MONITORING, SAMPLING AND ANALYSIS FOR AMBIENT AIR QUALITY, SURFACE WATER QUALITY AND GROUND WATER QUALITY IN 100 POLLUTED INDUSTRIAL AREAS

DURING DECEMBER 2019- FEBRUARY 2020

Environmental Quality Monitoring Report For Aurangabad, Maharashtra

Maharashtra Pollution Control Board
Kalptaru Point, Sion East, Mumbai – 400 022
March, 2020

INDEX

Acknowledgement

We gratefully acknowledge **Ashok Shingare**, Member Secretary, Maharashtra Pollution Control Board, for entrusting this very important and prestigious project to us.

Our special thanks to Regional and Sub Regional Officer of the concerned areas, for guidance during the sampling. The contribution of **Shri V. M Motghare** (Joint director APC) and **Mr. Sameer Hundlekar** (Field officer) is appreciated.

We would also like to extend our thanks to the concerned staff of Regional Hospitals, who has provided us the health data, which is the most important component of this revised concept of CEPI.

By undertaking this project and completing in schedule time, we consider ourselves very lucky since we have helped the mankind by giving the data on pollution load and further action by the Board, to bring down the pollution level.

We also thank our associates for working on this project for making the write up, making graphs and feeding the data on computer.

This acknowledgement will be incomplete if we do not thank our laboratory analysts and others who made this project a success by timely analyzing the samples.

We also thank our sampling team members for conducting the sampling in this vast area.

Abbreviations:

APHA	American Public Health Association
BDL	Below Detection Limit
BOD	Biochemical Oxygen Demand
CEPI	Comprehensive Environmental Pollution Index
CETP	Common Effluent Treatment Plant
COD	Chemical Oxygen Demand
CPA	Critically Polluted Areas
SPA	Severely Polluted Areas
DO	Dissolved Oxygen
ETP	Effluent Treatment Plant
MIBK	Methyl Isobutyl Ketone
MPCB	Maharashtra Pollution Control Board
NAAQS	National Ambient Air Quality Standards
NO_x	Oxides of Nitrogen
BDL	Not Detected
PAH	Poly Aromatic Hydrocarbons
PCB	Poly Chlorinated Biphenyls
PCT	Poly Chlorinated Terphenyls
PM_{10}	Particulate Matter (size less than 10 µm)
$PM_{2.5}$	Particulate Matter (size less than 2.5 µm)
SO_2	Sulphur Dioxide
STAP	Short Term Action Plan
WHO	World Health Organization

1. Introduction

Over the years, urbanization and industrialization have led to major pollution-related issues due to increased human activities. Lack of planning and a basic understanding of the ecology affects its balance leading to pollution of water, air, soil, and other natural resources. The pollution load in respect of air quality is of relatively high order in metropolitan cities. It is associated with higher rates of several health disorders too. The development of manufacturing, especially near cities and industrial zones, is changing the environment and the natural composition of water. Pollution of natural environment not only affects people but also have adverse impact on economic growth in the long run. Analysis of pollution load shows that there are few industries in the country which contribute to more than 90percent of the pollution. Hence, scientists are exploring the quantum of pollution load as well as to device certain strategies and technologies so that our sustainable development would not be jeopardized otherwise our long cherished dream of establishing eco-socialism on this watery planet could not come true.

Industrial pollution takes on many faces. It contaminates many sources of drinking water, releases unwanted toxins into the air and reduces the quality of soil all over the world. Every liter of waste water discharged by our industries pollutes eight times the quantity of fresh water. The extent of pollution varies with the size of the industry, the nature of the industry, the type of products used and produced etc. In view of this, Central Pollution Control Board (CPCB) has evolved the concept of 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.

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 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. Later-on proposals were received from the SPCBs, State Governments, and Industrial Associations and concerned Stake-holders for revisiting the criteria of assessment under CEPI concept. After careful examination and consideration of the suggestions of concerned stake-holders, it was decided to prepare the revised concept of CEPI by eliminating the subjective factors but retaining the factors which can be measured precisely. Hence, revised concept came into existence, which is termed as Revised CEPI Version 2016.

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. A total of 88 industrial areas or clusters have been selected by the Central Pollution Control Board (CPCB) in consultation with the Ministry of Environment & Forests Government of India for the study. 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.

2. Scope of Work

The Scope of Work consisted of the following:

Monitoring, Sampling, Analysis for Stack, Ambient Air Quality, Surface Water and Ground Water Quality at identified locations in Aurangabad, Maharashtra with a gap of one or two days.

Details regarding the works are provided as below:

Industrial Cluster/ Area	**No. of Stack sites**	**Parameter of Stack**	**No. of AAQM sites**	**Parameter of AAQM**	**Numbers of water quality monitoring site**		**Parameter of Water**
					Surface water	**Ground water**	
Aurangabad	**22**	PM, SO_2, NO_2 and HCL	**16**	PM_{10}, $PM_{2.5}$, SO_2, NO_2, NH_3, O_3, C_6H_6, CO, BAP, Pb, Ni, As	**16**	**12**	**(i) Simple Parameters** Sanitary Survey, General Appearance, Colour, Smell, Transparency and Ecological **(ii) Regular Monitoring Parameters** pH, O & G, Suspended Solids, DO, COD, BOD, 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, **(iii) Special Parameters** Total Phosphorous, TKN, Total Ammonia (NH_4+NH_3)-Nitrogen, Phenols, Surface Active Agents, Anionic detergents, Organo-Chlorine Pesticides, PAH, PCB and PCT, Zinc, Nickel, Copper, Hexa-valent Chromium, Chromium (Total), Arsenic (Total), Lead, Cadmium, Mercury, Manganese, Iron, Vanadium, Selenium, Boron **(iv) Bio-assay (zebra Fish)** Test – For specified samples only.

2.1 Frequency of Sampling:

Parameter	Round of Sampling	Frequency on each Round
Ambient Air Quality Monitoring		
Particulate Matter (size less than 10 µm) or PM_{10}	03	3 Shifts of 8 hrs each
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	03	1 Shifts of 24 hr
Sulphur Dioxide (SO_2)	03	6 Shifts of 4 hrs each
Nitrogen Dioxide (NO_2)	03	6 Shifts of 4 hrs each
Ammonia (NH_3)	03	6 Shifts of 4 hrs each
Ozone (O_3)	03	24 Shifts of 1 hr each
Benzene (C_6H_6)	03	1 Shifts of 24 hr
Carbon Monoxide (CO)	03	24 Shifts of 1 hr each
Benzo (a) Pyrene (BaP) – particulate phase only	03	3 Shifts of 8 hrs each
Lead (Pb)	03	3 Shifts of 8 hrs each
Arsenic (As)	03	3 Shifts of 8 hrs each
Nickel (Ni)	03	3 Shifts of 8 hrs each
Ground Water		
As Mentioned Above	03	01 samples at each round
Surface Water		
As Mentioned Above	03	01 samples at each round

2.2 Methodology followed in Sampling and Analysis

Industries, places and locations that have been chosen for the sampling are representative of the city/ area. 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 references incorporated. Methodology of various types of parameters is presented under following annexure:

1. Stack Emission Sampling and Analysis Methodology – **Annexure I**
2. Ambient Air Sampling and Analysis Methodology **- Annexure II**
3. Surface Water/ Ground water Sampling and Analysis Methodology - **Annexure III**

3. Monitoring Locations at Aurangabad

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
AAQM Stations at Aurangabad						
	MIDC Shendra					
1.	Fire Brigade office	19°52'53.1"N	75°29'05.4"E	18.02.2020	22.02.2020	24.02.2020
2.	Outside of Wockhart Biotech Ltd	19°52'23.8"N	75°29'37.7"E	18.02.2020	22.02.2020	24.02.2020
3.	Outside of Parkins India Pvt Ltd.	19°52'49.5"N	75°30'28.8"E	18.02.2020	22.02.2020	24.02.2020
4.	Outside of Hyosung India Pvt Ltd.	19°52'28.2"N	75°31'38.7"E	18.02.2020	22.02.2020	24.02.2020
	MIDC Chikalthana					
1.	Outside Concept Pharma	19°52'31.1"N	75°22'35.9"E	17.02.2020	21.02.2020	23.02.2020
2.	Outside Harman Finochem Ltd.	19°52'47.8"N	75°22'57.9"E	17.02.2020	21.02.2020	23.02.2020
3.	Outside Wackhart Biotech Ltd.	19°52'39.2"N	75°22'28.9"E	17.02.2020	21.02.2020	23.02.2020
4.	Outside Jolly Board Ltd.	19°52'24.0"N	75°19'6.56"E	17.02.2020	21.02.2020	23.02.2020
	MIDC Walunj					
1.	Outside of Forbes B Sector	19°50'02.2"N	75°14'07.8"E	25.02.2020	27.02.2020	29.02.2020
2.	Outside of Endurance E-95	19°50'40.7"N	75°13'58.4"E	25.02.2020	27.02.2020	29.02.2020
3.	Outside of Taylo Lucid	19°51'12.1"N	75°13'32.2"E	25.02.2020	27.02.2020	29.02.2020
4.	Outside of DIPL	19°51'30.7"N	75°13'40.5"E	25.02.2020	27.02.2020	29.02.2020

