.48	7.86	8.27

Parameters	Unit	Results				
		Sukna Dam	Lake Water Harsul Lake	STP Outlet Zalta Phata	Sukana River Near Shani Mandir	Lake Water, Salim Ali Sarovar
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	41	27	13	47	37
Total Dissolved Solids	mg/L	685	330	1255	2192	498
Dissolved Oxygen (% Saturation)	%	36.00	71.67	51.67	33.67	50.00
Chemical Oxygen Demand	mg/L	1313	14	32	151	43
Biochemical Oxygen Demand (3 days,27°C)	mg/L	542	4	9	50	12
Electrical Conductivity (at 25 °C)	µmho/cm	1222	587	2240	3917	888
Nitrite Nitrogen (as NO ₂)	mg/L	BLQ	BLQ	0.26	BLQ	0.02
Nitrate Nitrogen (as NO ₃)	mg/L	4.45	BLQ	6.43	5.64	1.65
(NO ₂ + NO ₃)-Nitrogen	mg/L	4.46	BLQ	6.70	5.64	1.65
Free Ammonia (as NH ₃ -N)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	BLQ	0.24	0.36	0.34	0.08
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.07	0.53	2.03	3.30	0.80
Sulphide (as H ₂ S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ

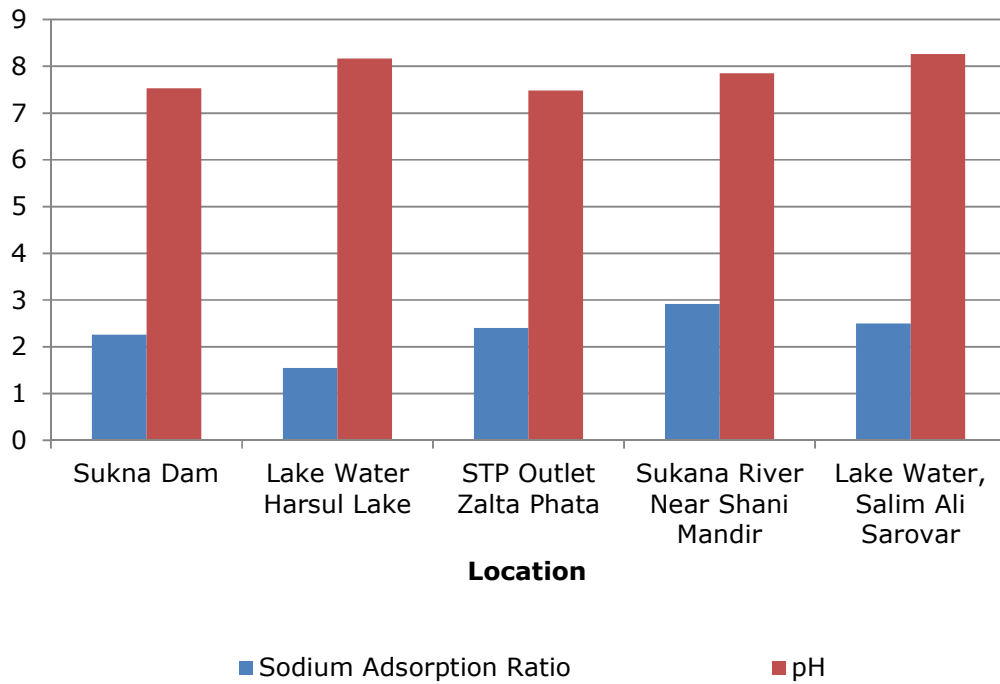
Parameters	Unit	Results				
		Sukna Dam	Lake Water Harsul Lake	STP Outlet Zalta Phata	Sukana River Near Shani Mandir	Lake Water, Salim Ali Sarovar
Dissolved Phosphate (as P)	mg/L	0.34	0.16	0.59	1.01	0.19
Sodium Adsorption Ratio	-	2.26	1.55	2.40	2.92	2.50
Total Coliforms	MPN Index/ 100 ml	89	91	131	85	308
Faecal Coliforms	MPN Index/ 100 ml	16	69	55	23	256
Total Phosphate (as P)	mg/L	0.47	0.17	0.68	1.15	0.25
Total Kjeldahl Nitrogen (as N)	mg/L	3.36	0.75	1.68	22.24	0.93
Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/L	1.15	0.46	0.20	0.92	0.55
Total Nitrogen	mg/L	7.81	1.47	8.40	27.88	2.07
Phenols (as C ₆ H ₅ OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	0.12	BLQ	BLQ	BLQ

Parameters	Unit	Results				
		Sukna Dam	Lake Water Harsul Lake	STP Outlet Zalta Phata	Sukana River Near Shani Mandir	Lake Water, Salim Ali Sarovar
Nickel (as Ni)	mg/L	0.01	0.02	BLQ	0.02	0.01
Copper (as Cu)	mg/L	BLQ	0.16	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr ⁶⁺)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	0.02	BLQ	0.07	BLQ
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ	0.02	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.12	0.08	0.06	0.05	0.11
Iron (as Fe)	mg/L	0.47	0.42	0.18	0.31	0.22
Vanadium (as V)	mg/L	BLQ	0.02	0.07	0.06	0.04
Selenium (as Se)	mg/L	0.01	0.01	0.01	0.01	0.01
Boron (as B)	mg/L	BLQ	BLQ	0.22	0.47	BLQ
Bioassay Test on fish	% survival	100	100	100	100	100

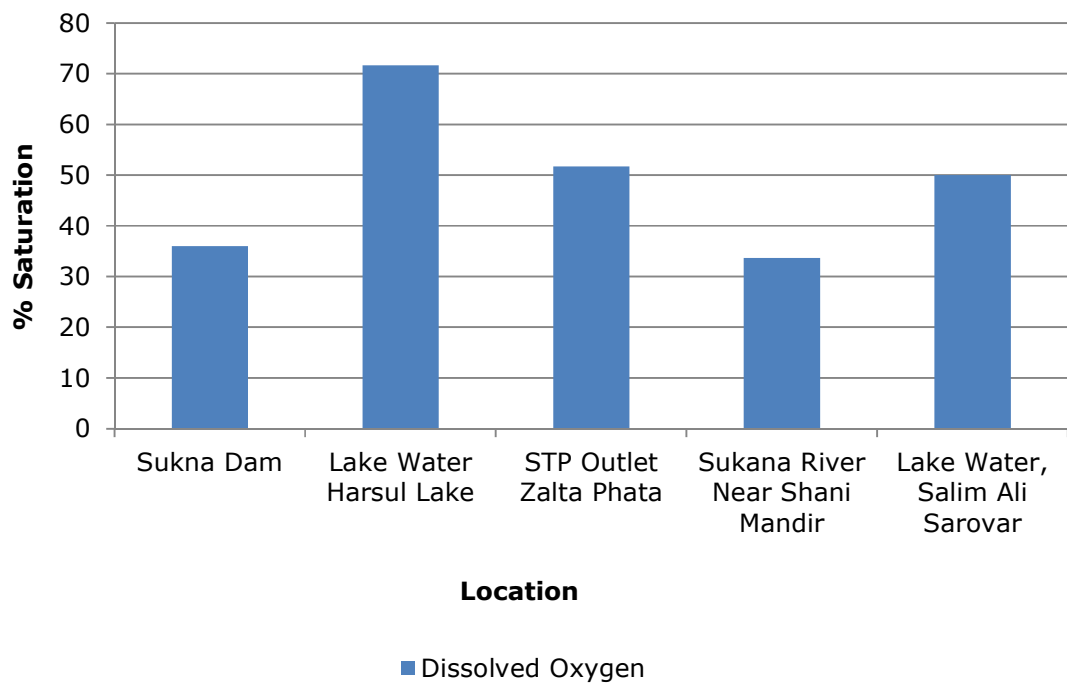
Graphs - Surface water of MIDC Chikalthana



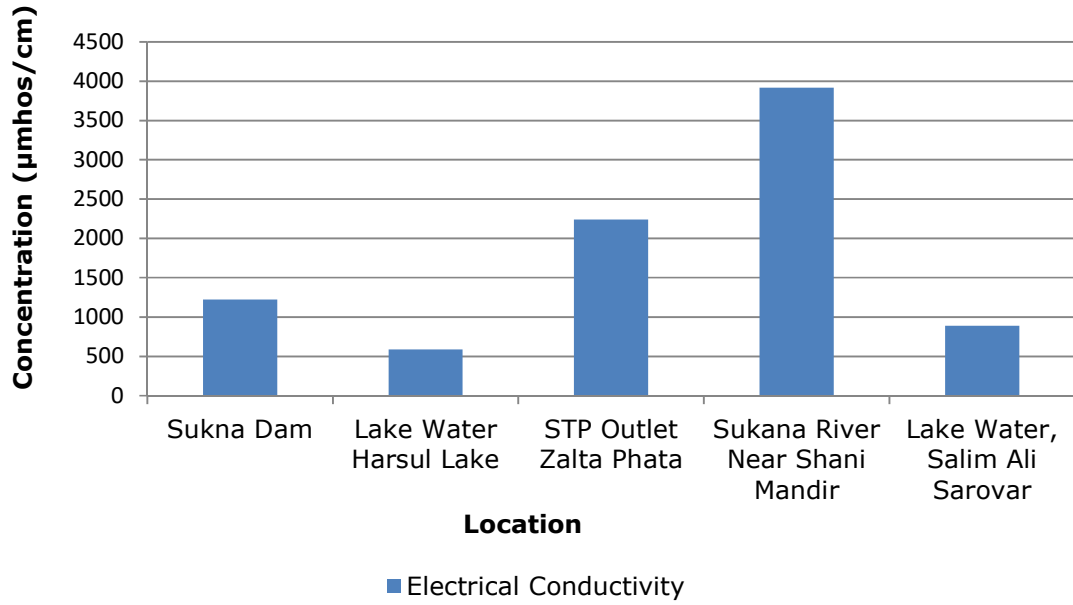
Waste water - MIDC Chikalthana



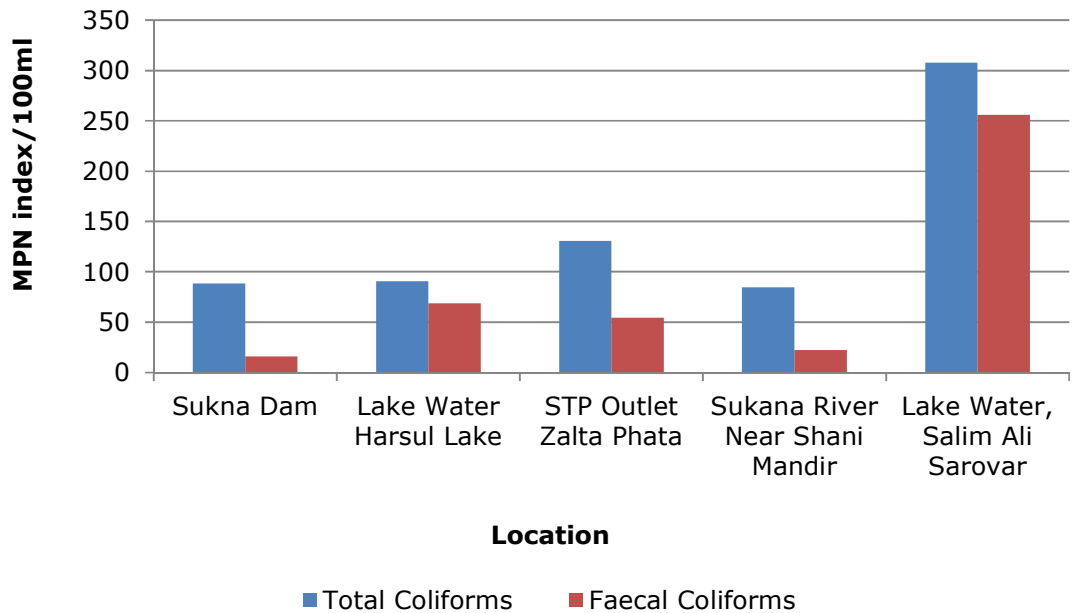
Waste water - MIDC Chikalthana



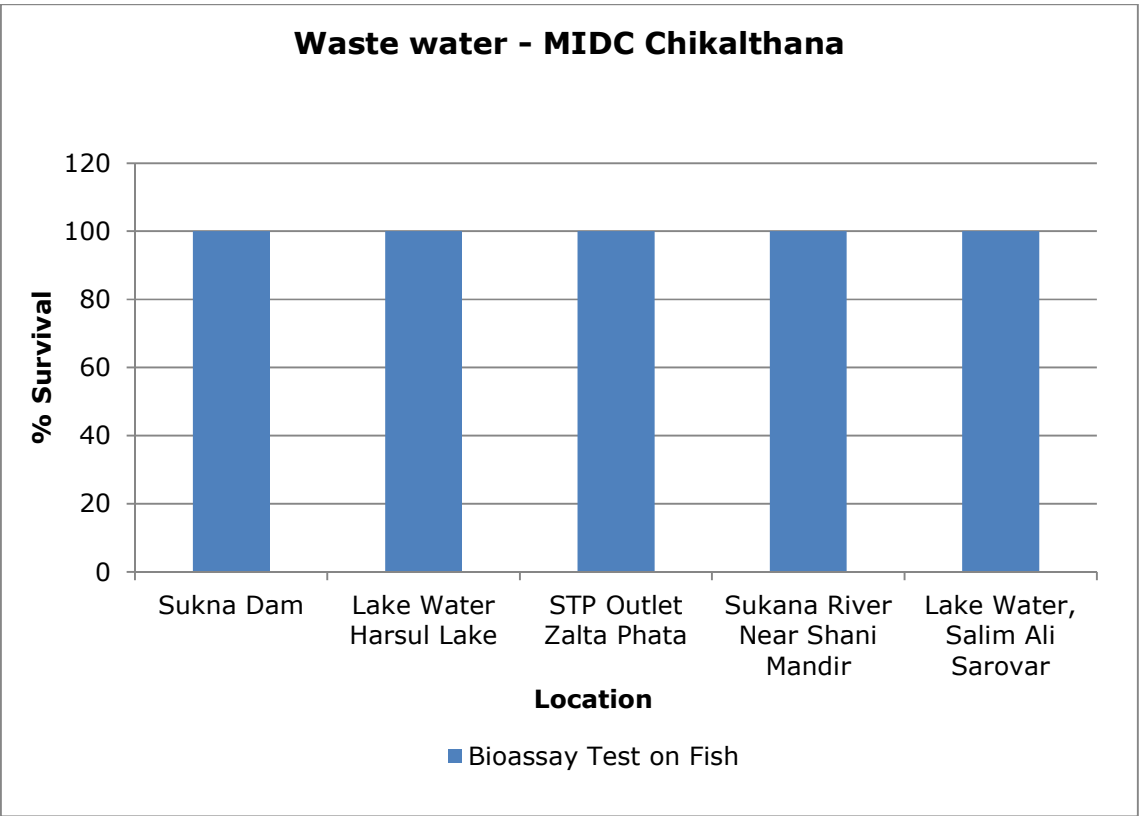
Waste water - MIDC Chikalthana



Waste water - MIDC Chikalthana



Waste water - MIDC Chikalthana



3. MIDC Waluj: Six surface water samples were collected from MIDC Waluj.

- Water in Waluj MIDC was found relatively of poor quality as most of the parameters exceed the acceptable limits.
- All six water samples collected were seen with floating matter in general appearance. Parameters like colour and smell, both exceed the acceptable limits.
- Whereas, the general parameters like pH, electrical conductivity and suspended solids were observed well within the limits in all the samples.
- Concentration of Biological Oxygen Demand (BOD), and Total Kjeldahl Nitrogen (TKN) was found beyond the standard limits at all the studied locations.
- In fish bioassay, 100% fish survival was observed in all the water samples.
- All metals like Arsenic, Nickel, Copper, Iron, Hexavalent Chromium (Cr⁶⁺) etc. were also observed either below limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Nitrogen, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Organo Chlorine Pesticides, Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were also observed below the limit of quantification in all the studied samples.

Table 6.5 MIDC Waluj - Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Upstream Kham River Water	19.811226N	75.249706E	30.05.2023	01.06.2023	03.06.2023
2.	CETP Discharge Point	19.828446N	75.239729E	30.05.2023	01.06.2023	03.06.2023
3.	Lake Water, Behind K Sector	19.852938N	75.214652E	30.05.2023	01.06.2023	03.06.2023
4.	Lake Water, Jogeshwari	19.816966N	75.205336E	30.05.2023	01.06.2023	03.06.2023
5.	Pond Water, SMS CETP Waluj Pvt Ltd.	19.828926N	75.239306E	30.05.2023	01.06.2023	03.06.2023
6.	Lake Water Ghanegoan	19.864641N	75.209682E	30.05.2023	01.06.2023	03.06.2023