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
	MIDC Paithan Road					
1.	Outside of Badve Engineering Chitegaon	19°47'1.35"N	75°16'42.0"E	24.02.2020	26.02.2020	28.02.2020
2.	Outside of Machhar Packaging, Farolla Village	19°44'30.5"N	75°17'42.2"E	24.02.2020	26.02.2020	28.02.2020
3.	Outside of Aurangabad Electrical, Chitegaon	19°45'23.4"N	75°17'41.2"E	24.02.2020	26.02.2020	28.02.2020
4.	Backside of Allana Frigarifico, Chitegaon	19°46'30.0"N	75°17'13.9"E	24.02.2020	26.02.2020	28.02.2020
Surface Water Sampling Locations at Aurangabad						
	MIDC Shendra					
1.	Pond Water, Nath Nagar	19°54'31.1"N	75°29'10.8"E	12.02.2020	14.02.2020	17.02.2020
2.	Nalla Water, Near Ultra Beauty Ltd.	19°53'53.1"N	75°29'06.6"E	12.02.2020	14.02.2020	17.02.2020
3.	Nalla Water, Back side of Perkins India Pvt Ltd.	19°53'02.2"N	75°30'46.3"E	12.02.2020	14.02.2020	17.02.2020
4.	Lake Water, Near Radico Distillery	19°53'23.2"N	75°30'04.8"E	12.02.2020	14.02.2020	17.02.2020
	MIDC Chikalthana					
1.	Dam Water, Sukna Dam	19°48'30.1"N	75°30'56.5"E	15.02.2020	18.02.2020	20.02.2020
2.	STP Outlet, Zalta phata	19°51'10.8"N	75°25'03.3"E	18.02.2020	20.02.2020	22.02.2020
3.	Nalla Water, Behind NHK	19°53'12.2"N	75°22'43.9"E	18.02.2020	20.02.2020	22.02.2020
4.	Nall Water, Uttaranagri	19°53'00.1"N	75°23'33.2"E	20.02.2020	22.02.2020	24.02.2020

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
	MIDC Walunj					
1.	Upstream Kham River Water	19°50'25.4"N	75°15'59.4"E	19.02.2020	21.02.2020	23.02.2020
2.	Downstream Kham River Water	19°48'40.4"N	75°14'59.0"E	19.02.2020	21.02.2020	23.02.2020
3.	SMS CETP Waluj Pvt Ltd.	19°49'44.4"N	75°14'23.0"E	19.02.2020	22.02.2020	24.02.2020
4.	Lake Water, Behind K Sector	19°51'10.1"N	75°12'54.3"E	19.02.2020	21.02.2020	23.02.2020
	MIDC Paithan Road					
1.	Lake Water, Farolla Village	19°43'35.5"N	75°18'22.3"E	22.02.2020	24.02.2020	26.02.2020
2.	Nalla Water, Kanchanwadi	19°50'03.7"N	75°17'26.9"E	24.02.2020	26.02.2020	28.02.2020
3.	Nalla Water	19°32'20.7"N	75°22'58.9"E	24.02.2020	26.02.2020	28.02.2020
4.	Nalla Water, Railway Station	19°51'24.5"N	75°19'19.9"E	24.02.2020	26.02.2020	28.02.2020
Ground Water Sampling Locations at Aurangabad						
	MIDC Shendra					
1.	Bore well water, Rajesh Kasture, Gat no 96	19°52'04.7"N	75°28'17.0"E	11.02.2020	13.02.2020	16.02.2020
2.	Open Well, Ramrao Kulkarni, Gat no 95	19°51'22.2"N	75°29'25.9"E	11.02.2020	13.02.2020	16.02.2020
3.	Open Well, Wockhardt Ltd.	19°52'27.6"N	75°29'31.9"E	11.02.2020	13.02.2020	16.02.2020
	MIDC Chikalthana					
1.	Bore Well Water, Mahda Colony	19°52'14.1"N	75°23'16.8"E	12.02.2020	14.02.2020	17.02.2020
2.	Hand Pump, Naregaon	19°53'39.4"N	75°23'01.7"E	12.02.2020	14.02.2020	17.02.2020

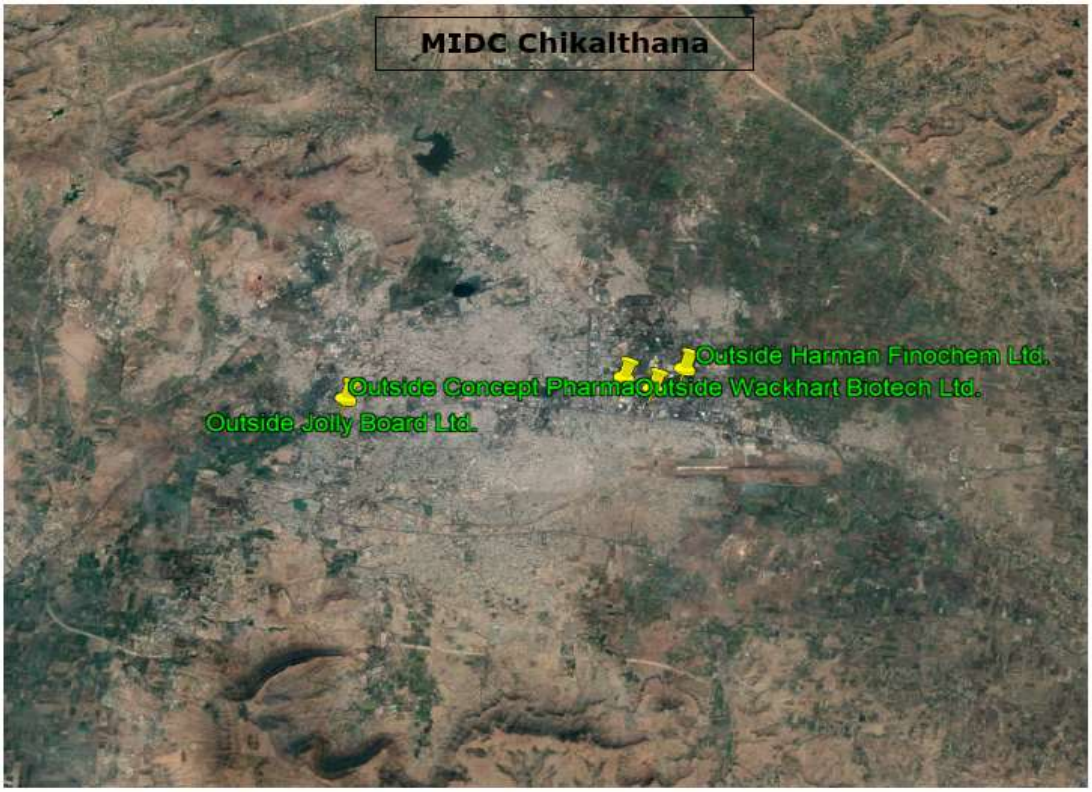
Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
3.	Bore Well water, Shree Shani Ashram	19°51'14.3"N	75°24'54.1"E	12.02.2020	14.02.2020	17.02.2020
	MIDC Walunj					
1.	Hand Pump, Near Sanskar School, CIDCO	19°51'01.8"N	75°14'35.4"E	19.02.2020	21.02.2020	23.02.2020
2.	Open Well, Hiwale Well, Near Ranjangaon	19°50'17.1"N	75°13'19.7"E	19.02.2020	21.02.2020	23.02.2020
3.	Open Well, Gayke Gat no. 71/72, Near Goodyear Tyre, Ghanegaon	19°51'35.2"N	75°12'13.5"E	19.02.2020	21.02.2020	23.02.2020
	MIDC Paithan Road					
1.	Open Well, Allana Frigarifico, Chitegaon	19°46'35.3"N	75°17'10.4"E	22.02.2020	24.02.2020	26.02.2020
2.	Hand Pump, Farolla Village	19°43'31.6"N	75°17'47.4"E	22.02.2020	24.02.2020	26.02.2020
3.	Open Well, Hajare Patil, Gat No. 200	19°32'29.4"N	75°23'31.8"E	24.02.2020	26.02.2020	28.02.2020
Stack Emission monitoring at Aurangabad						
	MIDC Shendra					
1.	Hyosung India Pvt Ltd.	19°52'32.9"N	75°31'38.5"E	22.02.2020	24.02.2020	26.02.2020
2.	Align Paper Mill, C-58.	19°53'11.8"N	75°29'20.0"E	22.02.2020	24.02.2020	26.02.2020
3.	Radiant Food Pvt Ltd.	19°52'55.9"N	75°30'12.9"E	22.02.2020	24.02.2020	26.02.2020
4.	Radico NV Distillery.	19°53'01.9"N	75°30'17.8"E	22.02.2020	24.02.2020	26.02.2020
5.	Cosmo Film Pvt Ltd.	19°53'24.3"N	75°29'24.6"E	22.02.2020	24.02.2020	26.02.2020

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
	MIDC Chikalthana					
1.	Jolly Board Ltd.	19°53'51.3"N	75°22'41.8"E	20.02.2020	23.02.2020	25.02.2020
2.	Garware Polyester Ltd.	19°53'36.3"N	75°22'01.9"E	20.02.2020	23.02.2020	25.02.2020
3.	Concept Pharma Ltd.	19°52'28.6"N	75°22'38.0"E	20.02.2020	23.02.2020	25.02.2020
4.	Radiant Induschem Pvt Ltd.	19°53'30.2"N	75°22'54.1"E	20.02.2020	23.02.2020	25.02.2020
5.	Wochardt (R&D), MIDC Chikalthana	19°52'39.2"N	75°22'28.9"E	20.02.2020	23.02.2020	25.02.2020
	MIDC Walunj					
1.	Carlsburg India	19°51'41.1"N	75°12'30.6"E	24.02.2020	26.02.2020	28.02.2020
2.	IPCA Laboratory	19°51'47.0"N	75°13'04.8"E	24.02.2020	26.02.2020	28.02.2020
3.	Lilasons	19°51'39.9"N	75°13'02.7"E	24.02.2020	26.02.2020	28.02.2020
4.	BKT	19°49'59.9"N	75°14'21.6"E	24.02.2020	26.02.2020	28.02.2020
5.	Varroc Engineering Pvt Ltd.	19°50'29.2"N	75°12'00.2"E	24.02.2020	26.02.2020	28.02.2020
6.	Eurolife Baxter India	19°49'52.9"N	75°13'58.6"E	24.02.2020	26.02.2020	28.02.2020
	MIDC Paithan Road					
1.	Allana Frigarifico, Chitegaon	19°46'30.0"N	75°17'13.9"E	25.02.2020	27.02.2020	29.02.2020
2.	Jailaxmi Casting	19°44'05.1"N	75°17'35.8"E	25.02.2020	27.02.2020	29.02.2020
3.	Harishrman Tradelinks	19°43'38.0"N	75°17'05.0"E	25.02.2020	27.02.2020	29.02.2020
4.	Machhar Packaging	19°44'30.7"N	75°17'44.9"E	25.02.2020	27.02.2020	29.02.2020

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
5.	Badve Engineering	19°46'59.1"N	75°16'46.5"E	25.02.2020	27.02.2020	29.02.2020
6.	OMR Bagla	19°46'13.6"N	75°17'16.3"E	25.02.2020	27.02.2020	29.02.2020
VOCs Emission monitoring at Aurangabad						
	MIDC Shendra					
1.	Sterlite	19°53'19.3"N	75°29'25.7"E	22.02.2020	24.02.2020	26.02.2020
2.	Premium Transmission Ltd.	19°52'12.7"N	75°30'11.3"E	22.02.2020	24.02.2020	26.02.2020
	MIDC Chikalthana					
1.	NHK Automotive Pvt Ltd.	19°53'11.6"N	75°22'50.8"E	20.02.2020	23.02.2020	25.02.2020
2.	NRB Bearing Pvt Ltd.	19°53'03.5"N	75°22'52.0"E	20.02.2020	23.02.2020	25.02.2020
	MIDC Walunj					
1.	Varroc Plant VII	19°50'53.3"N	75°11'56.9"E	24.02.2020	26.02.2020	28.02.2020
2.	Amri India	19°51'46.2"N	75°13'18.8"E	24.02.2020	26.02.2020	28.02.2020
	MIDC Paithan Road					
1.	BG Fastening, Farolla	19°44'07.6"N	75°17'44.8"E	25.02.2020	27.02.2020	29.02.2020

3.1 Mapping of the locations monitored

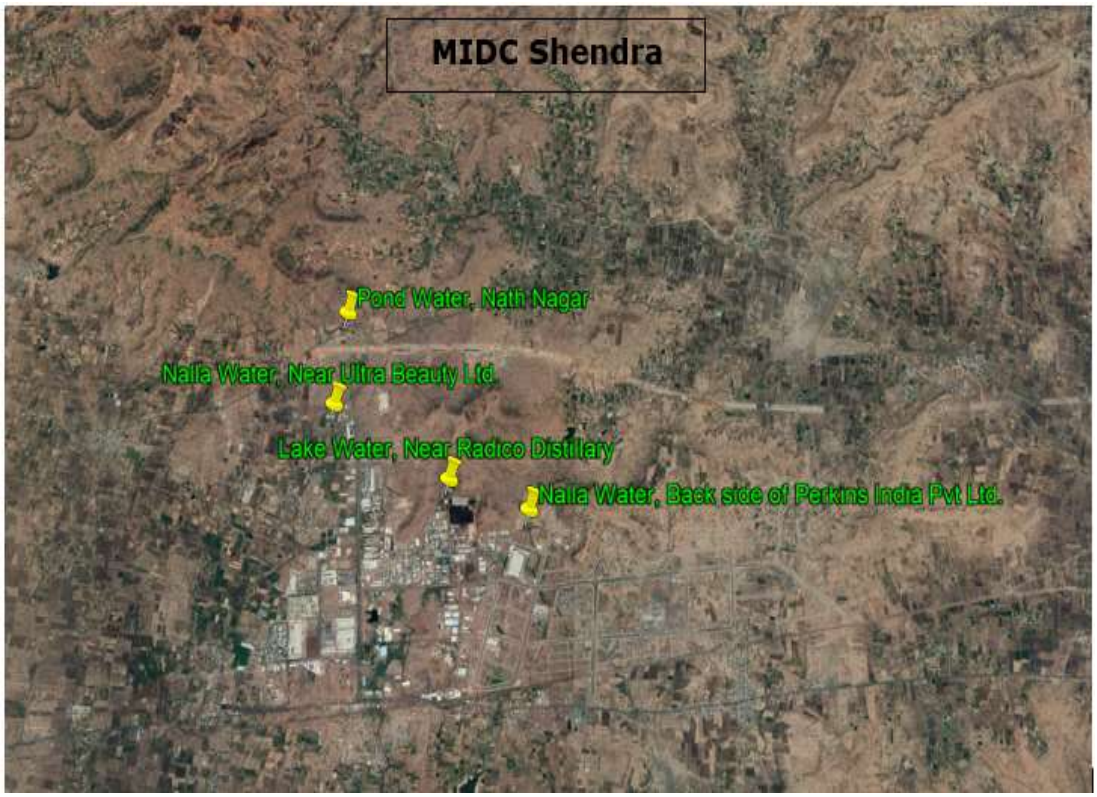
AAQM Stations at Aurangabad

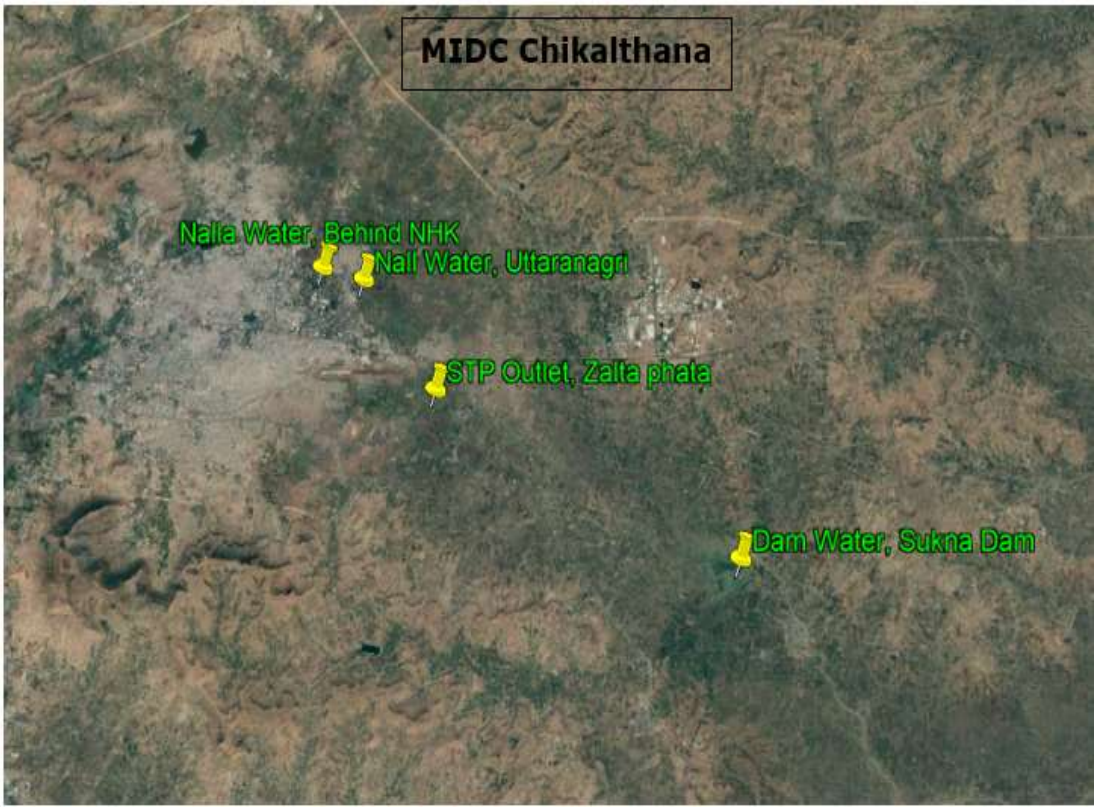



MIDC Walunj
Outside of Taylo Lucid
Outside of DIPL
Outside of Endurance E-95
Outside of Forbes B Sector

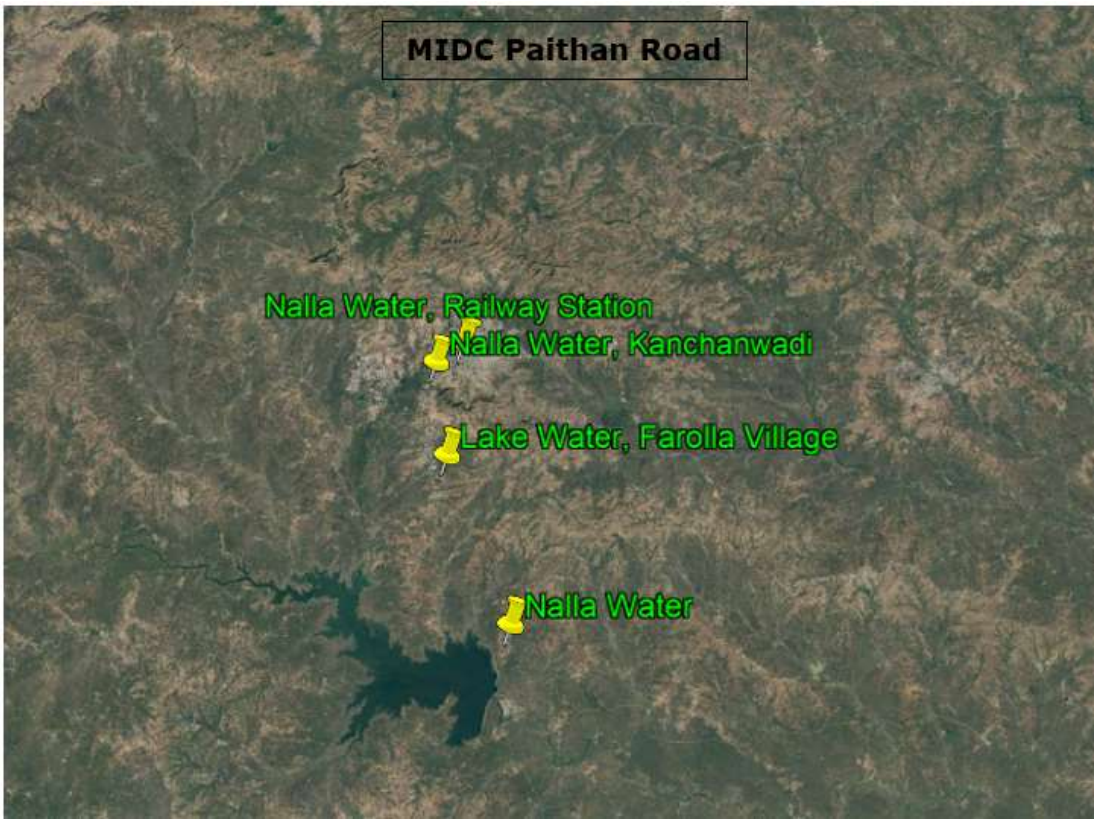

MIDC Paithan Road
Outside of Badve Engineering Chitegaon
Backside of Allana Frigarifico
Outside of Aurangabad Electrical
Outside of Machhar Packaging