Fig: Geographical Locations of Surface Water Sampling MIDC Waluj

Table 6.6 MIDC Waluj - Results of Surface Water

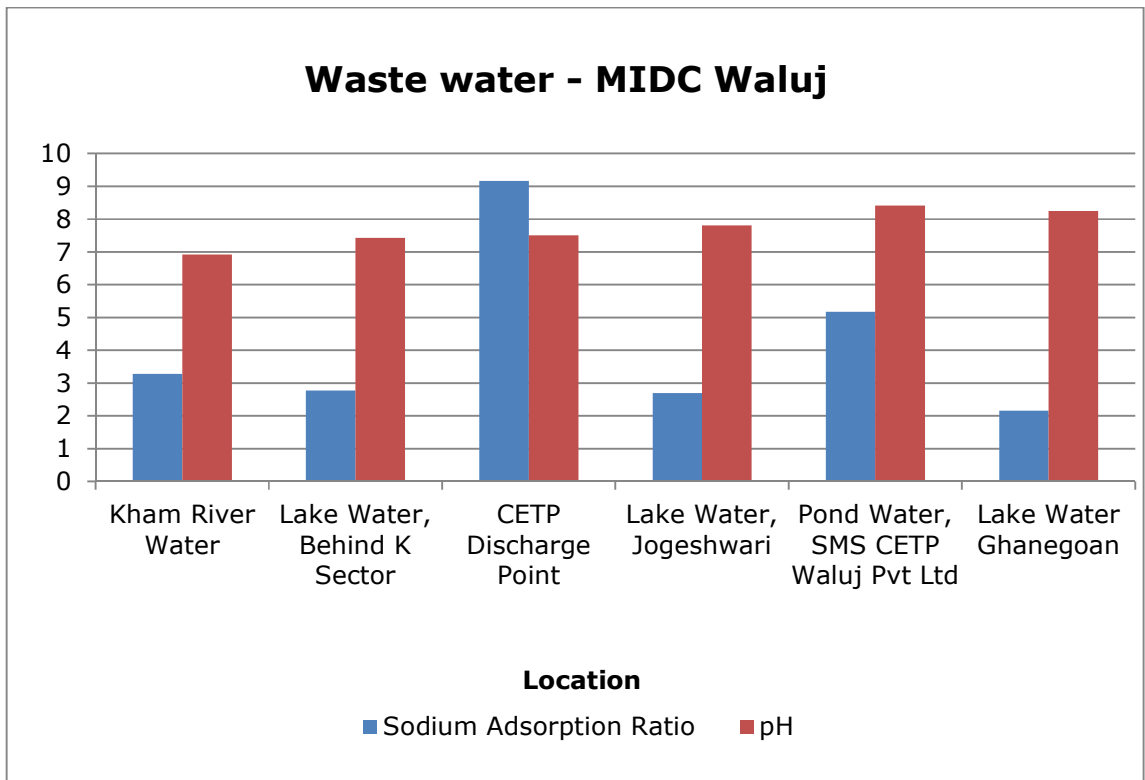
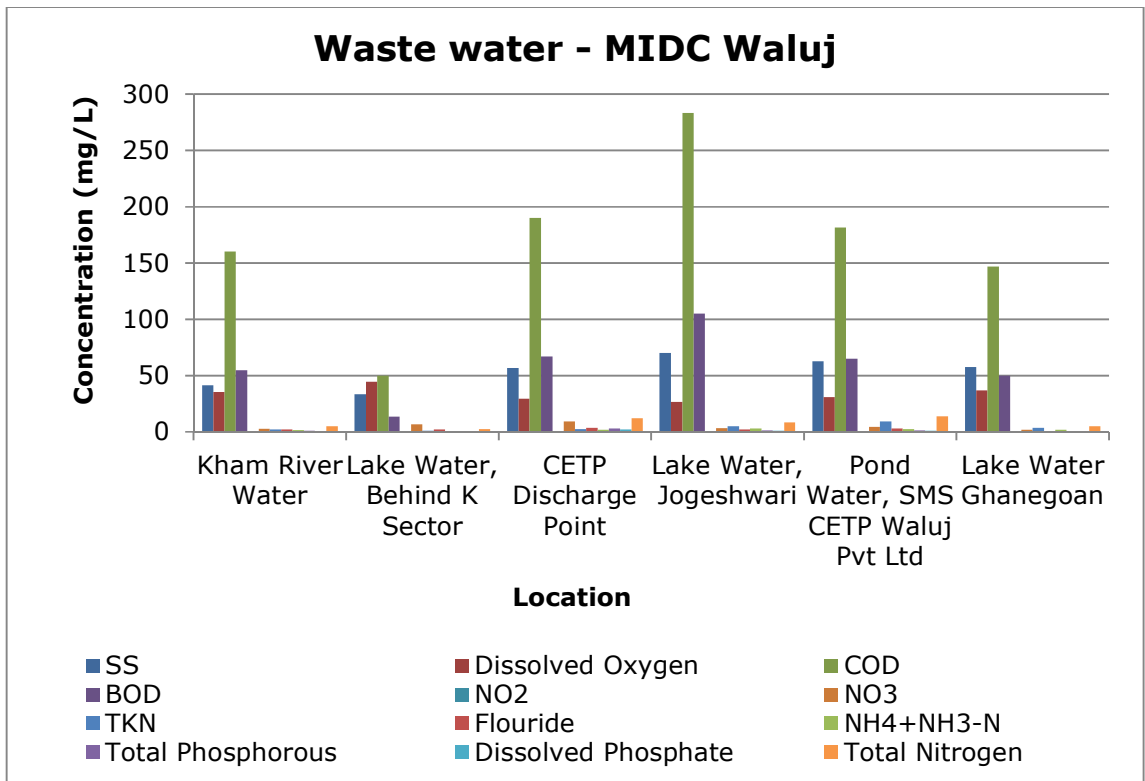
Parameters	Unit	Results					
		Kham River Water	Lake Water, Behind K Sector	CETP Discharge Point	Lake Water, Jogeshwari	Pond Water, SMS CETP Waluj Pvt Ltd	Lake Water Ghanegoan
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	Floating Matter evident	Floating Matter Evident	Floating Matter Evident	Floating Matter evident	Floating Matter evident	Floating Matter evident
Transparency	m	0.10	0.10	0.20	0.20	0.30	0.10
Temperature	°C	27	27	27	26	26	26
Colour	Hazen	3	17	5	10	5	5
Smell	-	Not Agreeable	Agreeable	Not Agreeable	Not Agreeable	Agreeable	Agreeable

Parameters	Unit	Results					
		Kham River Water	Lake Water, Behind K Sector	CETP Discharge Point	Lake Water, Jogeshwari	Pond Water, SMS CETP Waluj Pvt Ltd	Lake Water Ghanegoa n
pH	-	6.92	7.43	7.50	7.80	8.41	8.25
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	41	33	57	70	63	57
Total Dissolved Solids	mg/L	1199	1459	2995	1335	2299	527
Dissolved Oxygen (% Saturation)	%	35.67	44.67	29.33	26.67	30.67	37.00
Chemical Oxygen Demand	mg/L	160	50	190	283	181	147
Biochemical Oxygen Demand (3 days,27°C)	mg/L	54	14	67	105	65	50
Electrical Conductivity (at 25 °C)	µmho/cm	2137	2603	5350	2380	4103	9393
Nitrite Nitrogen (as NO ₂)	mg/L	0.06	0.04	0.33	0.07	0.09	BLQ
Nitrate Nitrogen (as NO ₃)	mg/L	2.72	6.68	9.28	3.17	4.52	1.77
(NO ₂ + NO ₃)-Nitrogen	mg/L	2.77	6.72	9.61	3.21	4.55	1.77
Free Ammonia (as NH ₃ -N)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	0.44	0.81	0.51	0.50	0.51	0.49
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	2.20	2.23	3.47	2.23	2.97	0.87
Sulphide (as H ₂ S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ

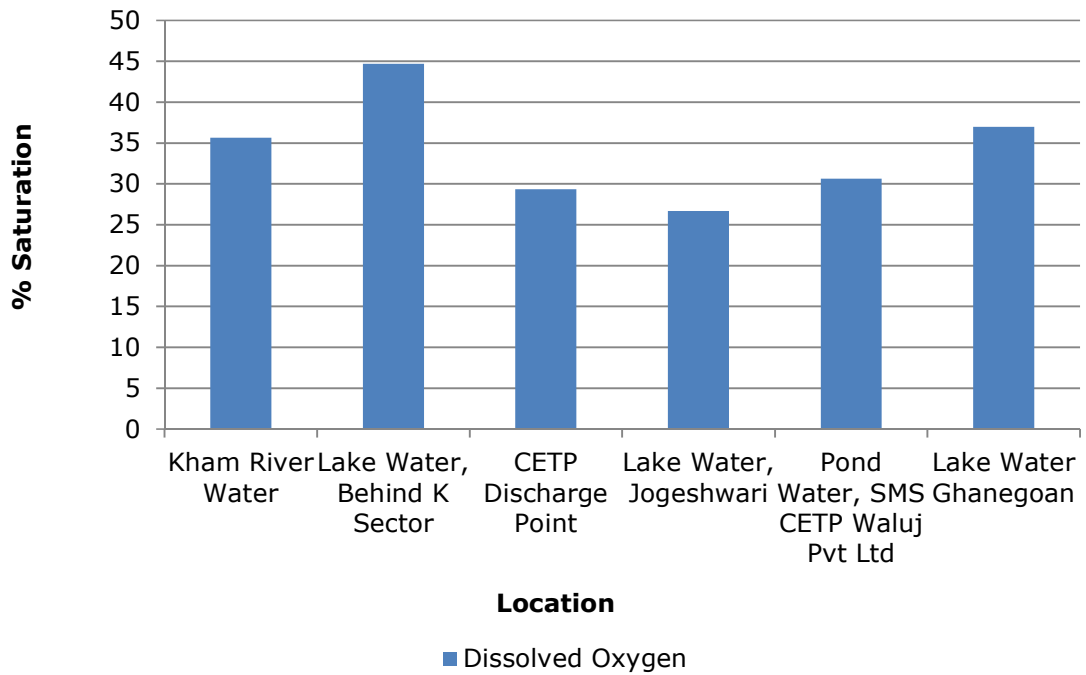
Parameters	Unit	Results					
		Kham River Water	Lake Water, Behind K Sector	CETP Discharge Point	Lake Water, Jogeshwari	Pond Water, SMS CETP Waluj Pvt Ltd	Lake Water Ghanegoa n
Dissolved Phosphate (as P)	mg/L	0.87	0.55	2.16	1.14	0.99	0.48
Sodium Adsorption Ratio	-	3.28	2.77	9.16	2.70	5.17	2.15
Total Coliforms	MPN Index/ 100 ml	614	588	767	443	168	1140
Faecal Coliforms	MPN Index/ 100 ml	562	97	107	103	58	140
Total Phosphate (as P)	mg/L	1.01	0.68	2.86	1.37	1.25	0.61
Total Kjeldahl Nitrogen (as N)	mg/L	2.24	1.12	2.43	5.04	9.33	3.36
Total Ammonia (NH ₄ +NH ₃)- Nitrogen	mg/L	1.47	0.75	1.83	2.93	2.46	1.90
Total Nitrogen	mg/L	5.00	2.31	12.02	8.28	13.88	5.14
Phenols (as C ₆ H ₅ OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ

Parameters	Unit	Results					
		Kham River Water	Lake Water, Behind K Sector	CETP Discharge Point	Lake Water, Jogeshwar i	Pond Water, SMS CETP Waluj Pvt Ltd	Lake Water Ghanegoa n
Zinc (as Zn)	mg/L	0.05	0.05	0.10	0.07	0.08	0.10
Nickel (as Ni)	mg/L	0.01	0.01	0.02	0.02	0.03	0.01
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr ⁶⁺)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	BLQ	BLQ	0.08	BLQ
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.10	0.06	0.07	0.06	0.09	0.08
Iron (as Fe)	mg/L	0.22	0.25	0.18	0.17	0.34	0.40
Vanadium (as V)	mg/L	0.03	0.05	BLQ	0.01	0.01	BLQ
Selenium (as Se)	mg/L	0.01	0.01	BLQ	BLQ	0.01	0.01
Boron (as B)	mg/L	BLQ	0.16	BLQ	BLQ	BLQ	BLQ
Bioassay Test on fish	% survival	100	100	100	100	100	100

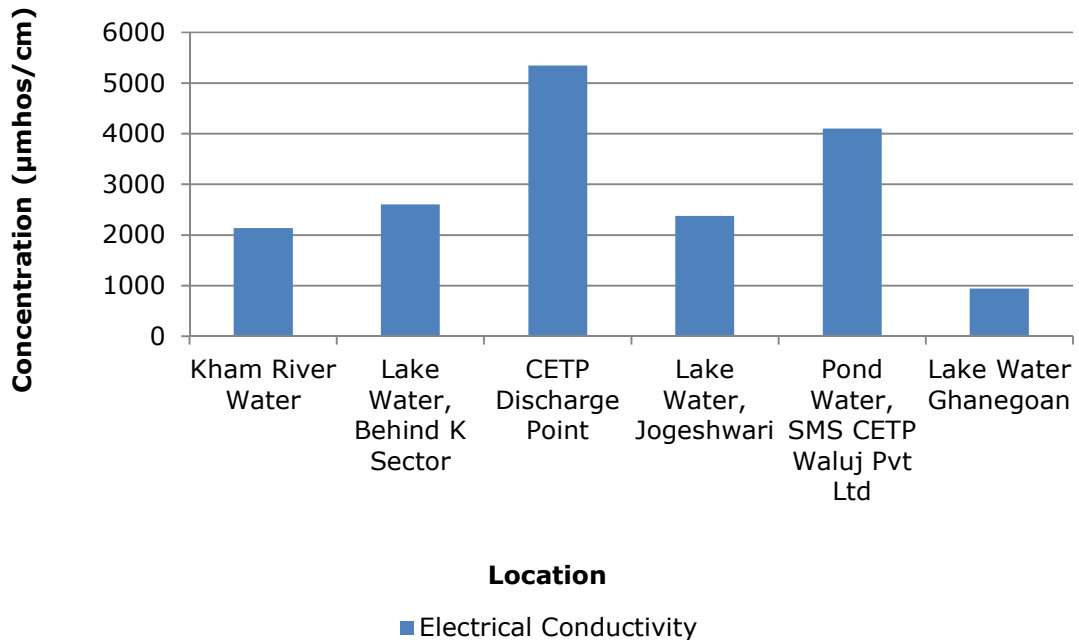
Graphs - Surface water of MIDC Waluj



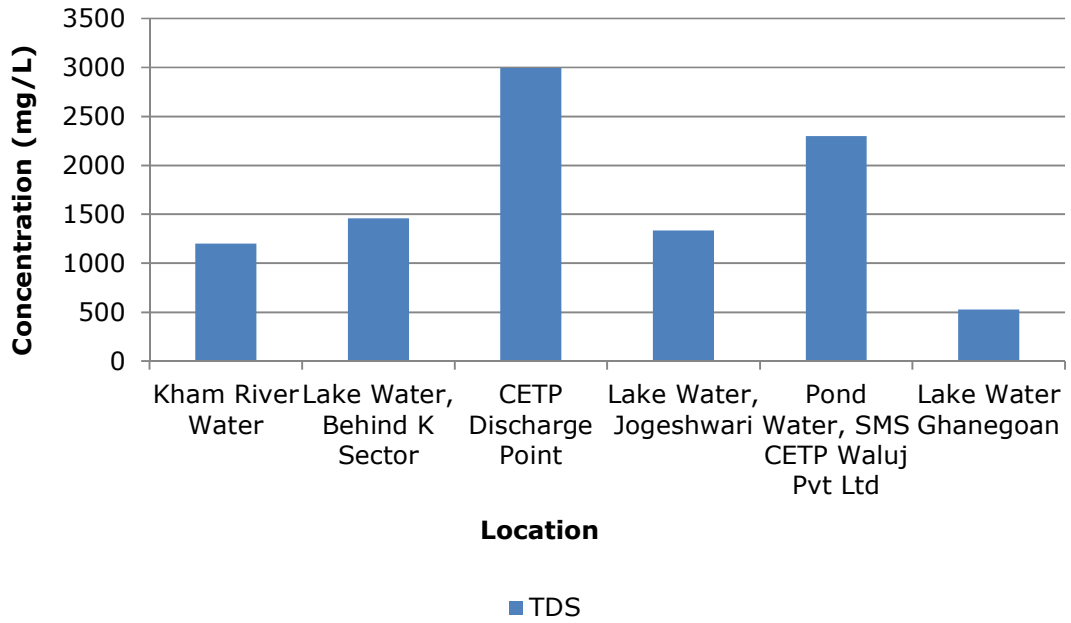
Waste water - MIDC Waluj



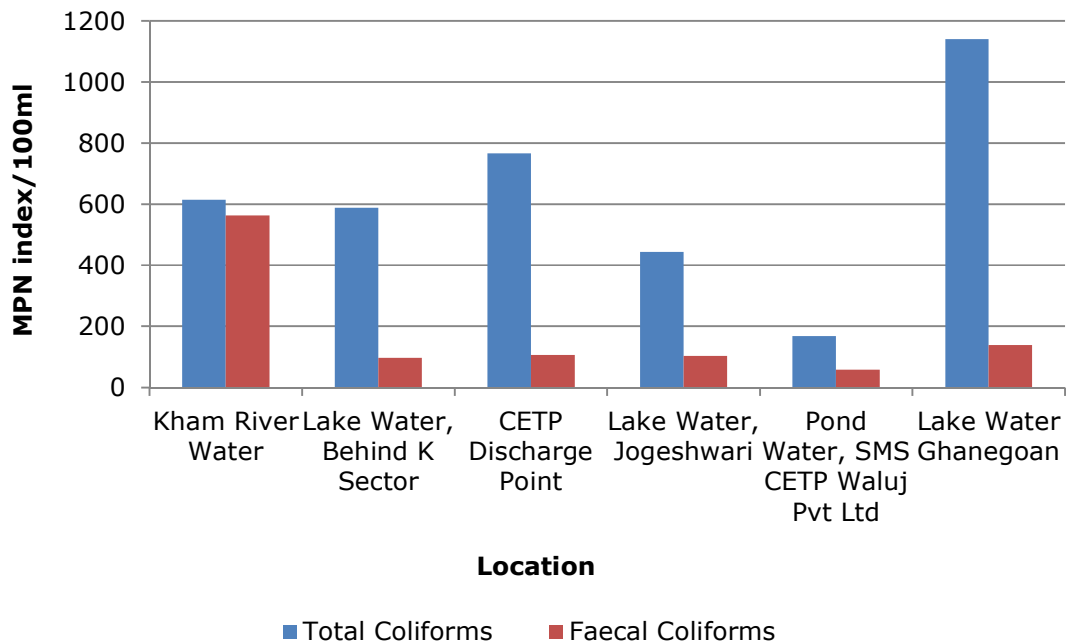
Waste water - MIDC Waluj



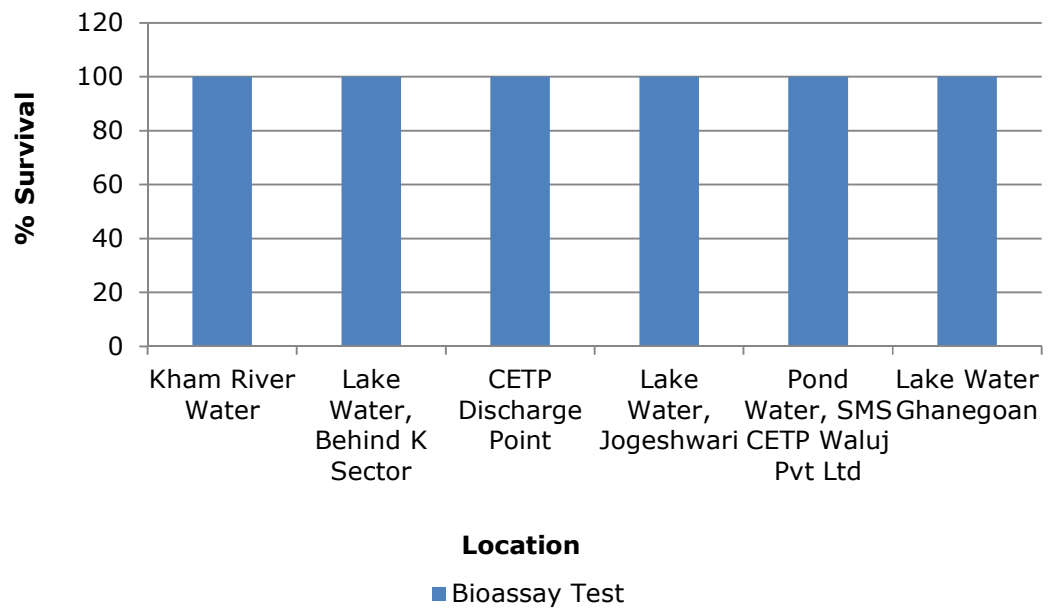
Waste water - MIDC Waluj



Waste water - MIDC Waluj



Waste water - MIDC Waluj



4. MIDC Paithan: Six surface water samples were collected from MIDC Paithan.

- Out of six water samples, four samples were found acceptable in general appearance, colour, smell and transparency.
- General parameters like pH, electrical conductivity and suspended solids are also observed well within the limits in all the samples.
- The concentration of Biological Oxygen Demand (BOD) was found above the standard limits at all the studied locations.
- Fish survival was observed in the range of 57%-100% during fish bioassay.
- Metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr⁶⁺) etc. were also observed either below the limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Nitrogen, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Organo Chlorine Pesticides, Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were also observed below the limit of quantification in all the studied samples.