Surface water sampling locations at Aurangabad

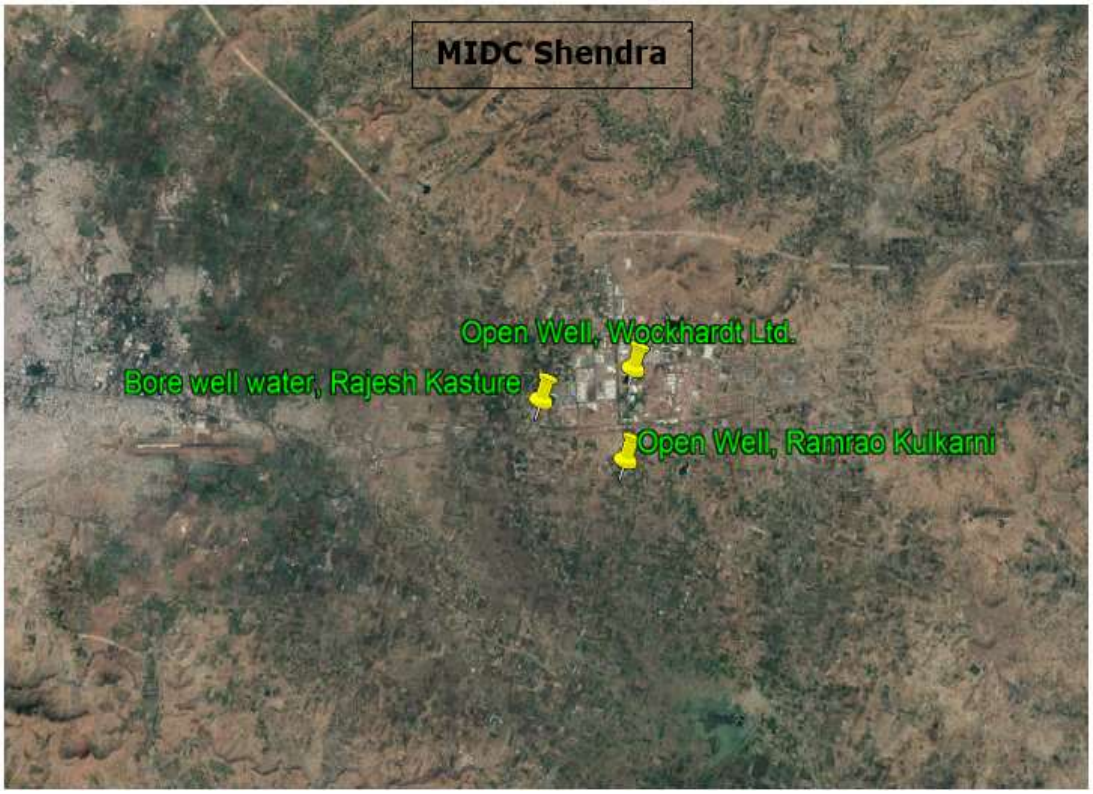


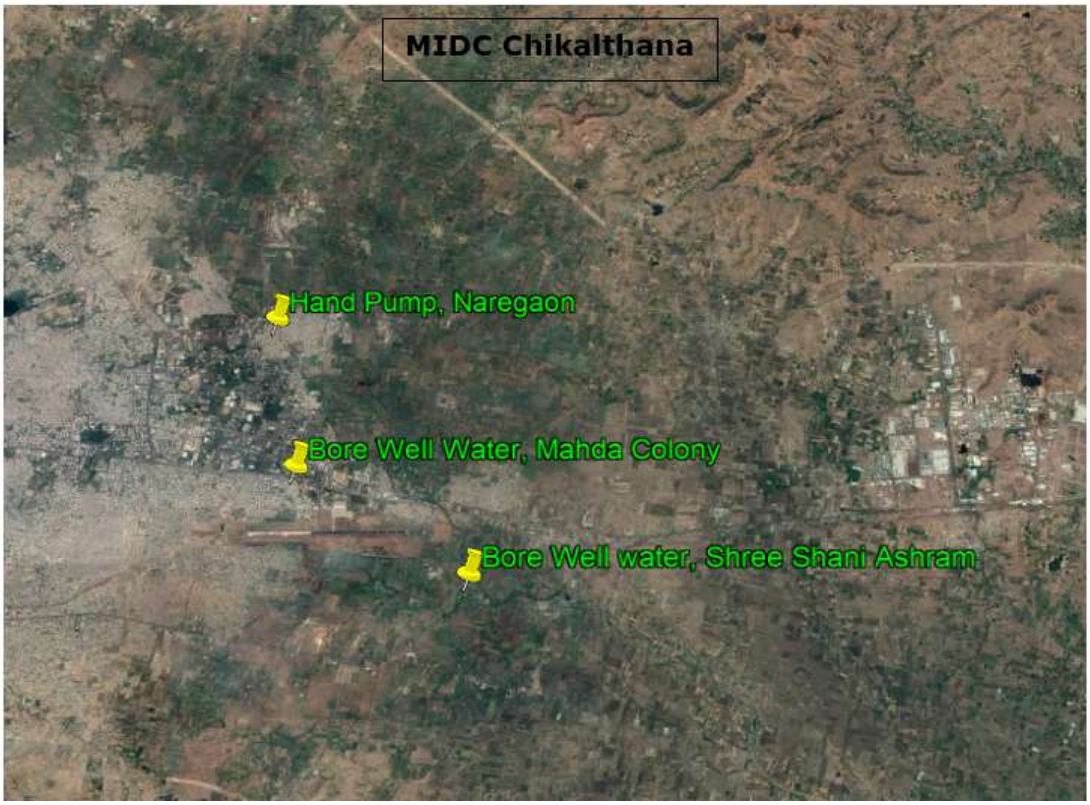



MIDC Waluni
Ghanegaon
Lake Water, Behind K Sector
Dharmapur
Upstream Kham River Water
Waluj
Kanchanwadi
SMS CETP Waluj Pvt Ltd.
Pandharpur
Downstream Kham River Water
Waluj Kh.

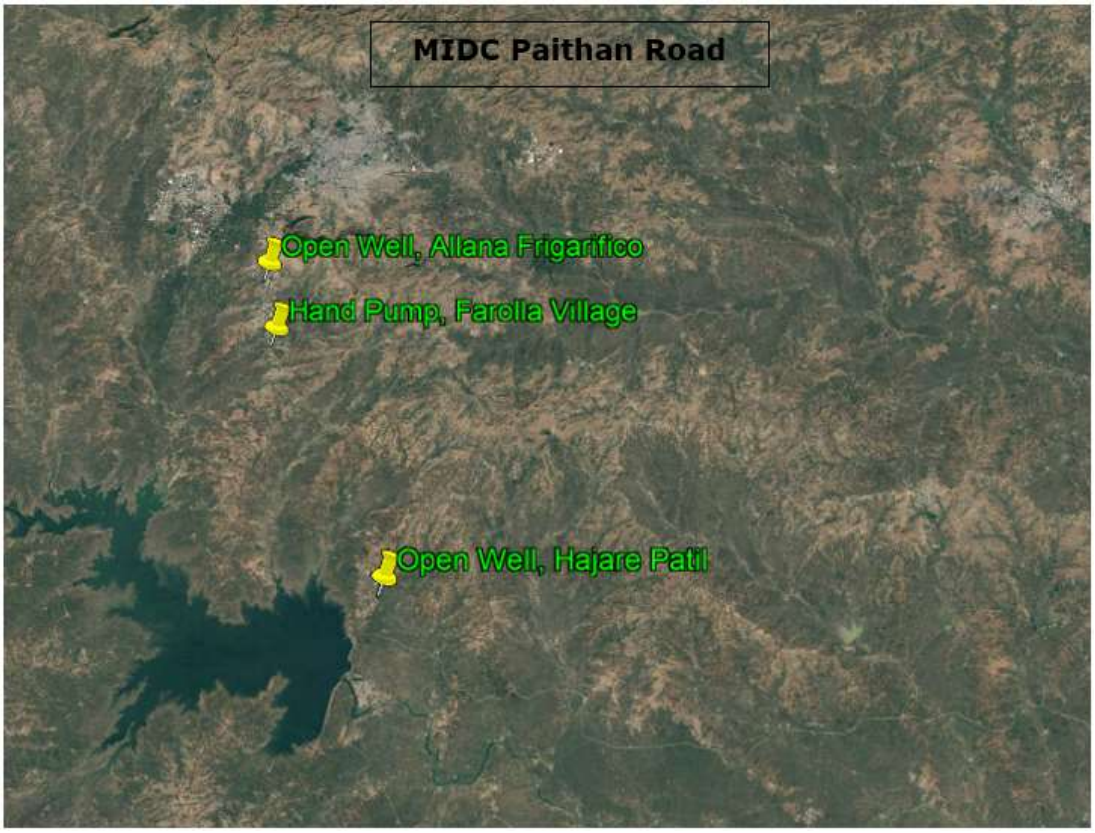

MIDC Paithan Road
Nalla Water, Railway Station
Nalla Water, Kanchanwadi
Lake Water, Farolla Village
Nalla Water

Ground water sampling locations at Aurangabad






MIDC Walunj
Open Well, Gayke Gat no. 71/72
Hand Pump, Near Sanskar School
Open Well, Hiwale Well


MIDC Paithan Road
Open Well, Allana Frigarifico
Hand Pump, Farolla Village
Open Well, Hajare Patil

4. Result of Analysis:

Results of Analysis are tabulated below for Stack Emission Monitoring, Ambient Air Quality Monitoring, Surface Water Analysis and Water Analysis. These are followed by their respective graphical representation.

***Kindly note:**

- *N.A specifies the sample is not analyzed for the specific parameter.*
- *BDL specifies that the result obtained is below detection limit.*
- *Also, industrial clusters observed with below detection limit parameters are NOT included into the graphs*

4.1 Stack Emission:

Stack Emission Monitoring Results are compared against The Environment (Protection) Rules, 1986 General Emission Standard - Part D. The limits are represented on the graphical representation.

Name of the Industry: Hyosung India Pvt Ltd. (MIDC Shendra)

Parameters	Units	Results		
		Round-1 (22.02.2020)	**Round-2 (24.02.2020)**	**Round-3 (26.02.2020)**
Particulate Matter	mg/Nm^3	13	13	12
Sulphur Dioxide (SO_2)	mg/Nm^3	8.89	7.27	8.89
	kg/day	3.68	2.99	3.71
Nitrogen dioxide (NO_2)	mg/Nm^3	14.8	14.4	17.5

Name of the Industry: Align Paper Mill (MIDC Shendra)

Parameters	Units	Results		
		Round-1 (22.02.2020)	**Round-2 (24.02.2020)**	**Round-3 (26.02.2020)**
Particulate Matter	mg/Nm^3	26	23	14
Sulphur Dioxide (SO_2)	mg/Nm^3	BDL	BDL	BDL
	kg/day	BDL	BDL	BDL
Nitrogen dioxide (NO_2)	mg/Nm^3	11.7	11.7	11.7

Name of the Industry: Radiant Food Pvt. Ltd. (MIDC Shendra)

Parameters	Units	Results		
		Round-1 (22.02.2020)	**Round-2 (24.02.2020)**	**Round-3 (26.02.2020)**
Particulate Matter	mg/Nm^3	12	12	21
Sulphur Dioxide (SO_2)	mg/Nm^3	BDL	BDL	BDL
	kg/day	BDL	BDL	BDL
Nitrogen dioxide (NO_2)	mg/Nm^3	11.8	11.8	11.6

Name of the Industry: Radico NV Distillery (MIDC Shendra)

Parameters	Units	Results		
		Round-1 (22.02.2020)	**Round-2 (24.02.2020)**	**Round-3 (26.02.2020)**
Particulate Matter	mg/Nm^3	23	16	15
Sulphur Dioxide (SO_2)	mg/Nm^3	7.41	7.27	8.88
	kg/day	31.2	30.6	37.4
Nitrogen dioxide (NO_2)	mg/Nm^3	17.5	11.7	17.5

Name of the Industry: Cosmo Film Pvt Ltd. (MIDC Shendra)

Parameters	Units	Results		
		Round-1 (22.02.2020)	**Round-2 (24.02.2020)**	**Round-3 (26.02.2020)**
Particulate Matter	mg/Nm^3	14	12	12
Sulphur Dioxide (SO_2)	mg/Nm^3	11.9	11.9	11.6
	kg/day	1.75	1.7	1.72
Nitrogen dioxide (NO_2)	mg/Nm^3	26.2	23.5	23.4

Name of the Industry: Garware Polyster Ltd. (MIDC Chikalthana)

Parameters	Units	Results		
		Round-1 (20.02.2020)	Round-2 (23.02.2020)	Round-3 (25.02.2020)
Particulate Matter	mg/Nm^3	18	14	12
Sulphur Dioxide (SO_2)	mg/Nm^3	7.27	8.89	8.89
	kg/day	0.259	0.316	0.318
Nitrogen dioxide (NO_2)	mg/Nm^3	14.2	17.6	17.5

Name of the Industry: Wochardt (R&D) (MIDC Chikalthana)

Parameters	Units	Results		
		Round-1 (20.02.2020)	Round-2 (23.02.2020)	Round-3 (25.02.2020)
Particulate Matter	mg/Nm^3	14	14	15
Sulphur Dioxide (SO_2)	mg/Nm^3	8.73	7.41	8.73
	kg/day	2.28	1.93	2.3
Nitrogen dioxide (NO_2)	mg/Nm^3	17.6	14.7	17.5

Name of the Industry: Radiant Induschem Pvt Ltd. (MIDC Chikalthana)

Parameters	Units	Results		
		Round-1 (20.02.2020)	Round-2 (23.02.2020)	Round-3 (25.02.2020)
Particulate Matter	mg/Nm^3	14	14	15
Sulphur Dioxide (SO_2)	mg/Nm^3	8.73	7.41	8.73
	kg/day	2.28	1.93	2.3
Nitrogen dioxide (NO_2)	mg/Nm^3	17.6	14.7	17.5

Name of the Industry: Jolly Board Ltd. (MIDC Chikalthana)

Parameters	Units	Results		
		Round-1 (20.02.2020)	**Round-2 (23.02.2020)**	**Round-3 (25.02.2020)**
Particulate Matter	mg/Nm^3	11	BDL0	11
Sulphur Dioxide (SO_2)	mg/Nm^3	8.73	8.89	8.89
	kg/day	5.28	5.37	5.44
Nitrogen dioxide (NO_2)	mg/Nm^3	17.3	17.7	20.4

Name of the Industry: Concept Pharma Ltd. (MIDC Chikalthana)

Parameters	Units	Results		
		Round-1 (20.02.2020)	**Round-2 (23.02.2020)**	**Round-3 (25.02.2020)**
Particulate Matter	mg/Nm^3	13	14	11
Sulphur Dioxide (SO_2)	mg/Nm^3	11.6	42.2	11.9
	kg/day	0.417	1.53	0.42
Nitrogen dioxide (NO_2)	mg/Nm^3	26.4	23.4	23.4

Name of the Industry: Carlsburg India (MIDC Waluj)

Parameters	Units	Results		
		Round-1 (24.02.2020)	**Round-2 (26.02.2020)**	**Round-3 (28.02.2020)**
Particulate Matter	mg/Nm^3	11	17	18
Sulphur Dioxide (SO_2)	mg/Nm^3	8.89	8.72	10.2
	kg/day	3.72	3.6	4.21
Nitrogen dioxide (NO_2)	mg/Nm^3	14.6	17.5	21.1

Name of the Industry: IPCA Laboratory (MIDC Waluj)

Parameters	Units	Results		
		Round-1 (24.02.2020)	**Round-2 (26.02.2020)**	**Round-3 (28.02.2020)**
Particulate Matter	mg/Nm^3	13	14	16
Sulphur Dioxide (SO_2)	mg/Nm^3	10.2	8.89	10.4
	kg/day	2.61	2.19	2.62
Nitrogen dioxide (NO_2)	mg/Nm^3	22.9	17.6	20.2

Name of the Industry: Lilasons (MIDC Waluj)

Parameters	Units	Results		
		Round-1 (24.02.2020)	**Round-2 (26.02.2020)**	**Round-3 (28.02.2020)**
Particulate Matter	mg/Nm^3	11	13	13
Sulphur Dioxide (SO_2)	mg/Nm^3	5.81	8.73	8.88
	kg/day	1.46	2.16	2.17
Nitrogen dioxide (NO_2)	mg/Nm^3	11.7	17.6	17.6

Name of the Industry: BKT (MIDC Waluj)

Parameters	Units	Results		
		Round-1 (24.02.2020)	**Round-2 (26.02.2020)**	**Round-3 (28.02.2020)**
Particulate Matter	mg/Nm^3	14	15	14
Sulphur Dioxide (SO_2)	mg/Nm^3	10.2	8.89	10.2
	kg/day	6.01	5.24	6.13
Nitrogen dioxide (NO_2)	mg/Nm^3	20.5	17.6	23.2

Name of the Industry: Varroc Engineering Ltd. (MIDC Waluj)

Parameters	Units	Results		
		Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Particulate Matter	mg/Nm^3	12	15	19
Sulphur Dioxide (SO_2)	mg/Nm^3	7.41	7.27	7.41
	kg/day	0.261	0.263	0.275
Nitrogen dioxide (NO_2)	mg/Nm^3	14.7	14.5	14.6

Name of the Industry: Eurolife Baxter India (MIDC Waluj)

Parameters	Units	Results		
		Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Particulate Matter	mg/Nm^3	14	19	15
Sulphur Dioxide (SO_2)	mg/Nm^3	5.82	5.93	7.27
	kg/day	1.96	2.01	2.45
Nitrogen dioxide (NO_2)	mg/Nm^3	11.7	11.6	17.5

Name of the Industry: Allana Frigarifico (Paithan MIDC)