Table 6.7 MIDC Paithan - Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Dam Water Back Side of WTP, Farolla Village, Paithan road	19.755413	75.307286	29.05.2023	31.05.2023	02.06.2023
2.	Pond water Backside Essem, Badve Engg	19.785952	75.273505	29.05.2023	31.05.2023	02.06.2023
3.	Nallah water, Farolla village	19.730742	75.295845	29.05.2023	31.05.2023	02.06.2023
4.	Nallah water, Near R. L. Steel, Chittegaon	19.742626	75.293119	29.05.2023	31.05.2023	02.06.2023
5.	Patil Lake Water Near Walmi, Beed Bypass	19.832217	75.315335	29.05.2023	31.05.2023	02.06.2023
6.	Nallah Water, Station MIDC	19.854414	75.318355	29.05.2023	31.05.2023	02.06.2023



Fig: Geographical Locations of Surface Water Sampling MIDC Paithan

Table 6.8 MIDC Paithan - Results of Surface Water

Parameters	Unit	Results					
		Dam Water Back Side of WTP	Nallah water Infront of Badve Engg.	Nallah water, Farolla village	Nallah water, Near R. L. Steel	Patil Lake Water Near Walmi, Beed Bypass	Nallah Water, Station MIDC
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	Floating Matter Evident	Floating Matter evident	Floating Matter evident	Floating Matter evident	Floating Matter evident	Floating Matter evident
Transparency	m	0.20	0.10	0.10	0.10	0.20	0.10
Temperature	°C	26	27	26	26	28	26
Colour	Hazen	6	2	1	2	2	6

Parameters	Unit	Results					
		Dam Water Back Side of WTP	Nallah water Infront of Badve Engg.	Nallah water, Farolla village	Nallah water, Near R. L. Steel	Patil Lake Water Near Walmi, Beed Bypass	Nallah Water, Station MIDC
Smell	-	Agreeable	Agreeable	Agreeable	Not Agreeable	Agreeable	Not Agreeable
pH	-	6.79	6.90	7.08	6.71	8.41	7.12
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	72	38	21	36	41	91
Total Dissolved Solids	mg/L	364	629	470	1441	345	1207
Dissolved Oxygen (% Saturation)	%	37.33	43.33	42.33	45.00	42.33	31.33
Chemical Oxygen Demand	mg/L	180	137	89	133	135	313
Biochemical Oxygen Demand (3 days,27°C)	mg/L	63	49	31	48	48	118
Electrical Conductivity (at 25 °C)	µmho/cm	647	1121	838	2470	613	2153
Nitrite Nitrogen (as NO ₂)	mg/L	0.03	BLQ	0.03	BLQ	BLQ	BLQ
Nitrate Nitrogen (as NO ₃)	mg/L	1.80	1.01	BLQ	1.00	1.32	3.69
(NO ₂ + NO ₃)-Nitrogen	mg/L	1.82	1.02	BLQ	1.00	1.32	3.69
Free Ammonia (as NH ₃ -N)	mg/L	BLQ	BLQ	0.12	BLQ	BLQ	0.12
Total Residual Chlorine	mg/L	0.39	0.57	0.55	0.61	0.52	BLQ

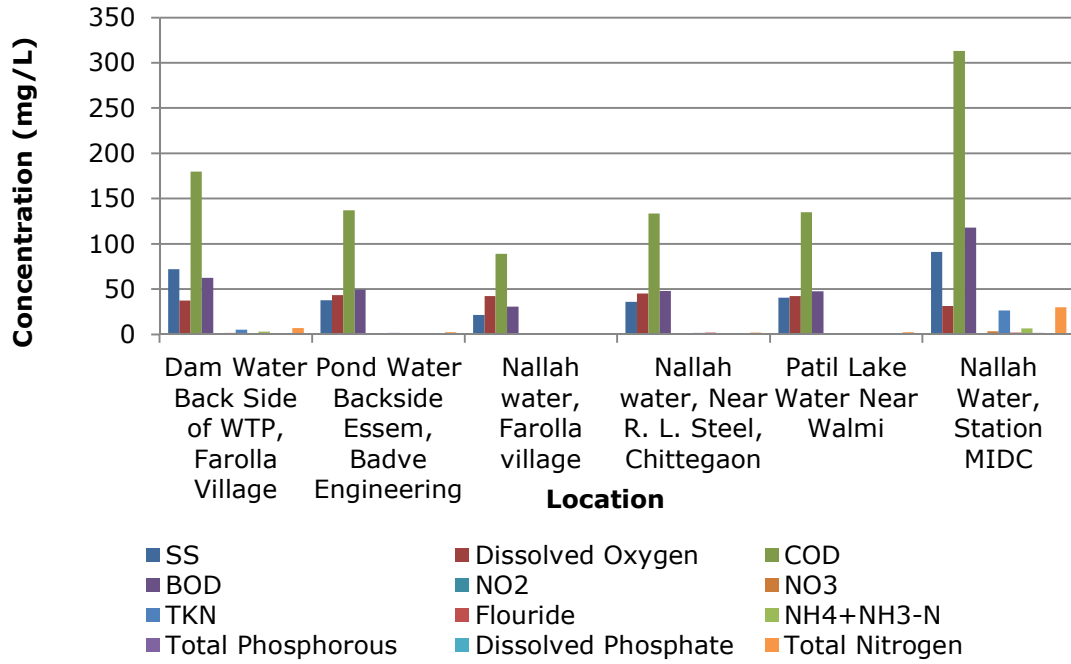
Parameters	Unit	Results					
		Dam Water Back Side of WTP	Nallah water Infront of Badve Engg.	Nallah water, Farolla village	Nallah water, Near R. L. Steel	Patil Lake Water Near Walmi, Beed Bypass	Nallah Water, Station MIDC
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.57	1.03	0.73	2.20	0.53	2.23
Sulphide (as H ₂ S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.35	0.31	0.16	0.56	0.23	1.38
Sodium Adsorption Ratio	-	1.30	1.49	2.00	3.44	1.27	3.54
Total Coliforms	MPN Index/100 ml	770	1020	1183	1160	957	913
Faecal Coliforms	MPN Index/100 ml	360	913	390	913	503	726
Total Phosphate (as P)	mg/L	0.49	0.42	0.21	0.76	0.24	1.73
Total Kjeldahl Nitrogen (as N)	mg/L	5.05	1.49	0.56	1.68	1.31	26.51
Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/L	3.15	0.89	0.33	1.01	0.87	6.42
Total Nitrogen	mg/L	6.90	2.41	1.10	2.34	2.48	30.22
Phenols (as C ₆ H ₅ OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ

Parameters	Unit	Results					
		Dam Water Back Side of WTP	Nallah water Infront of Badve Engg.	Nallah water, Farolla village	Nallah water, Near R. L. Steel	Patil Lake Water Near Walmi, Beed Bypass	Nallah Water, Station MIDC
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	0.12	0.13	0.10	0.08	0.10	BLQ
Nickel (as Ni)	mg/L	0.02	0.02	0.01	0.02	0.01	0.01
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr ⁶⁺)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	0.05	BLQ	0.04	0.04	0.05	0.02
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ	0.01	BLQ	BLQ
Lead (as Pb)	mg/L	0.01	BLQ	BLQ	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ

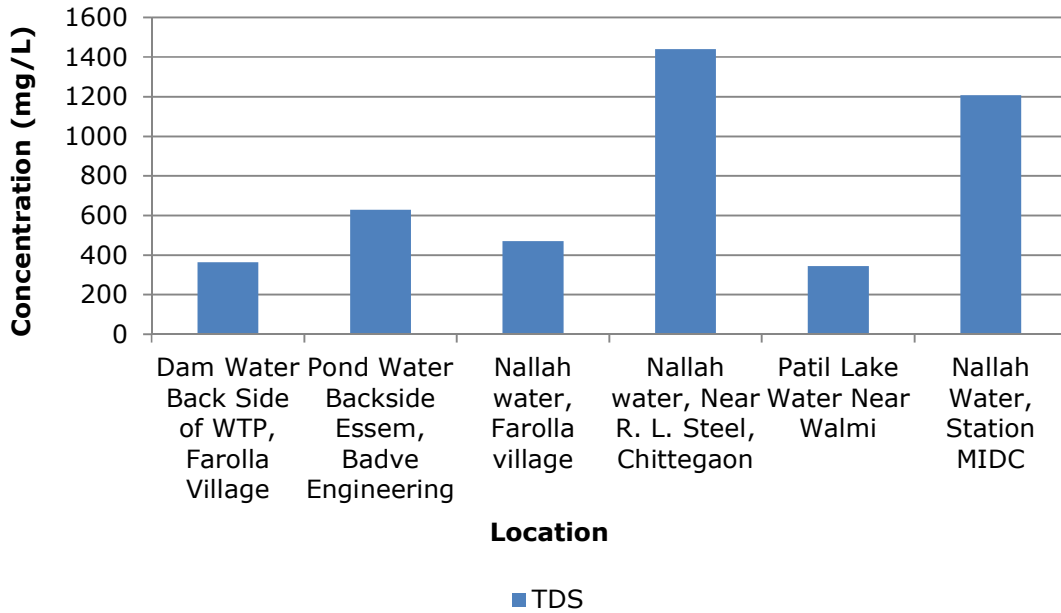
Parameters	Unit	Results					
		Dam Water Back Side of WTP	Nallah water Infront of Badve Engg.	Nallah water, Farolla village	Nallah water, Near R. L. Steel	Patil Lake Water Near Walmi, Beed Bypass	Nallah Water, Station MIDC
Manganese (as Mn)	mg/L	0.12	0.08	0.06	0.06	0.08	0.17
Iron (as Fe)	mg/L	0.44	0.38	0.41	0.81	0.43	0.43
Vanadium (as V)	mg/L	0.03	0.03	0.02	0.03	0.02	0.01
Selenium (as Se)	mg/L	0.01	0.01	0.01	0.01	0.01	0.01
Boron (as B)	mg/L	BLQ	0.12	BLQ	0.81	BLQ	0.17
Bioassay Test on fish	% survival	100	57	100	90	93	60

Graphs - Surface water of MIDC Paithan Road

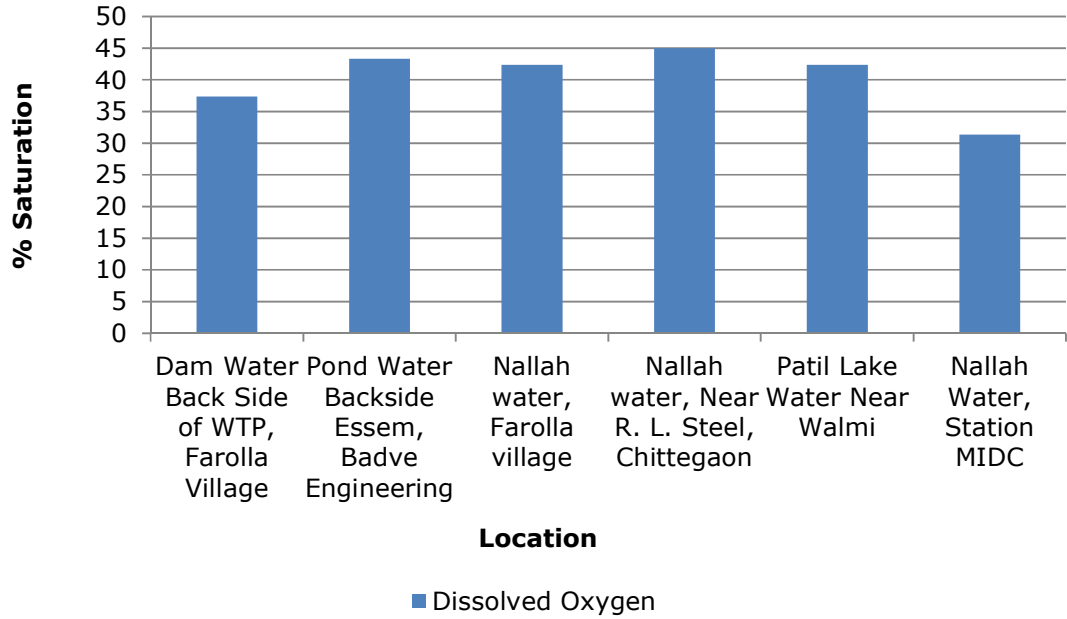
Waste water - MIDC Paithan Road



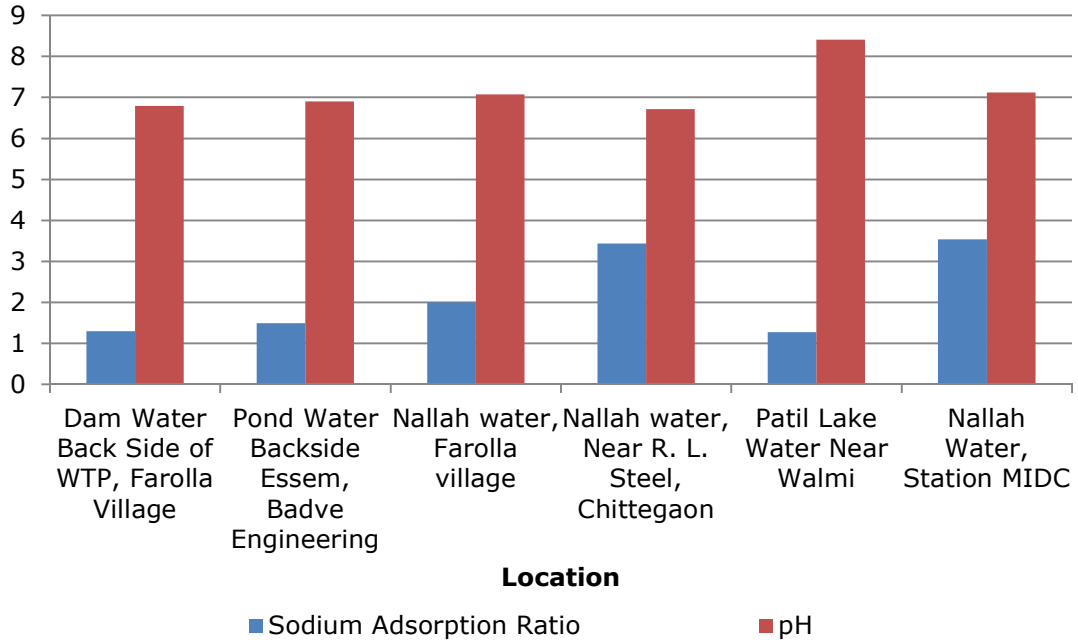
Waste water - MIDC Paithan Road



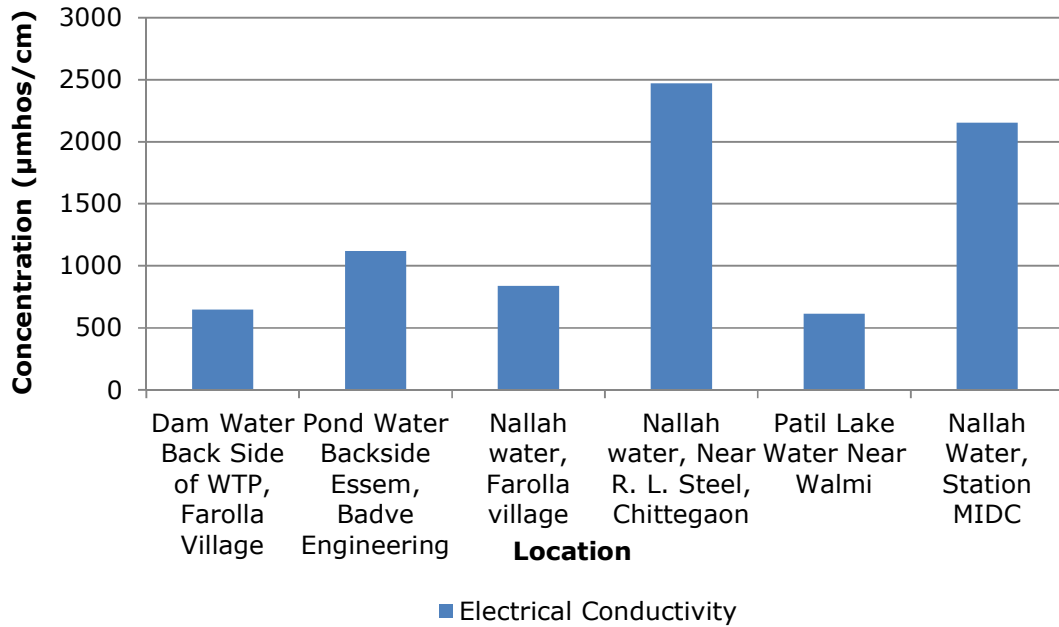
Waste water - MIDC Paithan Road



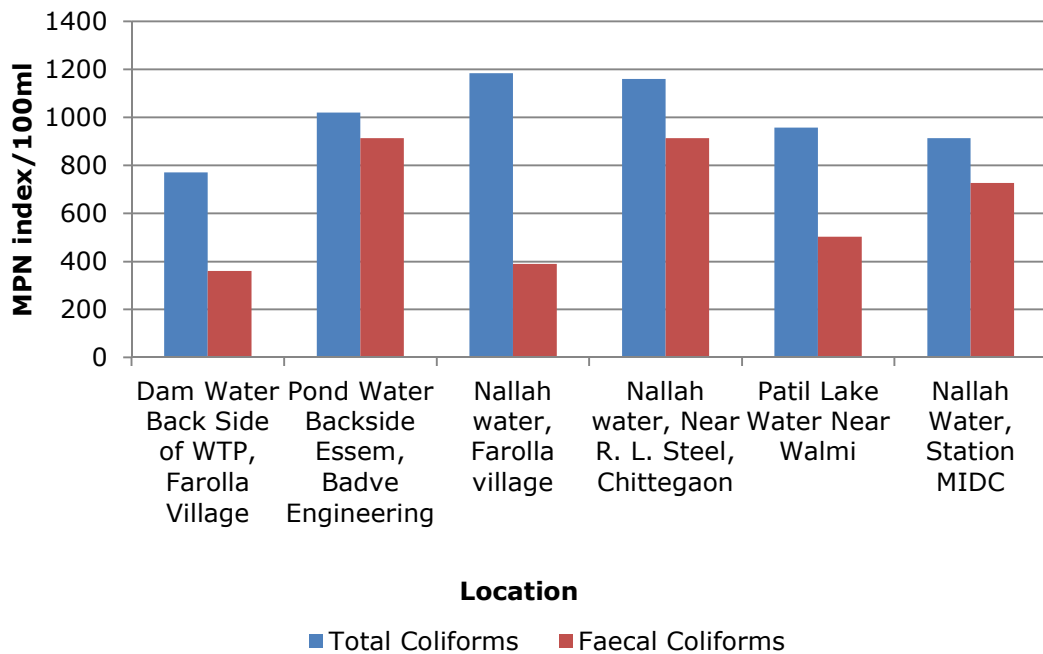
Waste water - MIDC Paithan Road



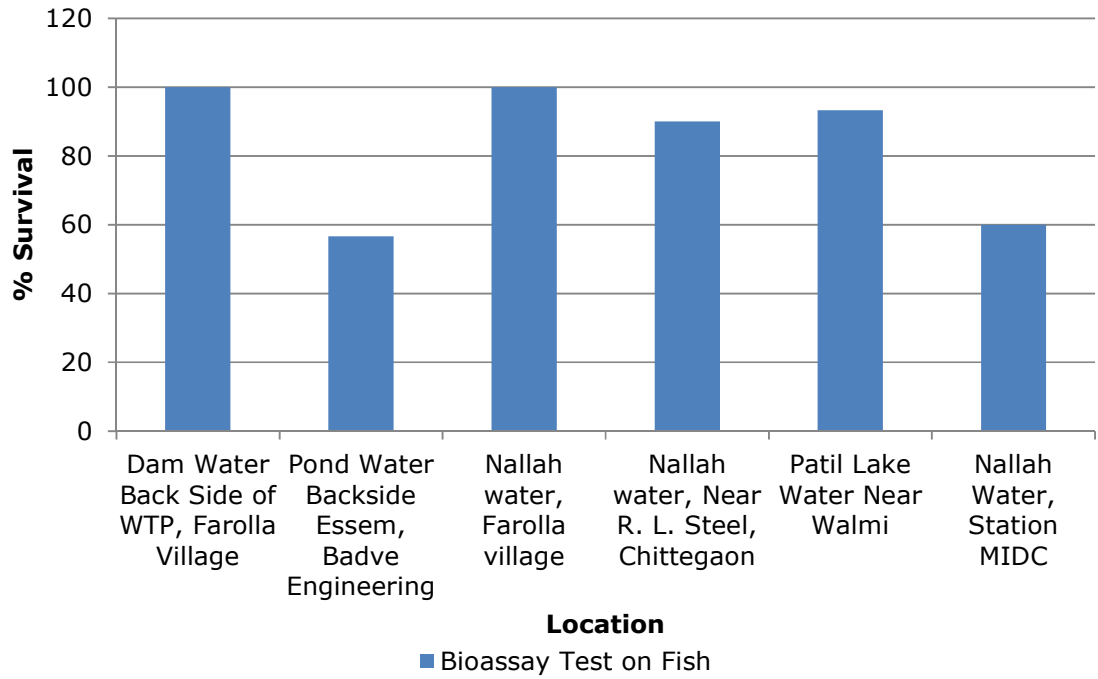
Waste water - MIDC Paithan Road



Waste water - MIDC Paithan Road



Waste water - MIDC Paithan Road



6. Land Environment

For studying the land Environment of Aurangabad area, ground water was collected from Bore well, Dug well, and Hand Pump. A total of 12 samples were collected from MIDC Shendra, MIDC Chikalthana, MIDC Paithan and MIDC Waluj.