Parameters	Units	Results		
		Round-1 (25.02.2020)	Round-2 (27.02.2020)	Round-3 (29.02.2020)
Particulate Matter	mg/Nm^3	17	11	11
Sulphur Dioxide (SO_2)	mg/Nm^3	8.89	8.89	10.2
	kg/day	5.12	5.3	5.93
Nitrogen dioxide (NO_2)	mg/Nm^3	17.4	17.5	20.4

Name of the Industry: Jailaxmi Casting Farolla (Paithan MIDC)

Parameters	Units	Results		
		Round-1 (25.02.2020)	**Round-2 (27.02.2020)**	**Round-3 (29.02.2020)**
Particulate Matter	mg/Nm^3	16	14	16
Sulphur Dioxide (SO_2)	mg/Nm^3	5.93	BDL	BDL
	kg/day	10.1	BDL	BDL
Nitrogen dioxide (NO_2)	mg/Nm^3	11.7	11.7	11.7

Name of the Industry: Harishrman Tradelinks (Paithan MIDC)

Parameters	Units	Results		
		Round-1 (25.02.2020)	**Round-2 (27.02.2020)**	**Round-3 (29.02.2020)**
Particulate Matter	mg/Nm^3	15	17	13
Sulphur Dioxide (SO_2)	mg/Nm^3	10.4	7.41	8.89
	kg/day	1.47	1.01	1.23
Nitrogen dioxide (NO_2)	mg/Nm^3	20.4	14.6	17.1

Name of the Industry: Machhar Packaging Farolla Village (Paithan MIDC)

Parameters	Units	Results		
		Round-1 (25.02.2020)	**Round-2 (27.02.2020)**	**Round-3 (29.02.2020)**
Particulate Matter	mg/Nm^3	17	15	18
Sulphur Dioxide (SO_2)	mg/Nm^3	BDL	BDL	BDL
	kg/day	BDL	BDL	BDL
Nitrogen dioxide (NO_2)	mg/Nm^3	11.8	11.7	11.7

Name of the Industry: Badve Engineering Chietgaon (Paithan MIDC)

Parameters	Units	Results		
		Round-1 (25.02.2020)	**Round-2 (27.02.2020)**	**Round-3 (29.02.2020)**
Particulate Matter	mg/Nm^3	13	14	11
Sulphur Dioxide (SO_2)	mg/Nm^3	7.41	8.89	8.73
	kg/day	0.259	0.311	0.311
Nitrogen dioxide (NO_2)	mg/Nm^3	14.6	20.5	20.3

Name of the Industry: OMR Bagla Chietgaon (Paithan MIDC)

Parameters	Units	Results		
		Round-1 (25.02.2020)	**Round-2 (27.02.2020)**	**Round-3 (29.02.2020)**
Particulate Matter	mg/Nm^3	12	12	12
Sulphur Dioxide (SO_2)	mg/Nm^3	11.9	11.6	12
	kg/day	3.17	3.14	3.23
Nitrogen dioxide (NO_2)	mg/Nm^3	23.4	25.7	27

VOCs Results

Name of the Industry: Sterlite MIDC Shendra

Parameters	Units	Results		
		Round-1 (24.02.2020)	**Round-2 (26.02.2020)**	**Round-3 (28.02.2020)**
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Premium Transmission MIDC Shendra

Parameters	Units	Results		
		Round-1 (24.02.2020)	**Round-2 (26.02.2020)**	**Round-3 (28.02.2020)**
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: NHK Bearing MIDC Chikalthana

Parameters	Units	Results		
		Round-1 (20.02.2020)	**Round-2 (23.02.2020)**	**Round-3 (25.02.2020)**
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: NRB Bearing MIDC Chikalthana

Parameters	Units	Results		
		Round-1 (20.02.2020)	**Round-2 (23.02.2020)**	**Round-3 (25.02.2020)**
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL

Parameters	Units	Results		
		Round-1 (20.02.2020)	Round-2 (23.02.2020)	Round-3 (25.02.2020)
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Varroc Plant MIDC Waluj

Parameters	Units	Results		
		Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

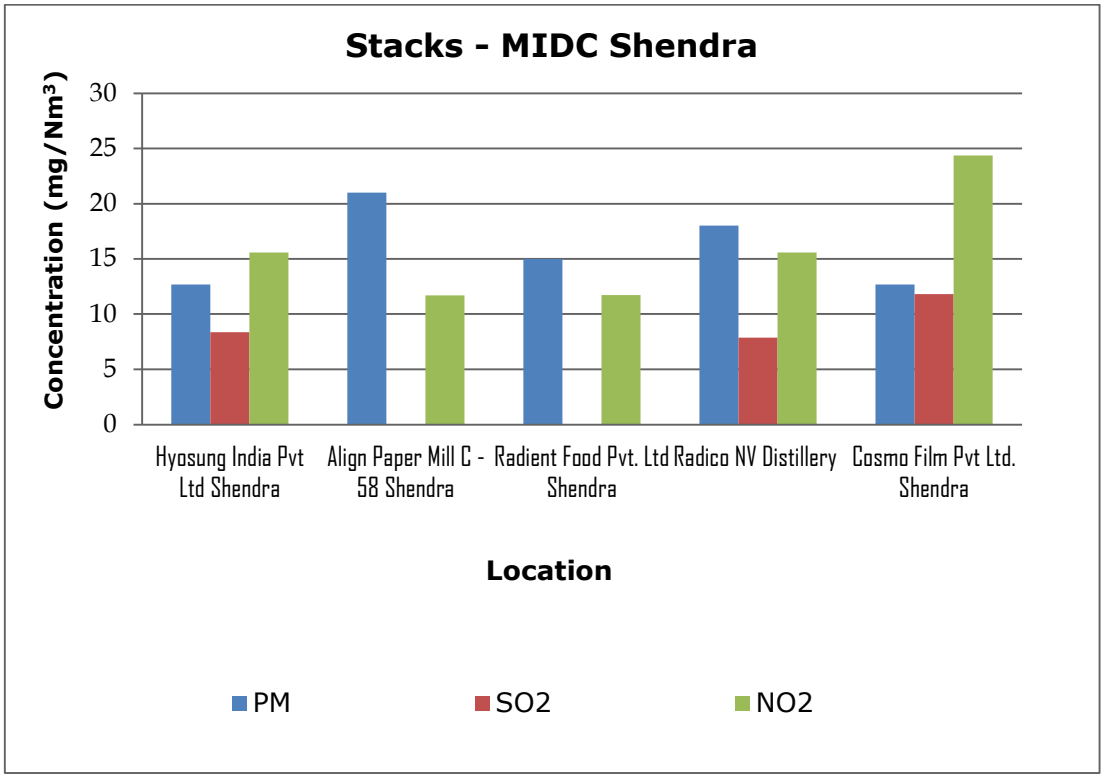
Name of the Industry: Amri India MIDC Waluj

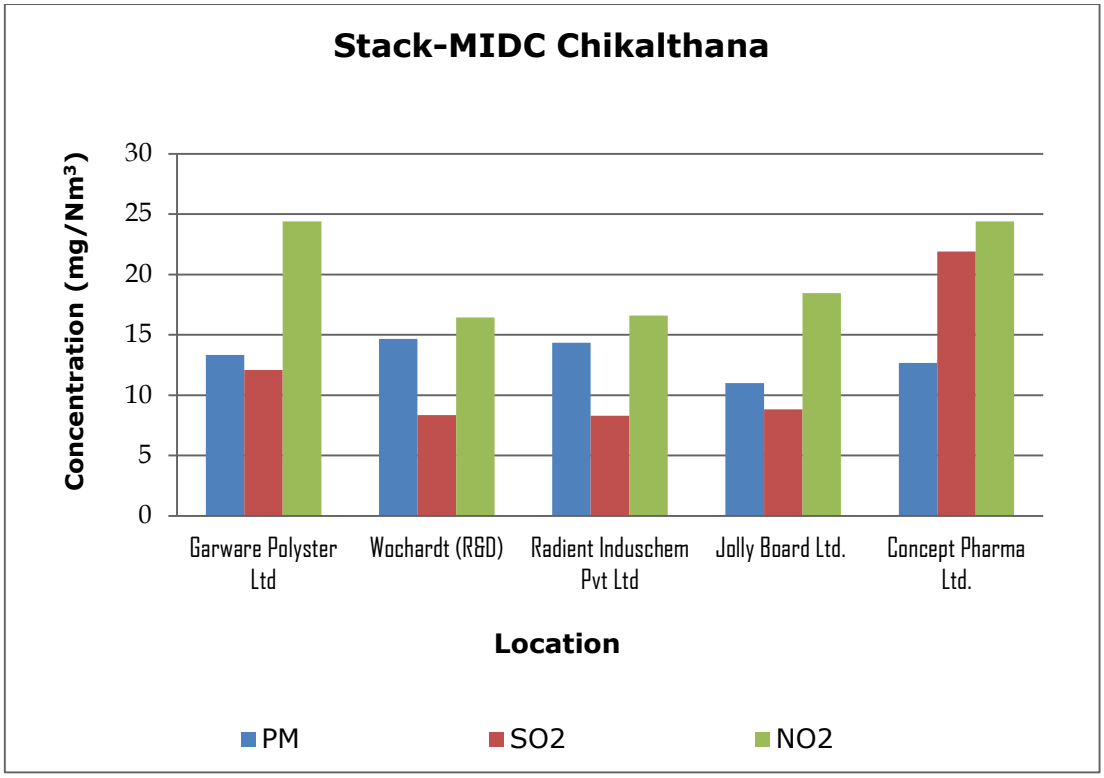
Parameters	Units	Results		
		Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