1. MIDC Shendra: Three groundwater samples were collected from the MIDC Aurangabad region.

- All three water samples collected were found acceptable in general appearance, colour, smell and transparency.
- All the general parameters like pH, suspended solids, BOD, and COD are also well within the limits in two samples collected. BOD of water sample collected from the handpump of Shendra Village is found beyond the permissible limit.
- Electrical conductivity of Hand Pump Near Grampanchayat Kumbhephal Village was highest with 2903 $\mu\text{mhos/cm}$.
- Fish survival was achieved in the range of 73% to 87% in the water samples during the Fish Bioassay.
- All metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr^{6+}) etc. were observed either below the limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were determined below the limit of quantification in all 3 samples collected.
- Organo Chlorine Pesticides were also observed below the limit of quantification in all 3 samples collected.

Table 7.1 MIDC Shendra - Details of Sampling Location of Ground Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Open Well Wockhardt Shendra	19.874766E	75.48838	23.05.2023	25.05.2023	27.05.2023
2.	Hand Pump, Near Grampanchayat, Kumbhephal Village	19.858383E	75.490362	23.05.2023	25.05.2023	27.05.2023

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
3.	Hand Pump, Near Hanuman Temple, Shendra Village	19.872643E	75.470643	23.05.2023	25.05.2023	27.05.2023

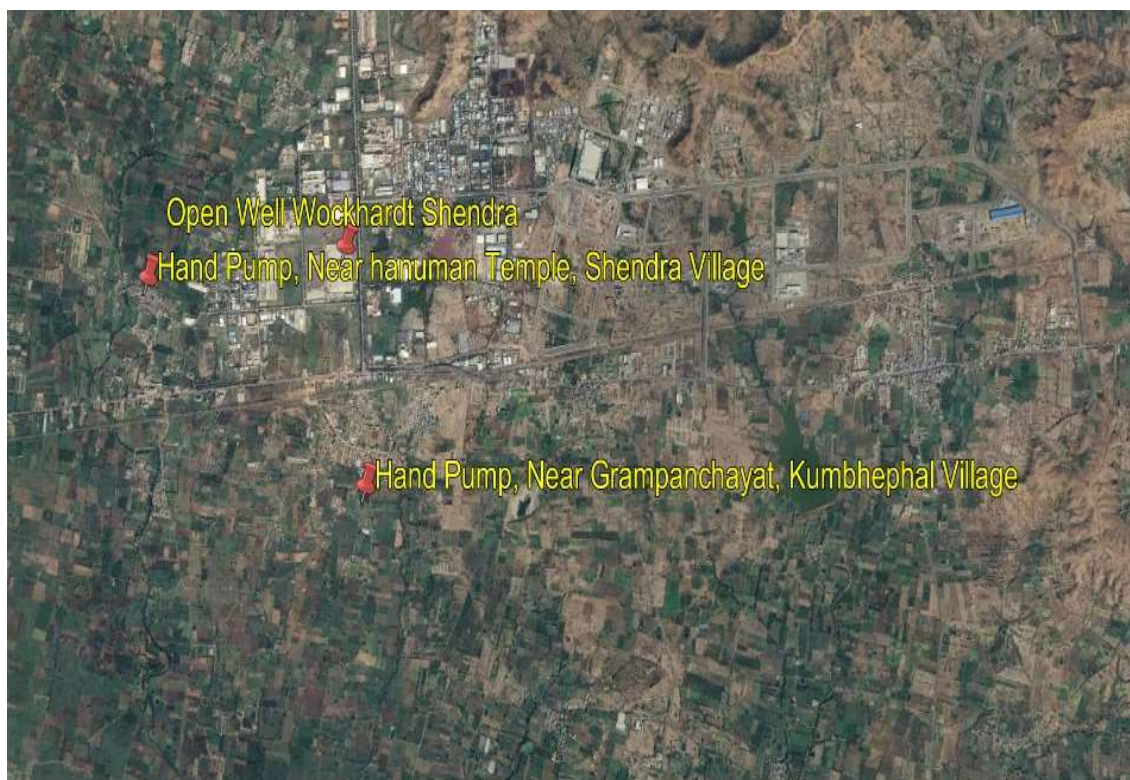


Fig: Geographical Locations of Ground Water Sampling MIDC Shendra

Table 7.2 MIDC Shendra - Results of Ground Water

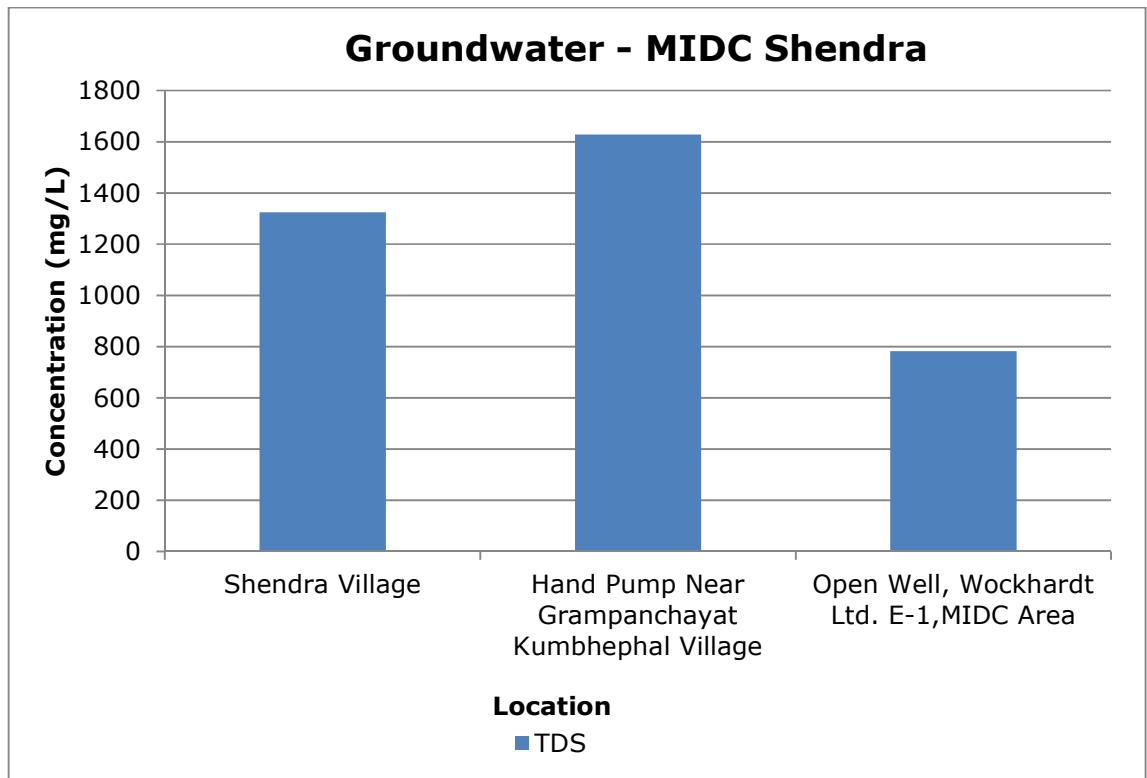
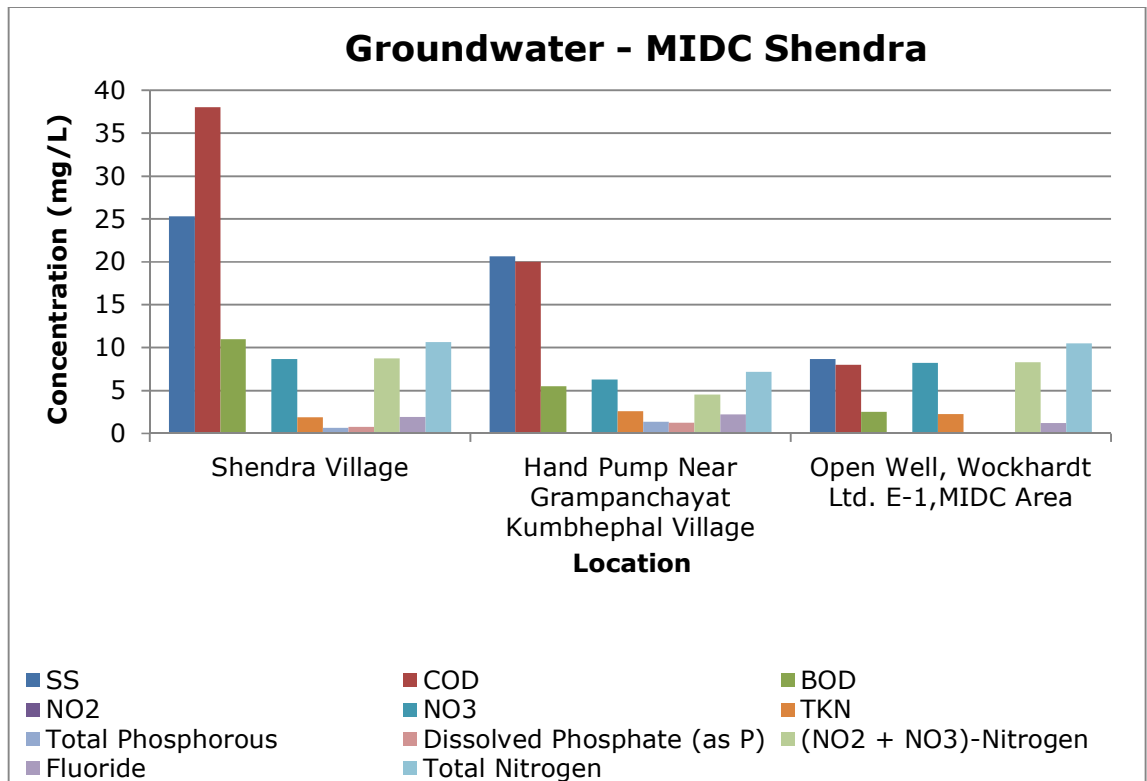
Parameters	Unit	Results		
		Shendra Village	Hand Pump Near Grampanchayat Kumbhephal Village	Open Well, Wockhardt Ltd. E-1, MIDC Area
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	No floating matter	No floating matter	No Floating matter
Transparency	m	1.40	1.40	1.50
Temperature	Hazen	25	24	26

Parameters	Unit	Results		
		Shendra Village	Hand Pump Near Grampanchayat Kumbhephal Village	Open Well, Wockhardt Ltd. E-1, MIDC Area
Colour	°C	1	1	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	7.19	7.52	7.32
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Total Suspended Solids	mg/L	25	21	9
Total Dissolved Solids	mg/L	1325	1627	782
Chemical Oxygen Demand	mg/L	38	20	8
Biochemical Oxygen Demand (3 days,27°C)	mg/L	11	6	3
Electrical Conductivity (at 25°C)	µmho/cm	2360	2903	1394
Nitrite Nitrogen (as NO ₂)	mg/L	0.10	0.06	0.05
Nitrate Nitrogen (as NO ₃)	mg/L	8.68	6.28	8.23
(NO ₂ + NO ₃)-Nitrogen	mg/L	8.73	4.55	8.27
Free Ammonia (as NH ₃ -N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	0.26	0.34	0.24
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.93	2.23	1.20
Sulphide (as H ₂ S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.79	1.23	0.12
Sodium Adsorption Ratio	-	2.48	2.23	1.12
Total Coliforms	MPN Index /100 mL	49	135	130

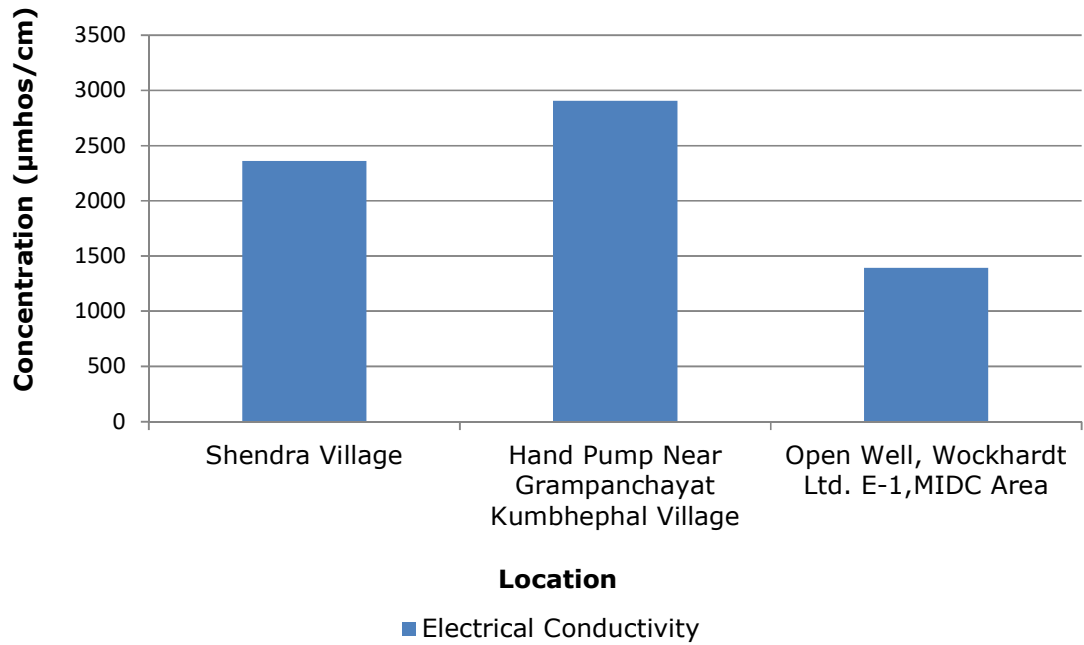
Parameters	Unit	Results		
		Shendra Village	Hand Pump Near Grampanchayat Kumbhephal Village	Open Well, Wockhardt Ltd. E-1, MIDC Area
Faecal Coliforms	MPN Index /100 mL	94	13	20
Total Phosphate (as P)	mg/L	0.65	1.33	0.18
Total Kjeldahl Nitrogen (as N)	mg/L	1.87	2.61	2.24
Total Ammonia (NH ₄ +NH ₃)-Nitrogen)	mg/L	0.99	1.51	0.14
Total Nitrogen	mg/L	10.62	7.15	10.50
Phenols (as C ₆ H ₅ OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	0.08	0.11	0.11
Nickel (as Ni)	mg/L	0.02	0.02	0.01
Copper (as Cu)	mg/L	0.09	0.14	BLQ
Hexavalent Chromium (as Cr ⁶⁺)	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	0.02	BLQ
Total Arsenic (as As)	mg/L	BLQ	0.01	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ

Parameters	Unit	Results		
		Shendra Village	Hand Pump Near Grampanchayat Kumbhephal Village	Open Well, Wockhardt Ltd. E-1, MIDC Area
Manganese (as Mn)	mg/L	0.10	0.11	0.17
Iron (as Fe)	mg/L	0.48	0.48	0.23
Vanadium (as V)	mg/L	0.02	0.03	0.03
Selenium (as Se)	mg/L	0.01	0.01	0.01
Boron (as B)	mg/L	BLQ	0.28	BLQ
Bioassay Test on fish	% survival	73	80	87

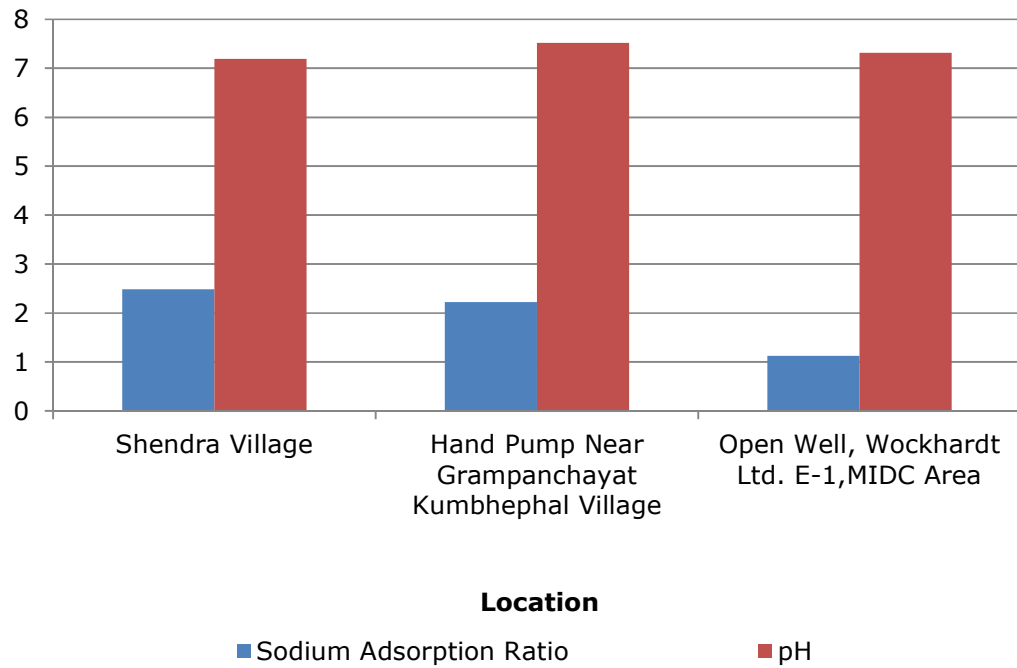
Graphs - Ground Water of MIDC Aurangabad