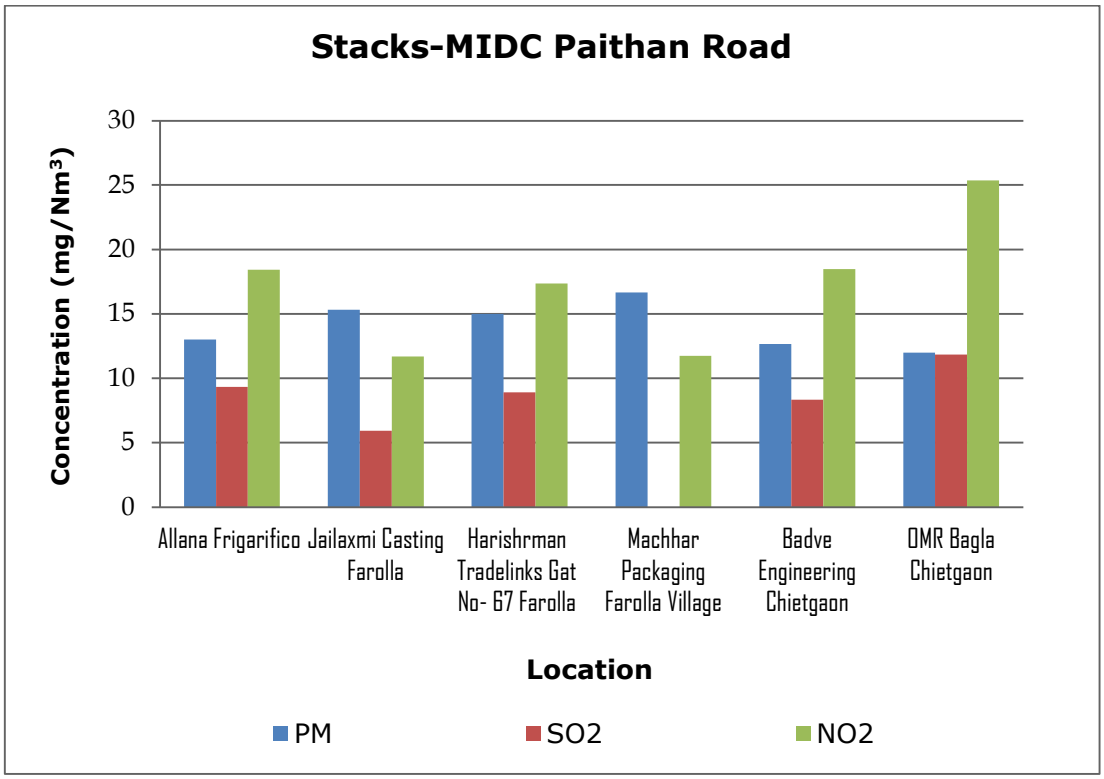
Name of the Industry: BG Fastening Farrola MIDC Paithan

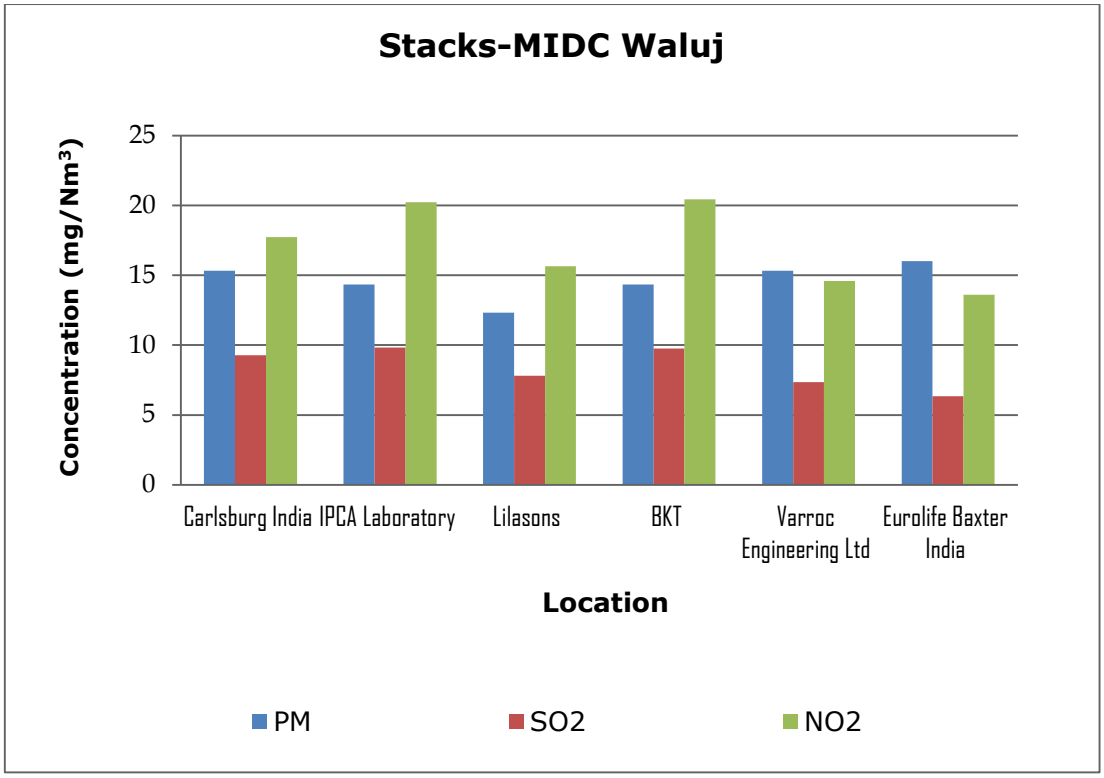
Parameters	Units	Results		
		Round-1 (25.02.2020)	Round-2 (27.02.2020)	Round-3 (29.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Graphs: Stack Emission Monitoring:




Stack-MIDC Chikalthana
Concentration (mg/Nm³)
30
25
20
15
10
5
0
Garware Polyster Ltd
Wochardt (R&D)
Radient Induschem Pvt Ltd
Jolly Board Ltd.
Concept Pharma Ltd.
Location
PM
SO2
NO2


Stacks-MIDC Paithan Road
Concentration (mg/Nm³)
30
25
20
15
10
5
0
Allana Frigarifico
Jailaxmi Casting Farolla
Harishrman Tradelinks Gat No- 67 Farolla
Machhar Packaging Farolla Village
Badve Engineering Chietgaon
OMR Bagla Chietgaon
Location
PM
SO2
NO2



4.2 Ambient Air Quality:

In order to arrive at conclusions, the Ambient Air Quality Monitoring Results are compared against National Ambient Air Quality Standards, 2009 (**Annexure V**).

Location: Fire Brigade Office (Shendra MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (18.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Sulphur Dioxide (SO_2)	µg/m³	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m³	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m³	**100**	45	69	72
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m³	**60**	16	16	21
Ozone (O_3)	µg/m³	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m³	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m³	**4**	BDL	2.69	2.81
Ammonia (NH_3)	µg/m³	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m³	**5**	BDL	1.39	1.38

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (18.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.90	0.44	BDL
Nickel (Ni)	ng/m^3	**20**	BDL	8.74	BDL

Location: Outside of Hyosung India Pvt. Ltd. (Shendra MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (18.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	294	58	82
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	71	16	22
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	BDL	2.25
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	BDL	1.14	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.742	BDL	0.365
Nickel (Ni)	ng/m^3	**20**	5.53	4.73	4.93

Location: Outside of Parkins India Pvt. Ltd. (Shendra MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (18.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	653	71	87
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	155	19	24
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	1.82	1.59
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	BDL	BDL	1.04
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	0.374	BDL
Nickel (Ni)	ng/m^3	**20**	5.99	9.0	6.14

Location: Outside of Wockhart Biotech Ltd. (Shendra MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (18.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	77	61	66
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	22	17	17
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	2.32	BDL

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (18.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	1.09	1.05
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	0.457	0.495
Nickel (Ni)	ng/m^3	**20**	BDL	8.29	4.9

Location: Outside of Jolly Board (Chikalthana MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (21.02.2020)	Round-3 (24.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	92	69	44
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	26	21	11
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	1.77	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	BDL	1.72
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.927	0.903	0.413
Nickel (Ni)	ng/m^3	**20**	3.41	5.68	4.93

Location: Outside of Harman Finochem Ltd. (Chikalthana MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (21.02.2020)	Round-3 (24.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	472	75	36
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	115	20	9
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	1.75	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	1.3	1.36	1.22
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.56	0.935	0.307
Nickel (Ni)	ng/m^3	**20**	4.08	5.41	BDL

Location: Near Wochardt Biotech Ltd (R & D), (Chikalthana MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (21.02.2020)	Round-3 (24.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	81	84	38
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	23	19	8
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	0.75	BDL

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (21.02.2020)	Round-3 (24.02.2020)
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	BDL	1.19
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.705	BDL	0.447
Nickel (Ni)	ng/m^3	**20**	7.73	5.72	BDL

Location: Outside of Concept Pharma (Chikalthana MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (21.02.2020)	Round-3 (24.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	237	86	42
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	55	23	6
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	0.02	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	3.17	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	10.1	BDL	1.13
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.341	BDL	BDL
Nickel (Ni)	ng/m^3	**20**	1.59	5.22	5.1

Location: Outside of Forbes (Waluj MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (25.02.2020)	Round-2 (27.02.2020)	Round-3 (29.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	82	68	64
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	23	18	18
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	1.81	3.55	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	9.47	5.12	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.415	BDL	BDL
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	10.7

Location: Outside of DIPL (Waluj MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (25.02.2020)	Round-2 (27.02.2020)	Round-3 (29.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	75	38	73
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	21	8	20
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	1.49	BDL	2.81

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (25.02.2020)	Round-2 (27.02.2020)	Round-3 (29.02.2020)
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	11.5	2.8	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	BDL
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	10.5

Location: Outside of Taylo Lucid (Waluj MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (25.02.2020)	Round-2 (27.02.2020)	Round-3 (29.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	65	35	92
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	18	5	24
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	2.29	BDL	3.81
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	6.22	1.11	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.309	BDL	BDL
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	7.51