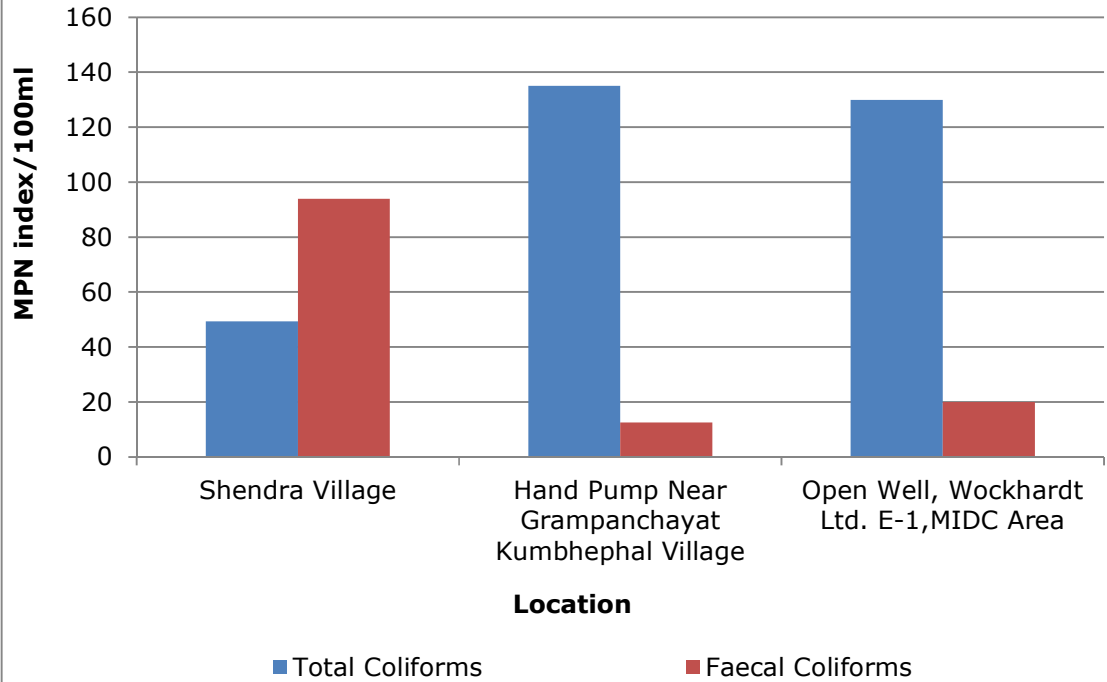
Groundwater - MIDC Shendra



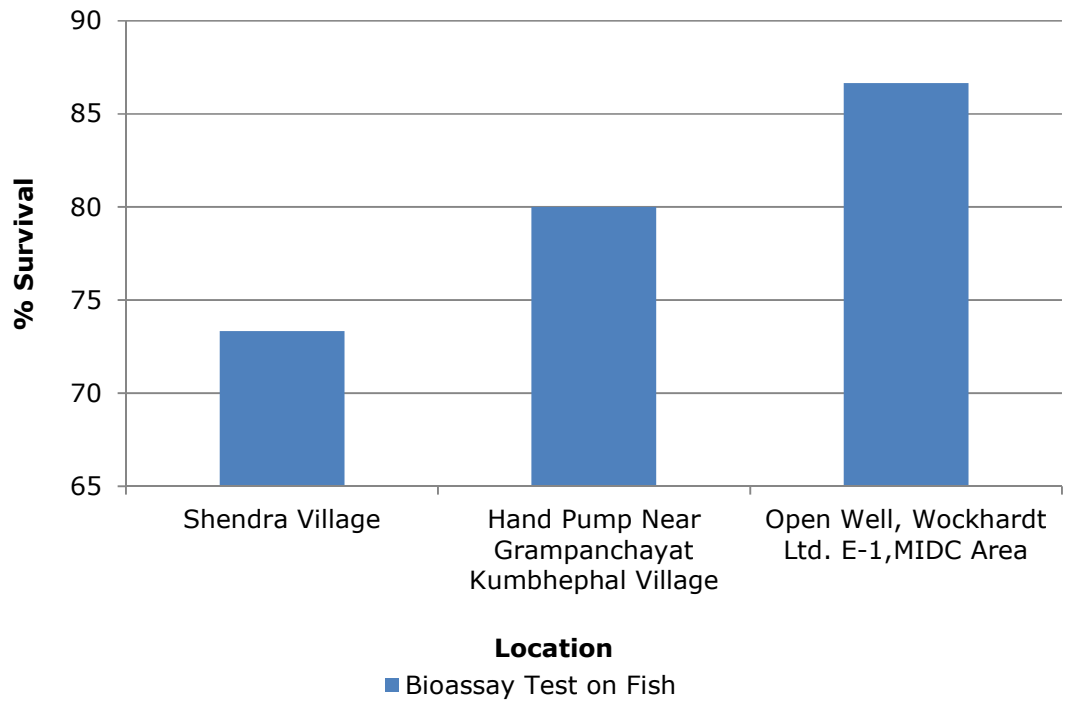
Groundwater - MIDC Shendra



Groundwater - MIDC Shendra



Ground water - MIDC Shendra



2. MIDC Chikalthana: From MIDC Chikalthana also, three ground water samples were collected.

- All three water samples collected were found acceptable in general appearance, colour, smell and transparency.
- Concentration of pH, suspended solids, BOD, and COD were also well within the limits at all three samples collected.
- Electrical conductivity of all the water samples is observed within acceptable limits.
- 100% survival was achieved in all three water samples during the Fish Bioassay.
- Metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr⁶⁺) etc. were also observed either below the limit of quantification (BLQ) or below their standard limits.
- Parameters like Total Residual Chlorine, Cyanide, Sulphide, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were below the limit of quantification (BLQ) in all 3 samples collected.
- Organo Chlorine Pesticides were also below the limit of quantification in all 3 samples collected.

Table 7.3 MIDC Chikalthana - Details of Sampling Location of Ground Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Borewell at RD Bhalerao HADCO Corner	19.911352N	75.349639E	24.05.2023	26.05.2023	28.05.2023
2.	Borewell, Click & Tech Company	19.88804N	75.368234E	24.05.2023	26.05.2023	28.05.2023
3.	Hand Pump, Manik nagar, Galli no. 2, Naregaon	19.894404N	75.383411E	24.05.2023	26.05.2023	28.05.2023

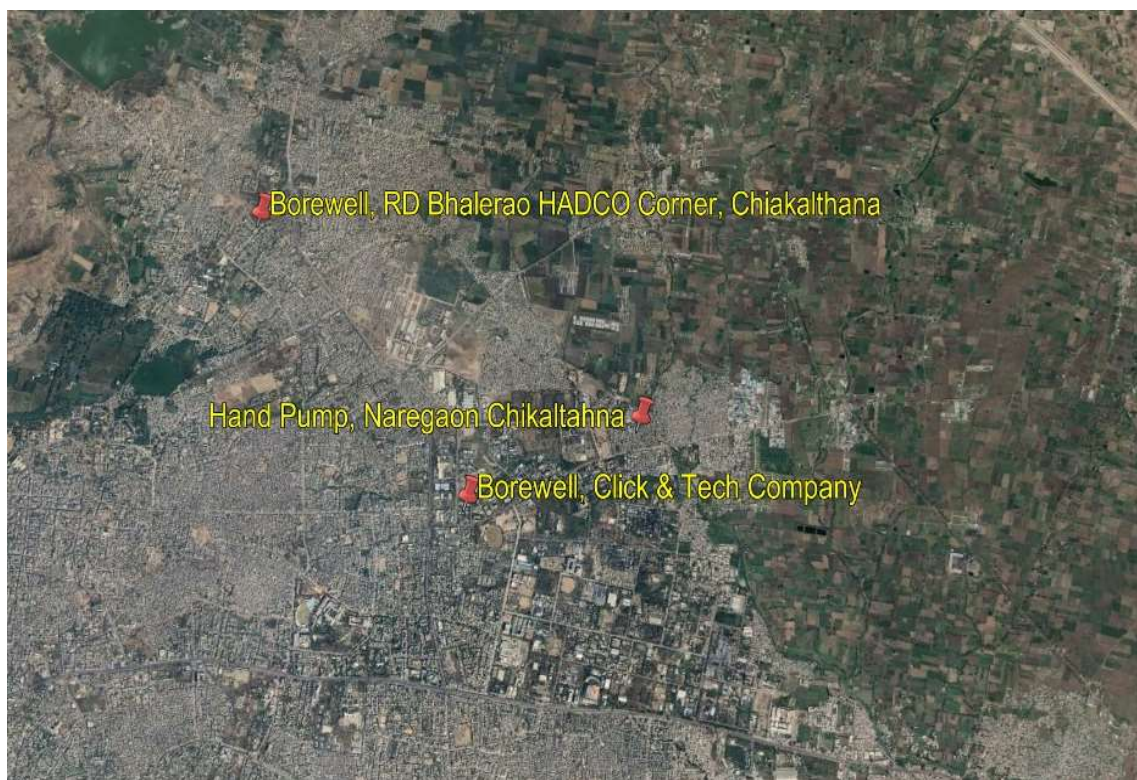


Fig: Geographical Locations of Ground Water Sampling MIDC Chikalthana

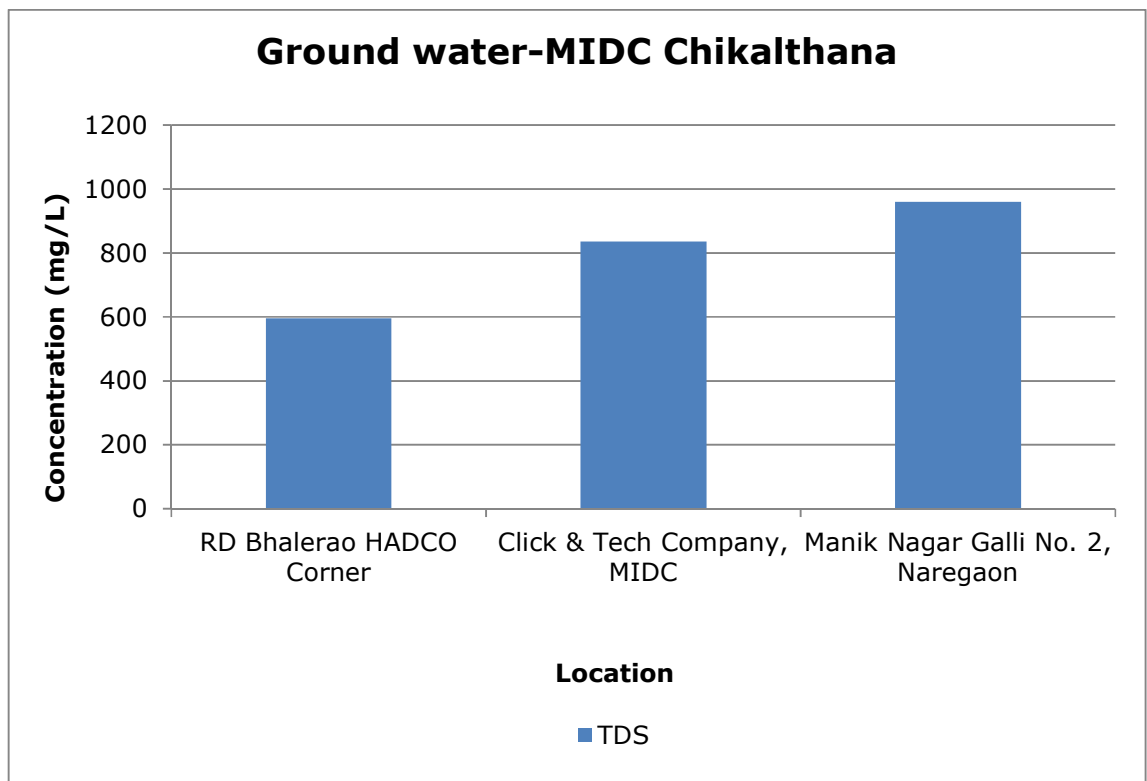
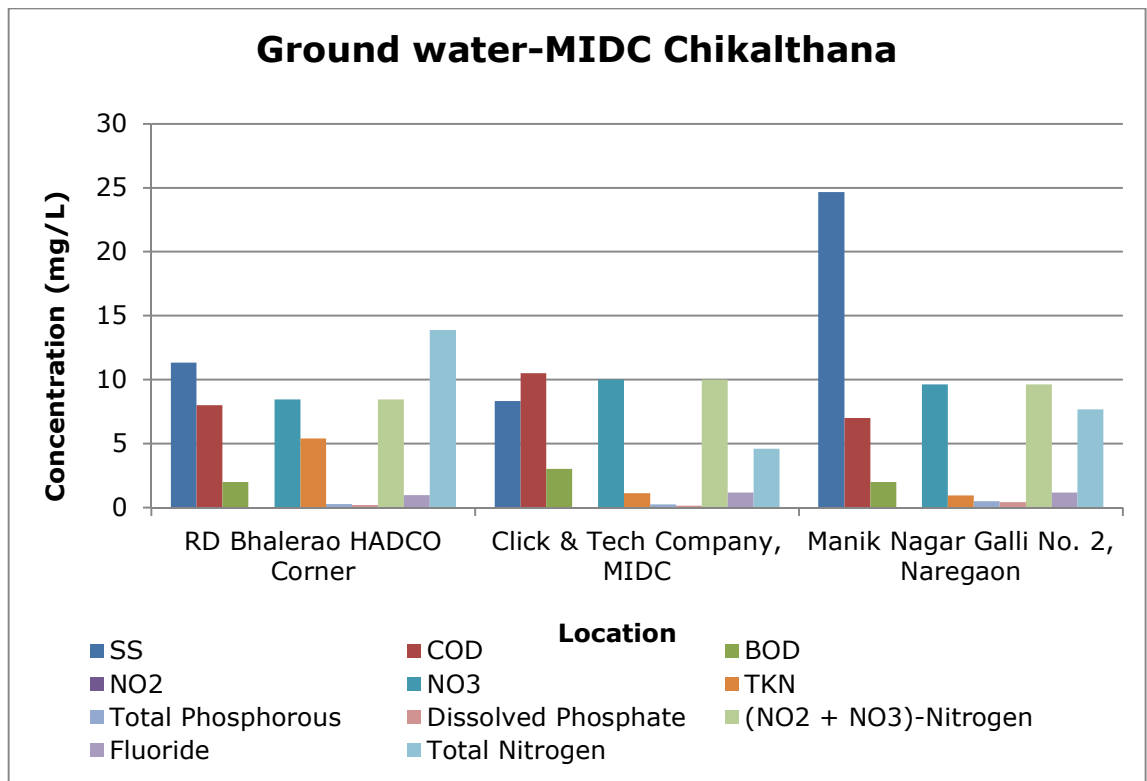
Table 7.4 MIDC Chikalthana - Results of Ground Water

Parameters	Unit	Results		
		RD Bhalerao HADCO Corner	Borewell, Click & Tech Company	Hand Pump, Manik nagar, Galli no. 2, Naregaon
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	floating matter Evident	floating matter Evident	floating matter Evident
Transparency	m	0.60	0.60	0.50
Temperature	Hazen	24	24	24
Colour	°C	1	1	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	7.49	7.06	7.30
Oil & Grease	mg/L	BLQ	BLQ	BLQ

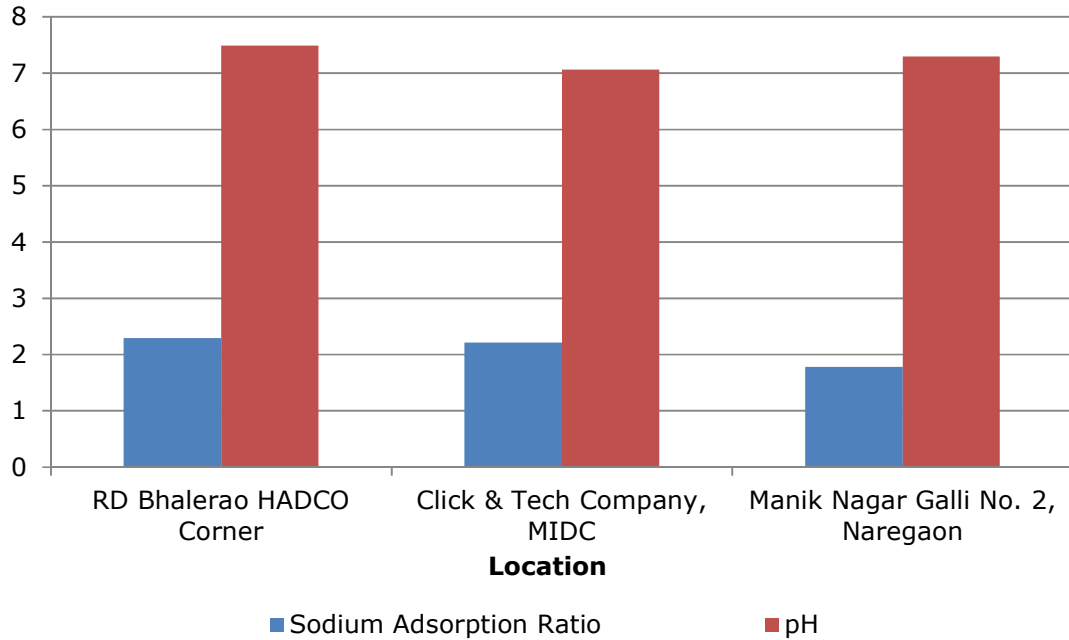
Parameters	Unit	Results		
		RD Bhalerao HADCO Corner	Borewell, Click & Tech Company	Hand Pump, Manik nagar, Galli no. 2, Naregaon
Total Suspended Solids	mg/L	11	8	25
Total Dissolved Solids	mg/L	595	836	960
Chemical Oxygen Demand	mg/L	8	11	7
Biochemical Oxygen Demand (3 days,27°C)	mg/L	2	3	2
Electrical Conductivity (at 25°C)	µmho/cm	1063	1493	1196
Nitrite Nitrogen (as NO ₂)	mg/L	0.03	BLQ	BLQ
Nitrate Nitrogen (as NO ₃)	mg/L	8.43	10.00	9.62
(NO ₂ + NO ₃)-Nitrogen	mg/L	8.44	10.00	9.62
Free Ammonia (as NH ₃ -N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	0.29	0.25	0.26
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.97	1.17	1.17
Sulphide (as H ₂ S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.19	0.14	0.43
Sodium Adsorption Ratio	-	2.30	2.22	1.78
Total Coliforms	MPN Index /100 mL	17	23	125
Faecal Coliforms	MPN Index /100 mL	7	3	27
Total Phosphate (as P)	mg/L	0.28	0.24	0.49
Total Kjeldahl Nitrogen (as N)	mg/L	5.41	1.12	0.93
Total Ammonia (NH ₄ +NH ₃)- Nitrogen)	mg/L	0.19	0.12	0.31
Total Nitrogen	mg/L	13.87	4.61	7.67

Parameters	Unit	Results		
		RD Bhalerao HADCO Corner	Borewell, Click & Tech Company	Hand Pump, Manik nagar, Galli no. 2, Naregaon
Phenols (as C ₆ H ₅ OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	0.14	BLQ	BLQ
Nickel (as Ni)	mg/L	0.02	0.03	0.03
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr ⁶⁺)	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	0.08	0.09
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	0.01	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.09	0.10	0.10
Iron (as Fe)	mg/L	0.27	0.24	0.25
Vanadium (as V)	mg/L	0.05	0.09	0.08
Selenium (as Se)	mg/L	0.01	0.01	0.01
Boron (as B)	mg/L	BLQ	0.10	0.10
Bioassay Test on fish	% survival	100	100	100

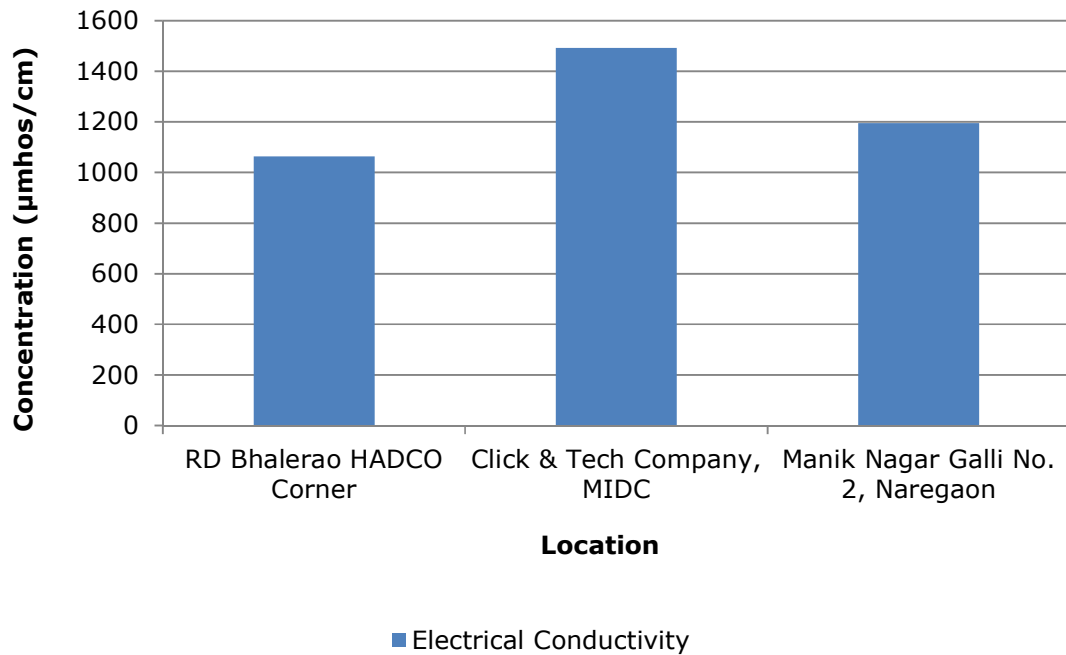
Graphs - Ground Water of MIDC Chikalthana



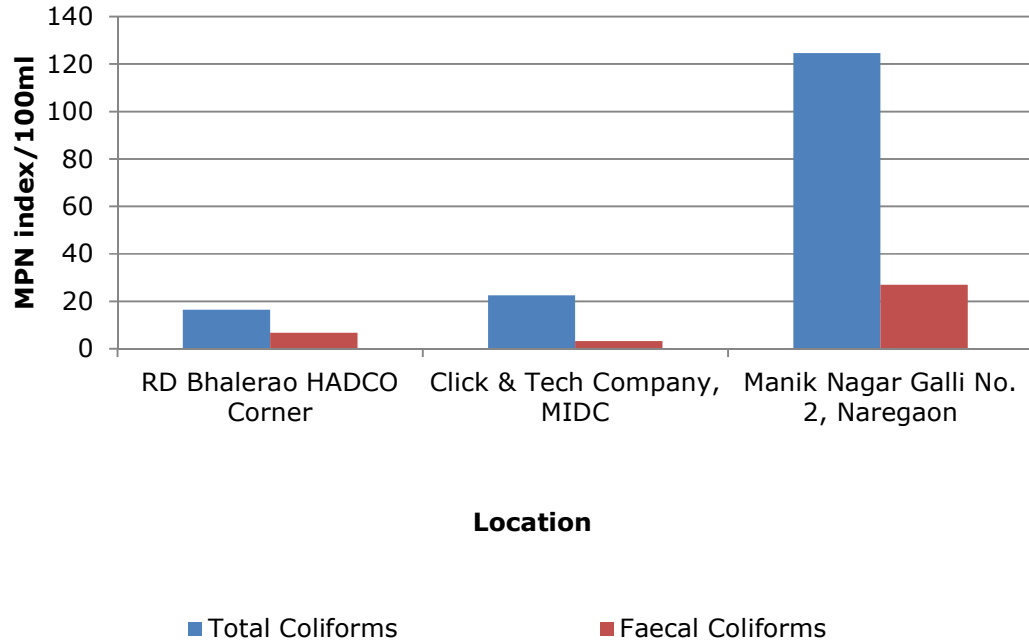
Ground water-MIDC Chikalthana



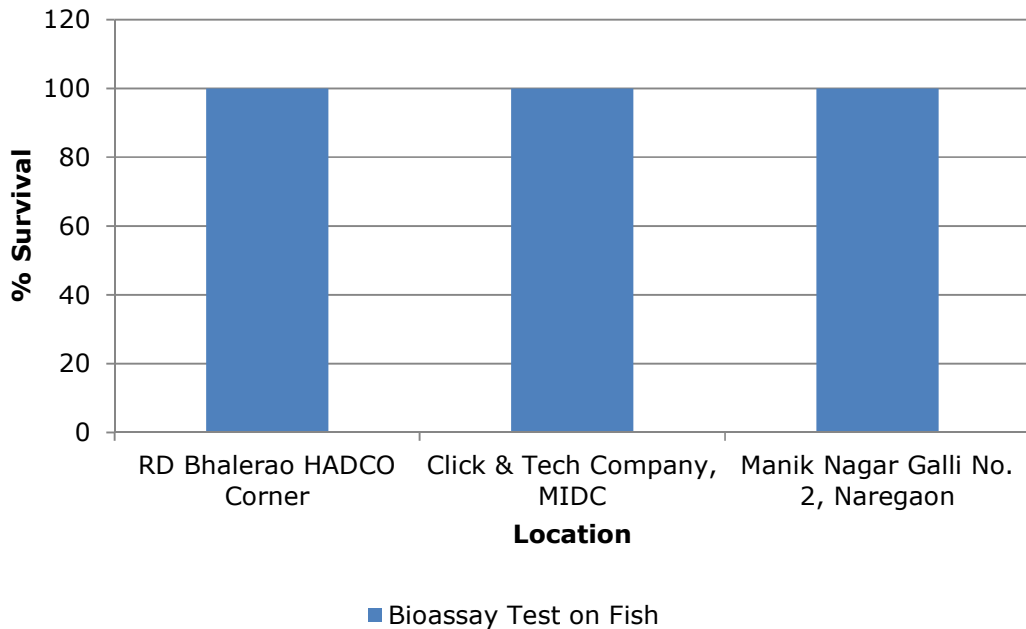
Ground water-MIDC Chikalthana



Ground water-MIDC Chikalthana



Ground water-MIDC Chikalthana



3. MIDC Waluj: Three ground water samples were collected from MIDC Waluj.

- All three water samples collected were observed as acceptable in general appearance, colour, smell and transparency.
- Concentration of parameters like pH, suspended solids, TDS and BOD were also well within the limits at all three samples collected.
- 100% survival was achieved in Fish Bioassay of borewell water near Sanjay Handore, D-19/1, CIDCO and Mr. Gayke well Near Goodyear South Asia Tyres.
- Metals like Arsenic, Nickel, Copper, Hexavalent Chromium etc. were observed either below the limit of quantification (BLQ) or below their standard limits.
- Parameters like Total Residual Chlorine, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were either below the limit of quantification (BLQ) or below their standard limits in all 3 samples collected.
- Organo Chlorine Pesticides were also below the limit of quantification in all 3 samples collected.

Table 7.5 MIDC Waluj - Details of Sampling Location of Groundwater

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Bore Well, Sanjay Handore, D-19/1, CIDCO	19.850777N	75.246017E	30.05.2023	01.06.2023	03.06.2023
2.	Bore Well, Pravin Ghule, Ghulevasti, Patoda Road, MIDC Waluj	19.815453N	75.248888E	30.05.2023	01.06.2023	03.06.2023
3.	Mr. Gayke well Near Goodyear South Asia Tyres	19.85973N	75.203666E	30.05.2023	01.06.2023	03.06.2023



Fig: Geographical Locations of Ground Water Sampling MIDC Waluj

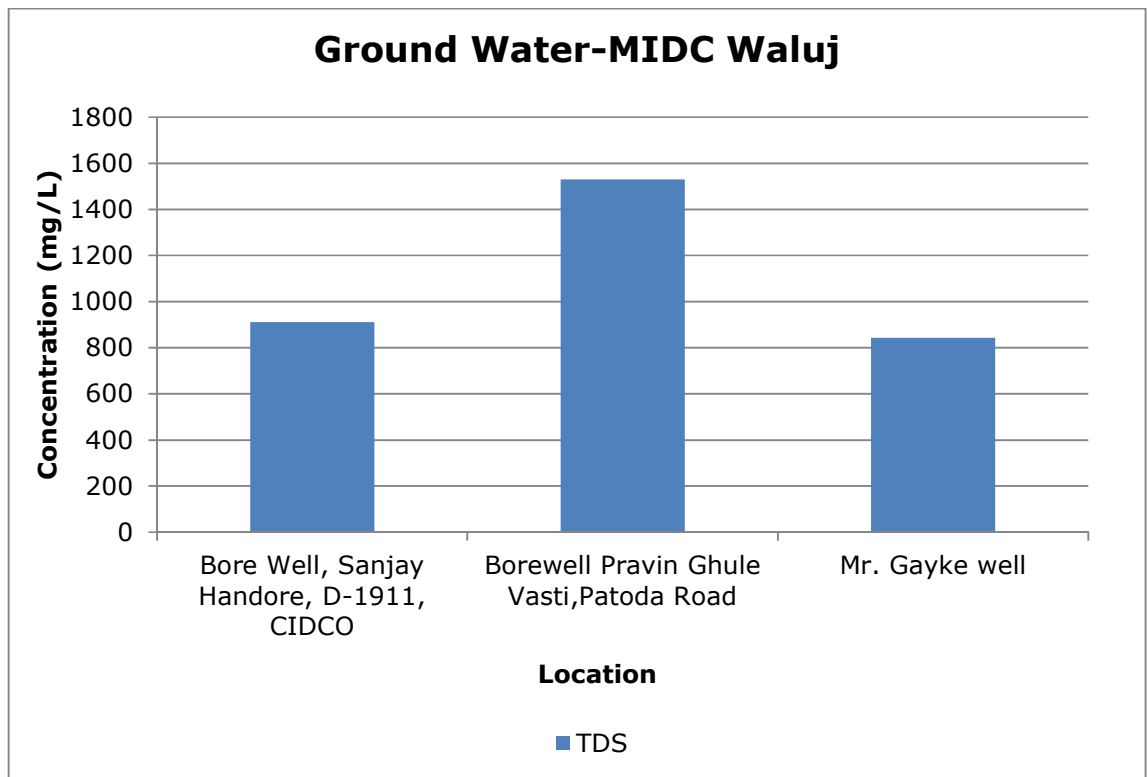
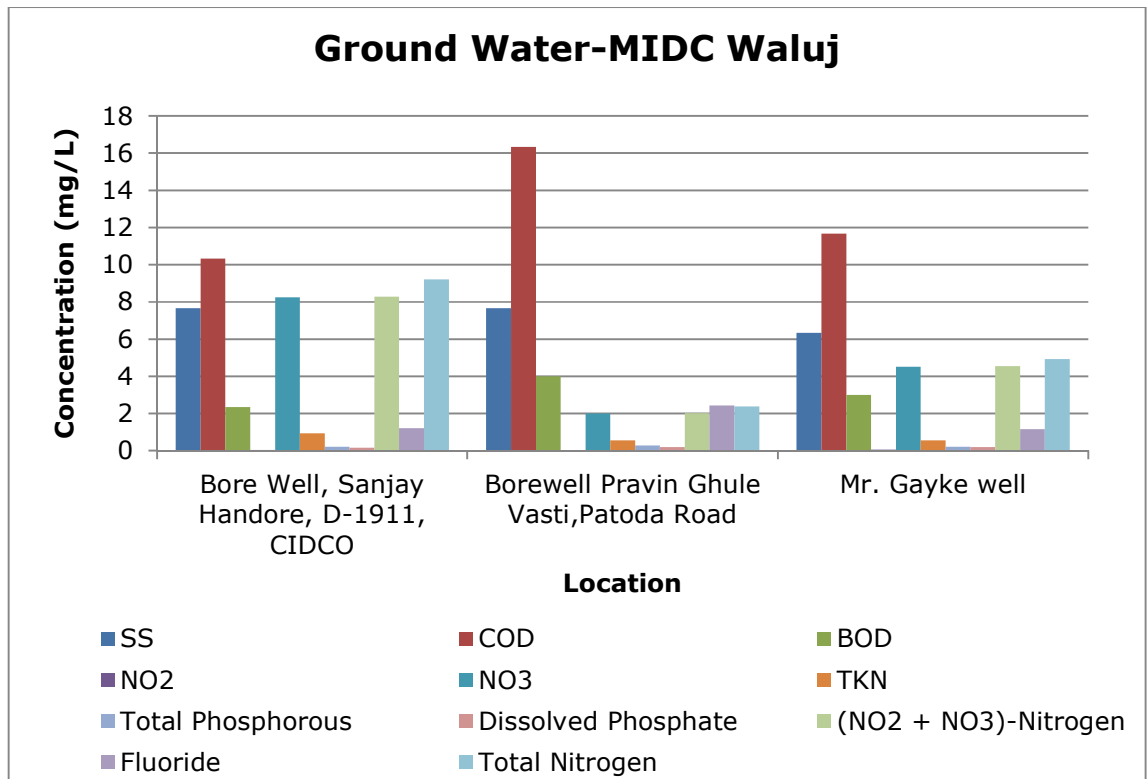
Table 7.6 MIDC Waluj - Results of Ground Water

Parameters	Unit	Results		
		Bore Well, Sanjay Handore, D-1911, CIDCO	Borewell Pravin Ghule Vasti, Patoda Road	Mr. Gayke well Near Goodyear South Asia Tyres
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	floating matter Evident	No floating matter	No floating matter
Transparency	m	BLQ	BLQ	0.50
Temperature	Hazen	26	25	26
Colour	oC	2	1	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	6.82	6.69	6.85
Oil & Grease	mg/L	BLQ	BLQ	BLQ

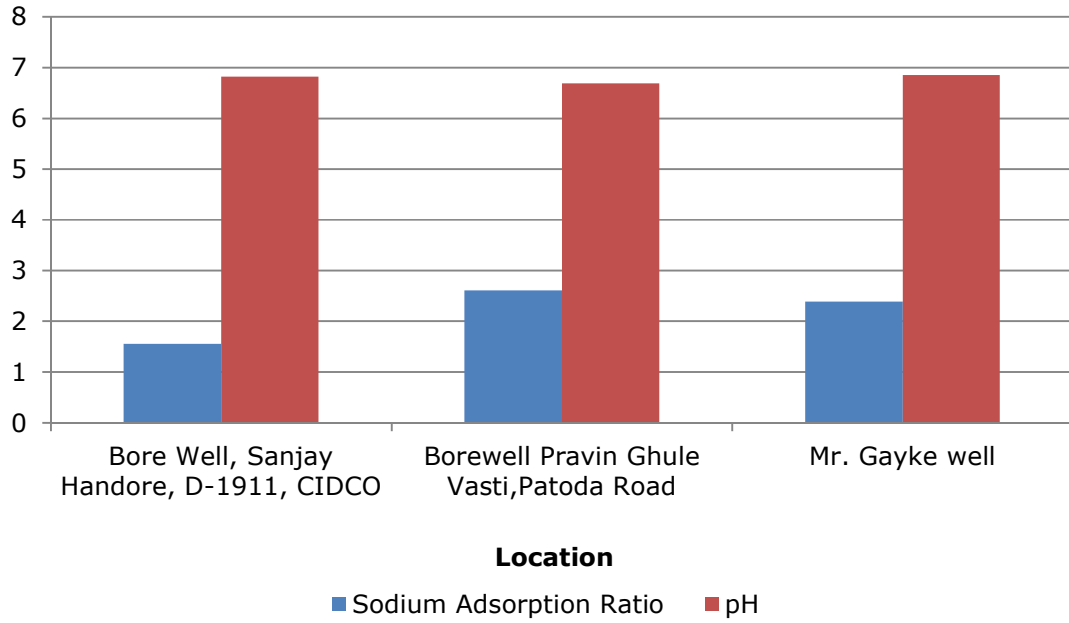
Parameters	Unit	Results		
		Bore Well, Sanjay Handore, D-1911, CIDCO	Borewell Pravin Ghule Vasti, Patoda Road	Mr. Gayke well Near Goodyear South Asia Tyres
Total Suspended Solids	mg/L	8	8	6
Total Dissolved Solids	mg/L	911	1530	843
Chemical Oxygen Demand	mg/L	10	16	12
Biochemical Oxygen Demand (3 days,27°C)	mg/L	2	4	3
Electrical Conductivity (at 25°C)	µmho/cm	1625	2730	1503
Nitrite Nitrogen (as NO ₂)	mg/L	0.05	BLQ	0.06
Nitrate Nitrogen (as NO ₃)	mg/L	8.25	2.01	4.51
(NO ₂ + NO ₃)-Nitrogen	mg/L	8.28	2.01	4.55
Free Ammonia (as NH ₃ -N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	0.38	0.43	0.31
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.20	2.43	1.17
Sulphide (as H ₂ S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.15	0.19	0.19
Sodium Adsorption Ratio	-	1.56	2.61	2.39
Total Coliforms	MPN Index /100 mL	866	593	59
Faecal Coliforms	MPN Index /100 mL	241	315	10
Total Phosphate (as P)	mg/L	0.22	0.28	0.22
Total Kjeldahl Nitrogen (as N)	mg/L	0.93	0.56	0.56
Total Ammonia (NH ₄ +NH ₃)- Nitrogen)	mg/L	BLQ	BLQ	BLQ

Parameters	Unit	Results		
		Bore Well, Sanjay Handore, D-1911, CIDCO	Borewell Pravin Ghule Vasti, Patoda Road	Mr. Gayke well Near Goodyear South Asia Tyres
Total Nitrogen	mg/L	9.22	2.39	4.92
Phenols (as C ₆ H ₅ OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	BLQ	0.12
Nickel (as Ni)	mg/L	0.01	0.01	0.01
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr ⁶⁺)	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	0.06
Total Arsenic (as As)	mg/L	BLQ	0.01	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.08	0.08	0.11
Iron (as Fe)	mg/L	0.48	0.41	0.41
Vanadium (as V)	mg/L	0.02	0.03	0.03
Selenium (as Se)	mg/L	0.01	0.01	0.01
Boron (as B)	mg/L	BLQ	BLQ	BLQ
Bioassay Test on fish	% survival	100	90	100

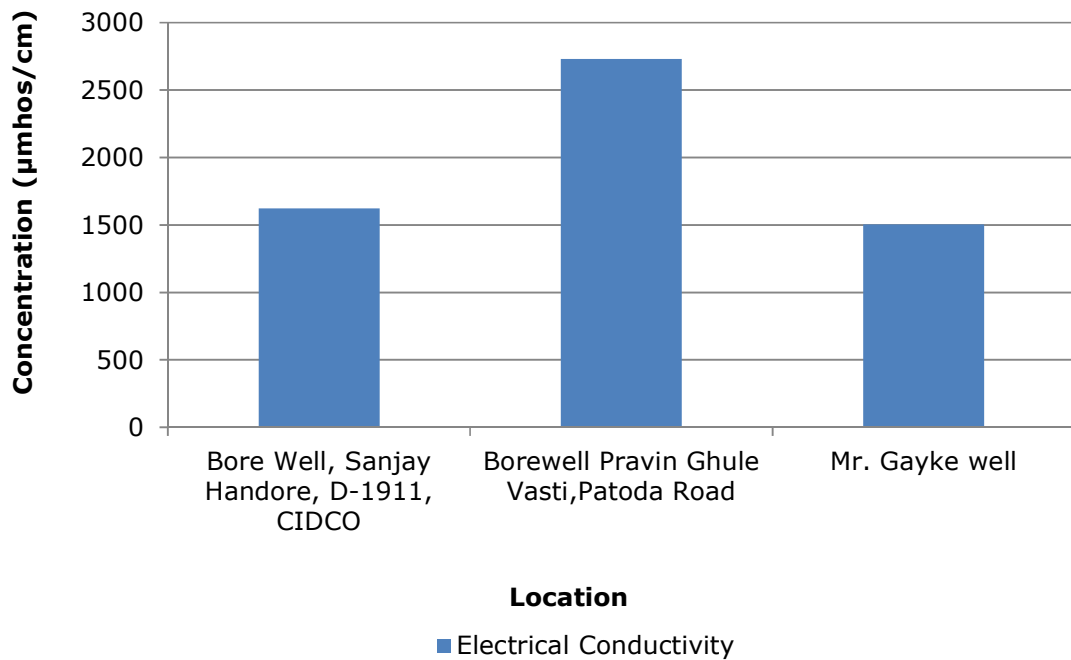
Graphs - Ground Water-MIDC Waluj



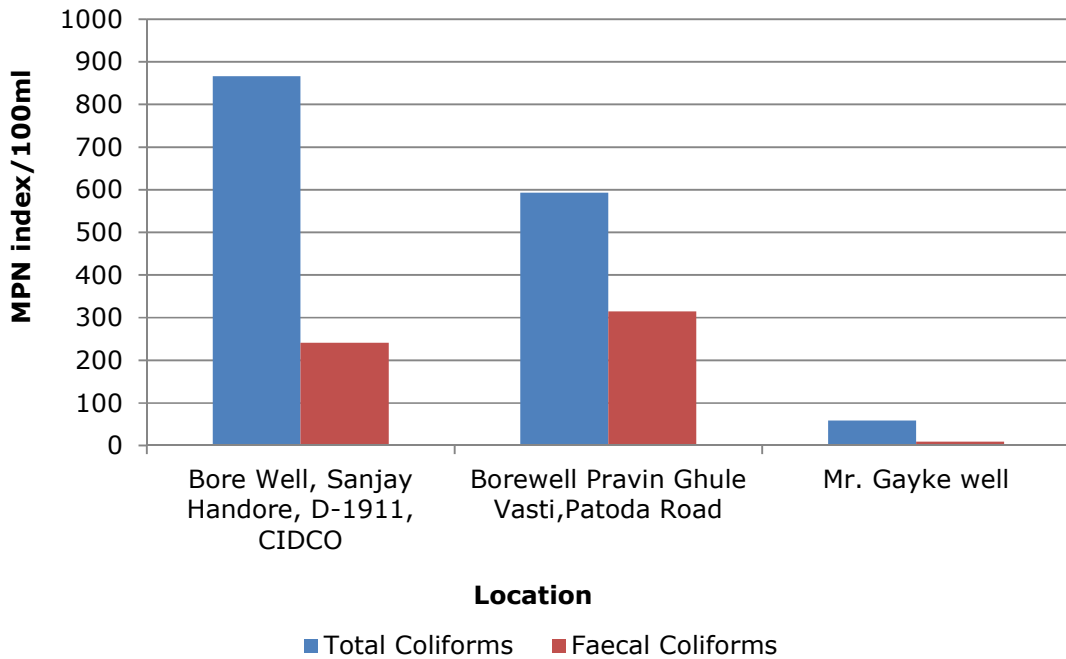
Ground Water-MIDC Waluj



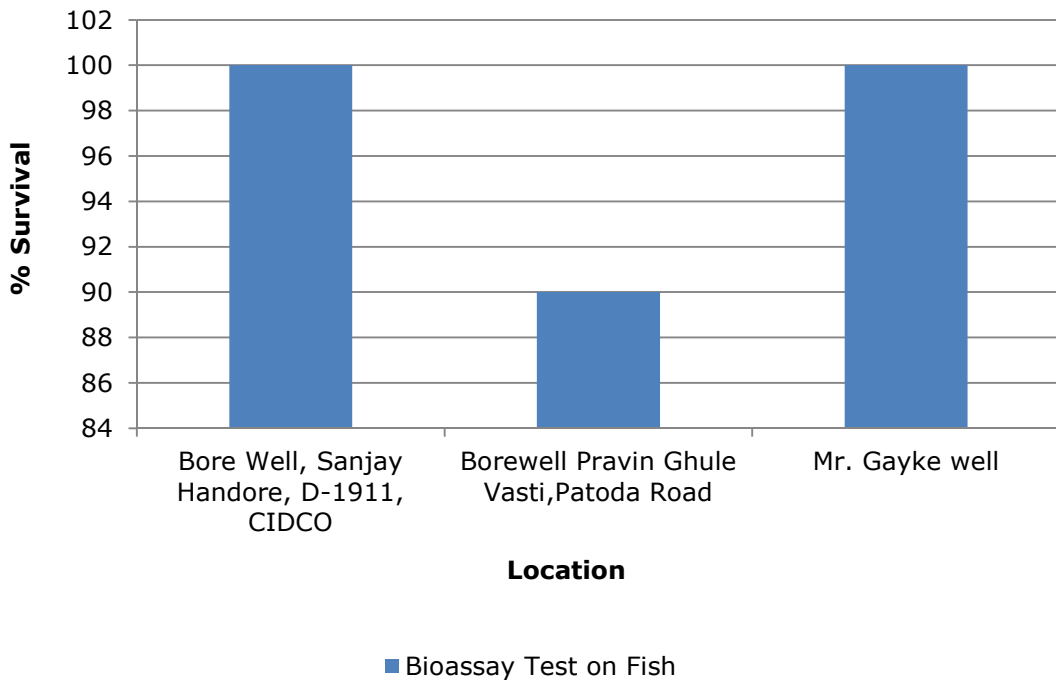
Ground Water-MIDC Waluj



Ground Water-MIDC Waluj



Ground Water-MIDC Waluj



4. MIDC Paithan: Three ground water samples are collected from MIDC Paithan.

- All three water samples collected were acceptable in general appearance, colour, smell and transparency.
- Concentration of parameters like pH, suspended solids, Electrical conductivity and BOD were also well within the limits at all three samples collected.
- 100% fish survival was achieved in two of the water samples collected for Fish Bioassay.
- Metals like Arsenic, Nickel, Copper, Hexavalent Chromium etc. are observed either below the limit of quantification (BLQ) or below their standard limits.
- Parameters like Total Residual Chlorine, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were found below the limit of quantification (BLQ) in all 3 samples collected.
- Organo Chlorine Pesticides were also below the detectable limit in all 3 samples collected.

Table 7.7 MIDC Paithan - Details of Sampling Location of Ground Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Mr. Ram Babu Well near Ajeet Seeds	19.765212N	75.288325E	29.05.2023	31.05.2023	02.06.2023
2.	Bore Well Matoshri Aashram	19.739217N	75.294277E	29.05.2023	31.05.2023	02.06.2023
3.	Hand Pump Farola Village, Near WTP	19.725494N	75.296154E	29.05.2023	31.05.2023	02.06.2023

Ground Water Quality locations of MIDC Paithan Road



Fig: Geographical Locations of Ground Water Sampling MIDC Paithan

Table 7.8 MIDC Paithan - Results of Ground Water

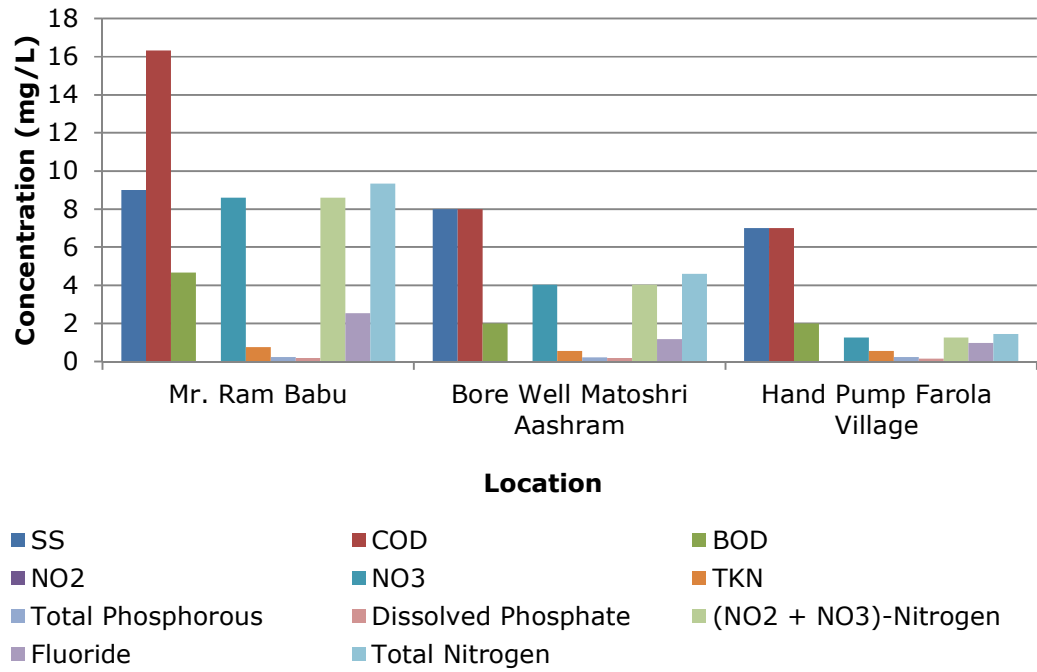
Parameters	Unit	Results		
		Mr. Ram Babu Well near Ajeet Seeds	Bore Well Matoshri Aashram	Hand Pump Farola Village, Near WTP
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	floating matter Evident	No floating matter	No floating matter
Transparency	m	0.30	BLQ	BLQ
Temperature	Hazen	25	25	25
Colour	°C	1	1	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	7.03	7.09	7.06
Oil & Grease	mg/L	BLQ	BLQ	BLQ

Parameters	Unit	Results		
		Mr. Ram Babu Well near Ajeet Seeds	Bore Well Matoshri Aashram	Hand Pump Farola Village, Near WTP
Total Suspended Solids	mg/L	9	8	7
Total Dissolved Solids	mg/L	1549	691	587
Chemical Oxygen Demand	mg/L	16	8	7
Biochemical Oxygen Demand (3 days,27°C)	mg/L	5	2	2
Electrical Conductivity (at 25°C)	µmho/cm	2763	1233	1048
Nitrite Nitrogen (as NO ₂)	mg/L	BLQ	BLQ	BLQ
Nitrate Nitrogen (as NO ₃)	mg/L	8.60	4.04	1.25
(NO ₂ + NO ₃)-Nitrogen	mg/L	8.60	4.04	1.25
Free Ammonia (as NH ₃ -N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	0.34	0.52	0.89
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	2.53	1.17	0.97
Sulphide (as H ₂ S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.18	0.18	0.15
Sodium Adsorption Ratio	-	4.14	1.91	1.81
Total Coliforms	MPN Index /100 mL	933	913	17
Faecal Coliforms	MPN Index /100 mL	245	297	5
Total Phosphate (as P)	mg/L	0.24	0.21	0.22
Total Kjeldahl Nitrogen (as N)	mg/L	0.75	0.56	0.56
Total Ammonia (NH ₄ +NH ₃)-Nitrogen)	mg/L	0.16	0.13	BLQ
Total Nitrogen	mg/L	9.34	4.60	1.44

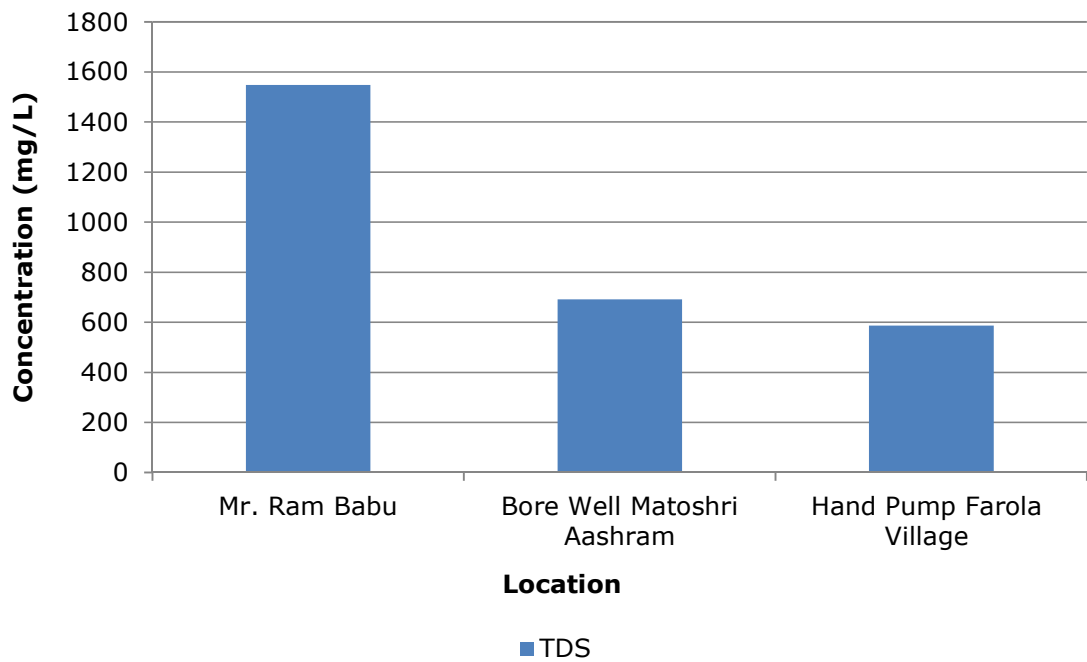
Parameters	Unit	Results		
		Mr. Ram Babu Well near Ajeet Seeds	Bore Well Matoshri Aashram	Hand Pump Farola Village, Near WTP
Phenols (as C ₆ H ₅ OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	0.06	BLQ	BLQ
Nickel (as Ni)	mg/L	0.01	0.03	0.03
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr ⁶⁺)	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	0.10	0.06
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.07	0.11	0.08
Iron (as Fe)	mg/L	0.33	0.38	0.39
Vanadium (as V)	mg/L	0.02	0.03	0.01
Selenium (as Se)	mg/L	0.01	0.01	0.01
Boron (as B)	mg/L	0.17	BLQ	BLQ
Bioassay Test on fish	% survival	67	67	97

Graphs - Ground Water of MIDC Paithan

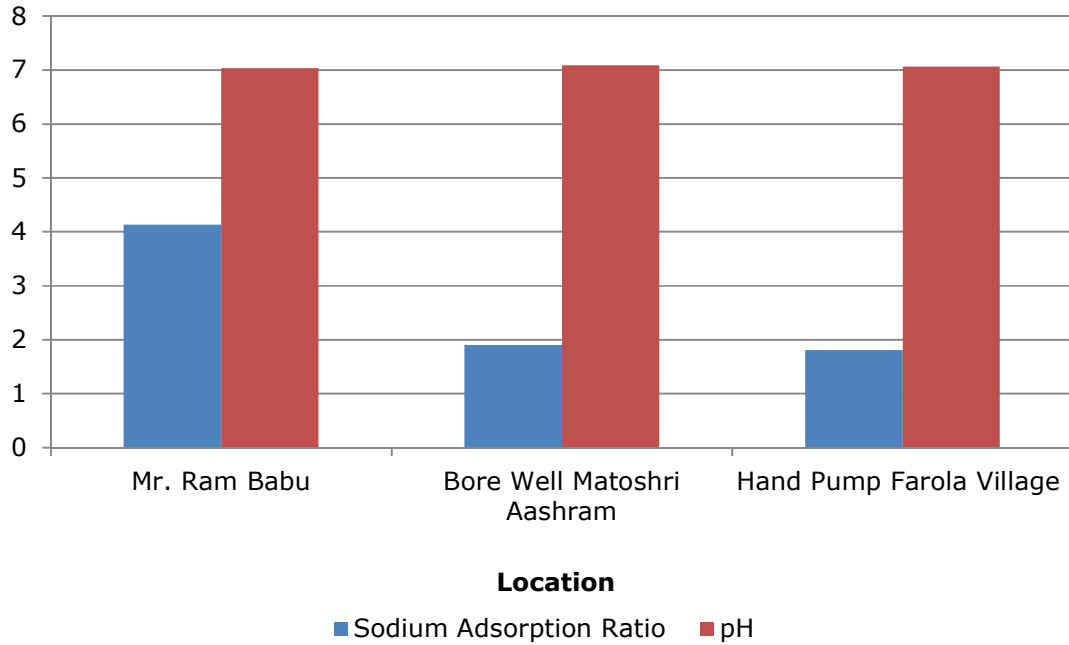
Ground water - MIDC Paithan Road



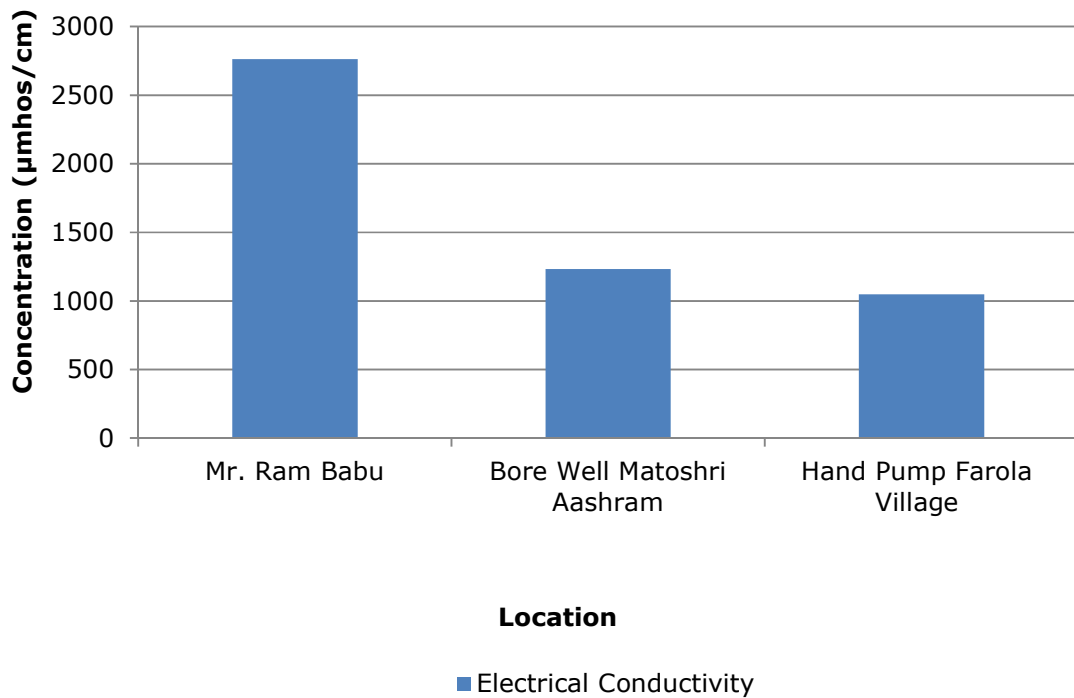
Ground water - MIDC Paithan Road



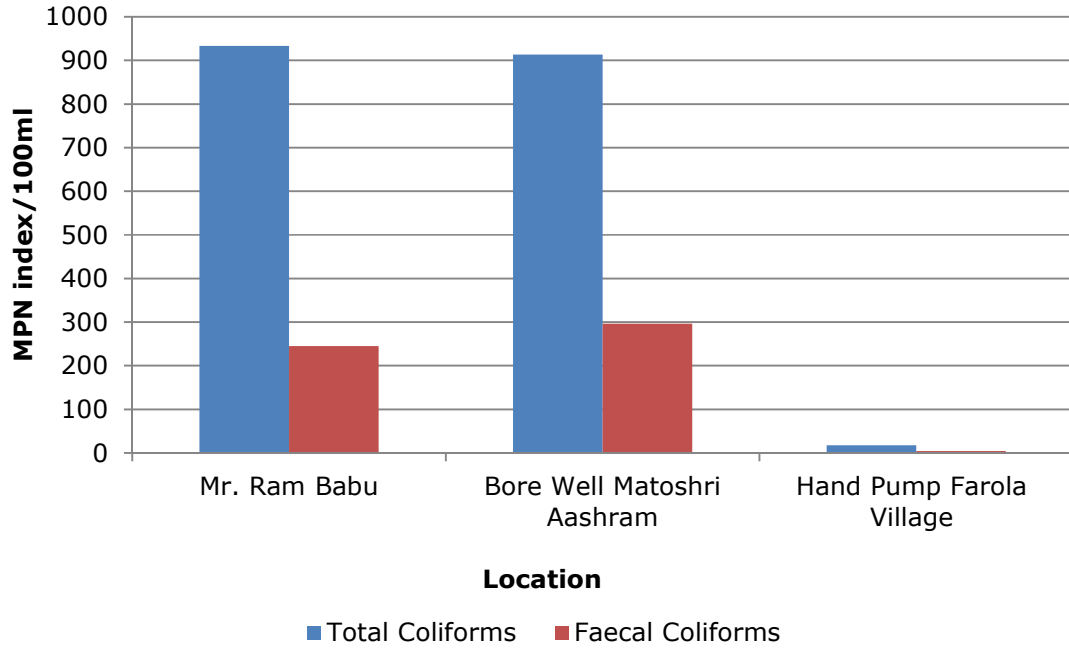
Ground water - MIDC Paithan Road



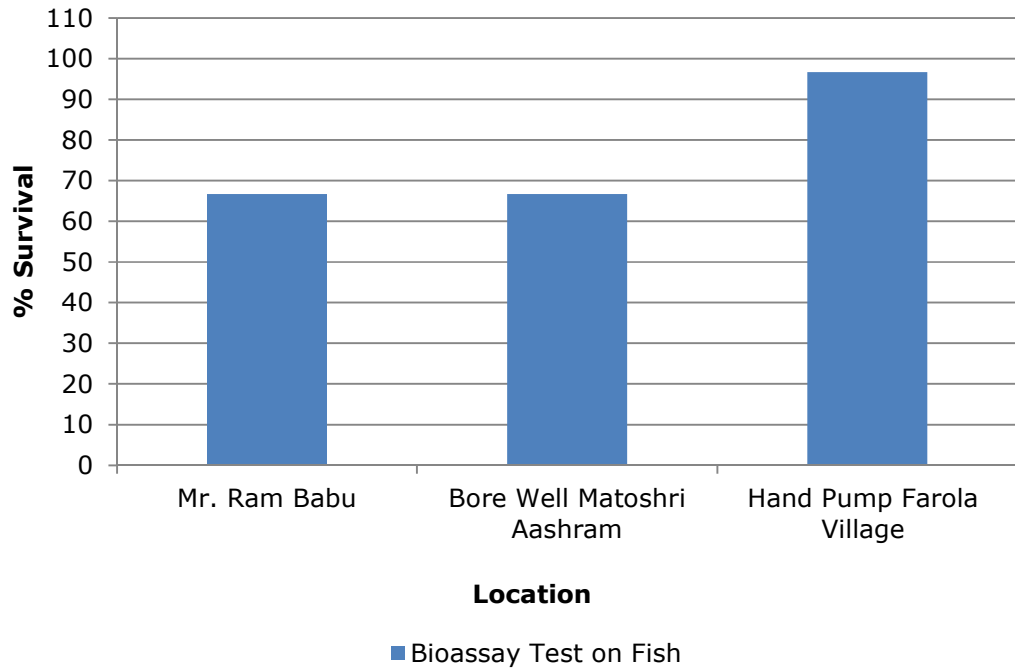
Ground water - MIDC Paithan Road



Ground water - MIDC Paithan Road



Ground water - MIDC Paithan Road



8. Health Related Data

C: Receptor

Component C (Impact on Human Health)	
Main - 10	
% increase in cases	Marks
<5%	0
5-10%	5
>10%	10

- % increase is evaluated based on the total no. of cases recorded during two consecutive years.
- For Air Environment, total no. of cases related to Asthma, Bronchitis, Cancer, Acute respiratory infections etc. are to be considered.
- For surface water/ ground water Environment, cases related to Gastroenteritis, Diarrhoea, renal (kidney) malfunction, cancer etc are to be considered.
- For the above evaluation, the previous 5 years records of 3-5 major hospitals of the area shall be considered.

Annexure – I Health Related Data enclosed.

9. CEPI Score

Comprehensive Environmental Pollution Index (CEPI) is intended to act as early warning tool which helps in categorization of industrial clusters/ areas in terms of priority of needing attention. The CEPI score have been calculated based on CPCB Letter No. B-29012/ESS (CPA)/2015-16 dated 26th April 2016. The scoring system involves an algorithm that considers the basic selection criteria. It is proposed to develop the CEPI based on sources of pollution, real time observed values of the pollutants in the ambient air, surface water and ground water in & around the industrial cluster and health related statistics. The present study is the compilation of pre-monsoon season.

Table 8.1 CEPI score of the Pre-monsoon season 2023 is given below:

	A1	A2	A	B	C	D	CEPI
Air Index	3	2.5	7.5	1.5	10	5	24.0
Water Index	2.5	2.5	6.25	33.25	10	5	54.5
Land Index	1.75	2.5	4.375	27	10	5	46.4
Aggregated CEPI							59.6

Table 8.2 Comparison of CEPI Scores

	Air Index	Water Index	Land Index	CEPI
CEPI Score June 2023	24.00	54.50	46.40	59.60
CEPI Score March 2023	21.88	55.88	36.00	59.36
CEPI Score June 2021	15.5	54.38	53.00	58.12
CEPI Score March 2021	23	53.9	53.8	59.60
CEPI score March 2020	53.80	34.50	38.50	59.90
CEPI score June 2019	25.00	58.50	17.50	60.31
CEPI score March 2019	22.75	23.25	62.00	64.01
CEPI score June 2018	36.25	55.25	56.25	65.01

	Air Index	Water Index	Land Index	CEPI
CEPI score March 2018	56.00	34.00	50.00	64.38
CPCB CEPI score March 2018	45.00	65.38	28.75	69.85

The result shows that CEPI score of present report is 59.6. This time CEPI is observed lower than the CPCB CEPI score (69.85) of March 2018.

CEPI Score Calculation:

Ambient Air Analysis Report

Pollutant	Group	A1	A2	A (A1 X A2)
PM ₁₀	B	2	Moderate	
CO	B	0.5		
PM _{2.5}	B	0.5		
		3	2.5	7.5

Pollutant	Avg (1)	Std (2)	EF (3) [(3)=(1)/(2)]	No. of samples Exceeding (4)	Total no. of samples (5)	SNLF Value (6) [(6)=(4)/(5)x(3)]	SNLF score (B)		
PM ₁₀	61.94	100	0.62	0	16	0.00	L	0	
CO	1.76	2	0.88	0	16	0.00	L	1.5	
PM _{2.5}	17.02	60	0.28	0	16	0.00	L	0	
B score = (B1+B2+B3)								B	1.5

C	10	>10%
D	5	A-IA-A

Air CEPI	(A+B+C+D)	24.0
-----------------	------------------	-------------

Water Quality Analysis Report

Pollutant	Group	A1	A2	A (A1 X A2)
BOD	B	2	Moderate	
TDS	A	0.25		
(NO ₂ + NO ₃)-N	A	0.25		
		2.5	2.5	6.25

Pollutant	Avg (1)	Std (2)	EF (3) [(3)=(1)/(2)]	No. of samples Exceeding (4)	Total no. of samples (5)	SNLF Value (6) [(6)=(4)/(5)x(3)]	SNLF score (B)	
							C	
BOD	109.83	8	13.73	20	23	11.94	C	30
TDS	1096.99	2000	0.55	4	23	0.10	M	3.25
(NO ₂ + NO ₃)-N	4.25	15	0.28	0	23	0.00	L	0
B score = (B1+B2+B3)							B	33.25

C	10	>10 %
D	5	A-IA-A

Water CEPI	(A+B+C+D)	54.5
-------------------	------------------	-------------

Ground Water Quality Analysis Report

Pollutant	Group	A1	A2	A (A1 X A2)
Fe	A	1	Moderate	
Fluoride	A	0.25		
Se	B	0.5		
		1.75	2.5	4.375

Pollutant	Avg (1)	Std (2)	EF (3) [(3)=(1)/(2)]	No. of samples Exceeding (4)	Total no. of samples (5)	SNLF Value (6) [(6)=(4)/(5)x(3)]	SNLF score (B)	
							C	
Fe	0.36	0.3	1.20	8	12	0.80	H	20.25
Fluoride	1.51	1.5	1.01	4	12	0.34	M	4.25
Se	0.01	0.01	1.00	0	12	0.00	L	2.5
B score = (B1+B2+B3)							B	27

C	10	>10 %
D	5	A-IA-A

Land CEPI	(A+B+C+D)	46.4
------------------	------------------	-------------

Water CEPI Score (im) 54.5

Land CEPI Score (i2) 46.4

Air Score (i3) 24.0

Aggregated CEPI Score = **$im + \{(100-im)*i2/100\}*i3/100\}$**

where, im = maximum sub index; and i2 and i3 are sub indices for other media

CEPI Score **59.6**

10. Conclusion

Ambient Air Quality

- In the present study, 16 AAQ stations of 4 MIDCs namely: MIDC Shendra, MIDC Chikalthana, MIDC Waluj and MIDC Paithan, were identified in the CEPI impact area to cover both upwind and cross wind directions and AAQ survey was conducted.
- All air quality parameters are observed well within the limits as per NAAQS.
- In the CEPI score calculated for Air environment by CPCB in March 2018, the concentration of PM₁₀ and PM_{2.5} has exceeded at 50% of the studied locations, which contributed to air index (45.00). However, in the present report, concentration of both PM₁₀ and PM_{2.5} are found below permissible levels resulted in less exceedance factor, hence lower air index (24.0).

Surface Water Quality

- To understand the quality of treated effluent, samples were collected from 23 locations of different MIDCs.
- Concentration of BOD, and Total Dissolved Solids was found to exceed the acceptable limits at few places.
- All the industries in the Aurangabad region are either reusing the treated trade effluent as sewage in their process or gardening.
- In the CEPI score calculated for Water Environment by CPCB in March 2018, concentration values of BOD, TDS, TKN and TP were higher and exceeded at 50% of studied locations as observed in the present study also.

Ground Water Quality

- Total 12 ground water samples were collected from different Dug well, well and Bore well in different regions of four MIDCs.
- All the parameters of groundwater analysis were found within the permissible limits, except Floride content which is found to exceed in few of the water samples.
- In the CEPI score calculated for Land Environment by CPCB in March 2018, all the critical parameters were observed within the permissible limits.

CEPI Score

- The CEPI Score of pre-monsoon season is 59.6.
- During the calculation of CEPI score, water Index is calculated highest with 54.5, followed by the land Index 46.40 and Air index as 24.0. The parameters of surface water and ground water in

Aurangabad region are observed well within the limits. Hence, aggregated CEPI score is calculated as 59.6, which is lower than the CPCB CEPI score March 2018 which was 69.85.

- In CEPI score of CPCB 2018, Air index and water index were higher as compared to the present (March, 2023) indices. However, land index of present CEPI (36.0) is little higher than the land CEPI (28.75) calculated by CPCB in 2018
- In comparison with the CEPI Score of June 2021, there is a decrease in the Land Index, but little rise is observed in air index, however, water index is observed almost similar.
- As per the CPCB CEPI calculation revised in 2016, Health statistics represented by Receptor C in CEPI Calculation, also plays an important role.
- By analysing the health data collected from hospitals, more than 10% increase in air and water borne disease cases is observed in the consecutive years of 2020-2021 and 2021-2022. Hence score for receptor C is considered as 10 for water & land Environment. However, in the CEPI score calculated by CPCB (2018), the receptor C (the health data) score is 5 for water and land environment.
- Collective efforts of regional office of MPCB, NMMC, administration and environmental organizations are resulting in significant reduction in pollution level over the years.
- Efforts taken to reduce the pollution level is represents factor D in CEPI Calculation, which also affects the overall CEPI score.
- The present study is the compilation of pre-monsoon season, which results in dilution of environmental samples resulting in lower pollution load, hence also affects the total score.
- In conclusion, approximately 15% decrease in CEPI score is observed from 69.85 in 2018 to 59.6 in June 2023.

11. Efforts taken by MPCB to control and reduce Environmental Pollution Index

- Encouragement to the industries to switchover to cleaner fuel from exiting fuel coal.
- All the water polluting industries to change their underground ETP tank to overhead.
- Waste collection and segregation centres: The AMC has already installed and commissioned the MSW Processing Plant of 150MT/day capacity at Chikalthana and Padegaon. The Biogas Plant at Kanchanwadi of 30 TPD Biomethanization Technology has been installed and commissioned.
- Construction of one Common Effluent Treatment plant (CETP).
- Sixteen CEMS are installed for Air and Water in Large and Medium scale RED category industries
- Arrangement of scientific collection and treatment of sewage generated: Aurangabad Municipal Corporation has provided Sewage Treatment Plants at Kanchanwadi — 161 MLD, Zalta — 35MLD, Padegaon — 10 MLD and Dr. Salim Ali Lake — 5 MLD, which is of adequate capacity for treating the domestic sewage generated from Aurangabad city.
- Installation of three Continuous Ambient Air Quality Monitoring Stations (CAAQMS) i.e. in MIDC Waluj, Deogiri Engineering College premises and at MPCB Office premises.
- Nine monitoring stations under National Water Quality Monitoring Programme (NWMP) are also installed to check the water quality of the area.
- Steps are taken for industrial area/other units to recycle 100% treated effluent to achieve zero liquid discharge (ZLD). Time to time directions were issued to the industries to provide ZLD systems & to recycle 100 % treated effluent to achieve ZLD. Total 23 industries have provided ZLD system.
- Steps taken to reduce dust emission:
 - a) AMC has widened the roads and squares for avoiding traffic congestion.
 - b) Road sweeping machines has been provided by AMC.
 - c) Condition of city roads improved under Smart City.
 - d) The industries have been instructed to operate the Air Pollution Control System like dust collector, scrubber efficiently to achieve the consented standards.
- Tree plantation in last one year (2021-2022): Steps taken by MPCB to increase tree plantation in industrial premises upto 40 %.
- Other initiatives taken to control and reduce pollution in air, surface water and groundwater in last one year (2021-2022)
- The work of MSW Processing Plant of 150 MT/day capacity (Each) at Harsool is in progress.
- Public awareness campaign is taken.
- Continuous vigilance & monitoring of industries carried out by MPCB.

- State Govt. has approved DPR of Rs. 243.89 Crs for underground sewage network in Satara Deolai Area.



Continuous Ambient Air Quality Monitoring Station (CAAQMS)



Ambient Air Quality Monitoring (AAQM) Van

12. Photographs



**Ambient Air Sampling at ABD Distillery –
MIDC Chikalthana**



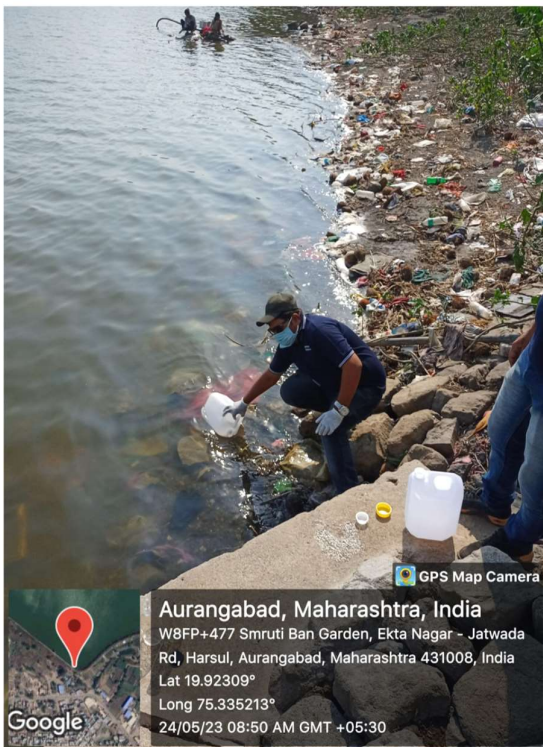
**Ambient Air Sampling at Glenmark Pharma-
MIDC Shendra**



**Ambient Air Sampling at Varroc Engg VIII –
MIDC Waluj**



**Ambient Air Sampling at ABD Electrical Unit
III – MIDC Paithan**



Surface Water Sampling –MIDC Chikalthana



Surface Water Sampling at Kham River– MIDC Waluj



Groundwater Sampling – Open Well water Wockardt-MIDC Shendra



Groundwater Sampling Matoshri Ashram - MIDC Paithan

Annexure – I Health Related Data

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Study by
Maharashtra Pollution Control Board (MPCB)

6/02/2023

Name of the Polluted Industrial Area (PIA)	Aurangabad
Name of the major health centre/ Organization	CIDCO N-8, Hospital, Municipal Corporation, Aurangabad.
Name & designation of the Contract person	
Address	Cidco N-8 Hospital

Sr. no.	Diseases	No. of Patients Reported	
		2022 (Jan-Dec)	2021 (Jan-Dec)
Airborne Diseases			
1.	Asthma	03	03
2.	Acute Respiratory Infection	2320	1327
3.	Bronchitis	—	—
4.	Cancer	01	—
Waterborne Diseases			
1.	Gastroenteritis	03	01
2.	Diarrhea	23	11
3.	Renal Diseases	—	—
4.	Cancer	—	—

Date:


MEDICAL OFFICER
CIDCO Hospital,
Municipal Corporation,
Aurangabad

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Study by
Maharashtra Pollution Control Board (MPCB)

Name of the Polluted Industrial Area (PIA)	Aurangabad
Name of the major health centre/ Organization	United Cigna Hospital Aurangabad
Name & designation of the Contract person	Anjali Kulkarni Coordinator - MRD
Address	6,7 Shahansorwadi, Dargah Road, Aurangabad 431005.

Sr. no.	Diseases	No. of Patients Reported	
		2022 (Jan-Dec)	2021 (Jan-Dec)
Airborne Diseases			
1.	Asthma	1800	1500
2.	Acute Respiratory Infection	1000	1200
3.	Bronchitis	1200	1000
4.	Cancer	40	50
Waterborne Diseases			
1.	Gastroenteritis	450	400
2.	Diarrhea	350	310
3.	Renal Diseases	1200	1000
4.	Cancer	1800	1500

Date: 16/02/2023

Signature



HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Study by
Maharashtra Pollution Control Board (MPCB)

Name of the Polluted Industrial Area (PIA)	Aurangabad
Name of the major health centre/ Organization	MGM medical college & hosp
Name & designation of the Contract person	Dean
Address	N-6, cidco, Aurangabad

Sr. no.	Diseases	No. of Patients Reported	
		2022 (Jan-Dec)	2021 (Jan-Dec)
Airborne Diseases			
1.	Asthma	16	08
2.	Acute Respiratory Infection	674	504
3.	Bronchitis	35	31
4.	Cancer	-	06
Waterborne Diseases			
1.	Gastroenteritis	427	133
2.	Diarrhea	13	1
3.	Renal Diseases	1632	167
4.	Cancer	-	10

Date: 14/2/23


 Signature
 MGM Medical College N-6,
 CIDCO, Aurangabad.