Location: Outside of Endurance E-95 (Waluj MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (25.02.2020)	Round-2 (27.02.2020)	Round-3 (29.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	84	41	85
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	22	12	24
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	2.55	BDL	3.15
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	9.53	1.84	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.35	BDL	BDL
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	7.34

Location: Backside of Allana Frigarifico (Paithan MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	66	35	79
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	18	8	23
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	2.06	BDL	3.15

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	7.33	5.12	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.338	0.391	BDL
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	BDL

Location: Outside of Machhar Packaging Farolla Village (Paithan MIDC)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	64	42	77
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	17	8	22
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	3.11	BDL	1.31
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	2.38	7.39	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.336	0.357	BDL
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	BDL

Location: Outside of Badve Engineering Chietgaon (Paithan MIDC)

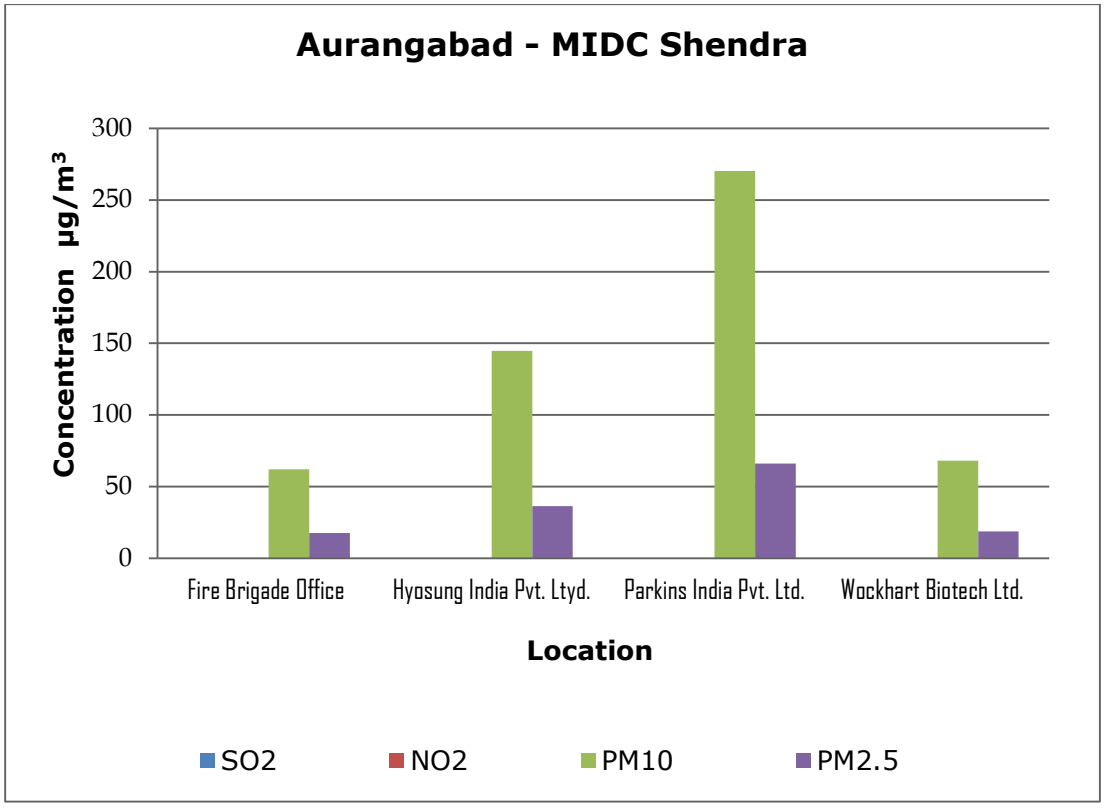
Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	68	35	82
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	19	5	19
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	2.86	BDL	2.81
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	4.52	1.75	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.394	0.611	BDL
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	BDL

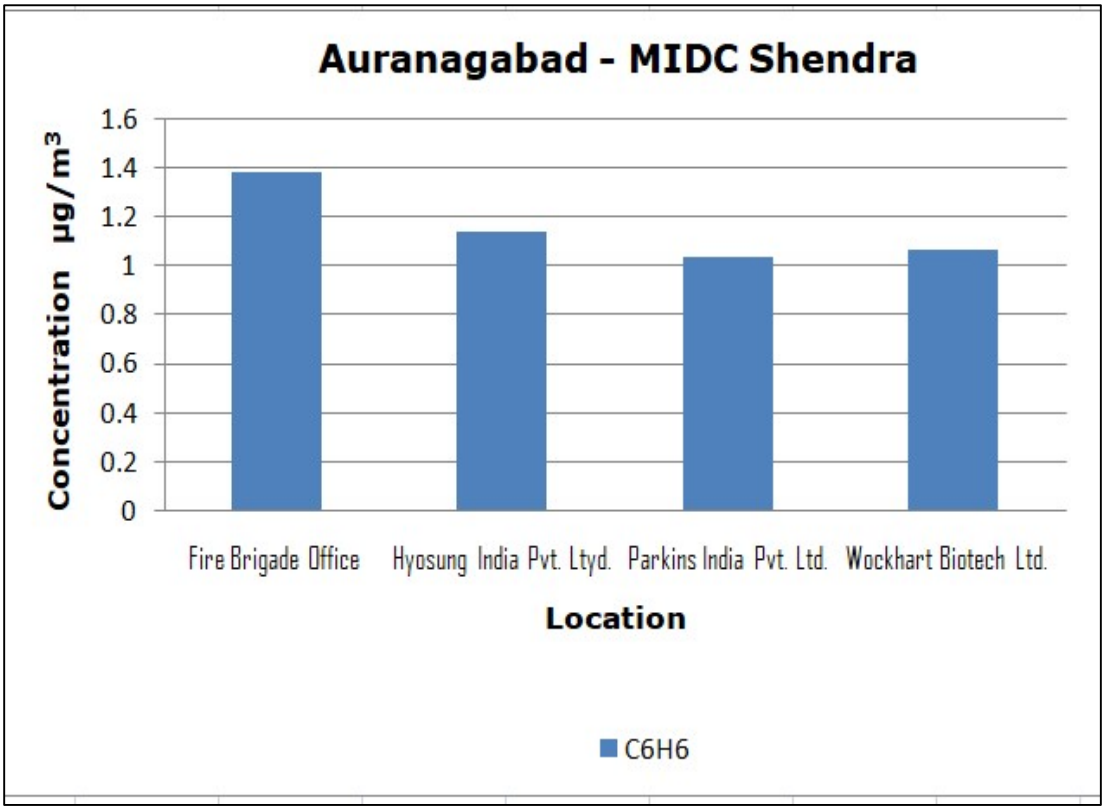
Location: Outside of Aurangabad Electricals Chietgaon (Paithan MIDC)

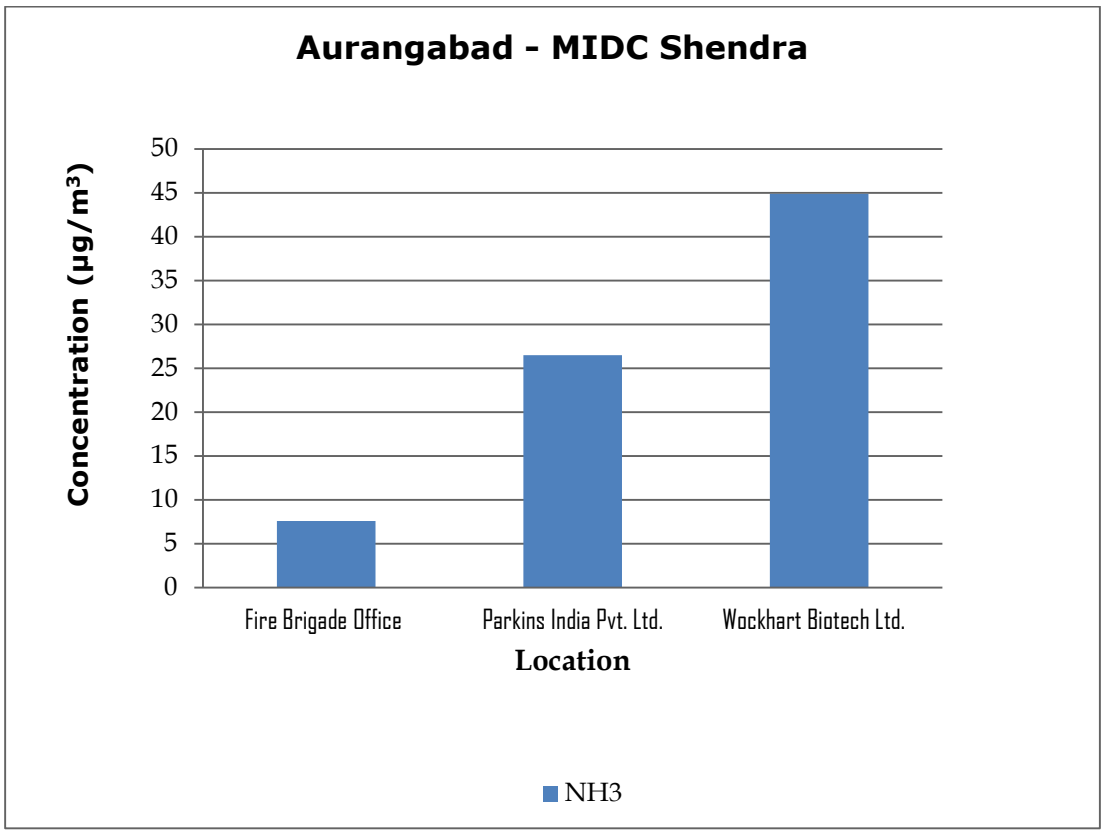
Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	59	42	50
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	15	8	14
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	1.5	BDL	3.69

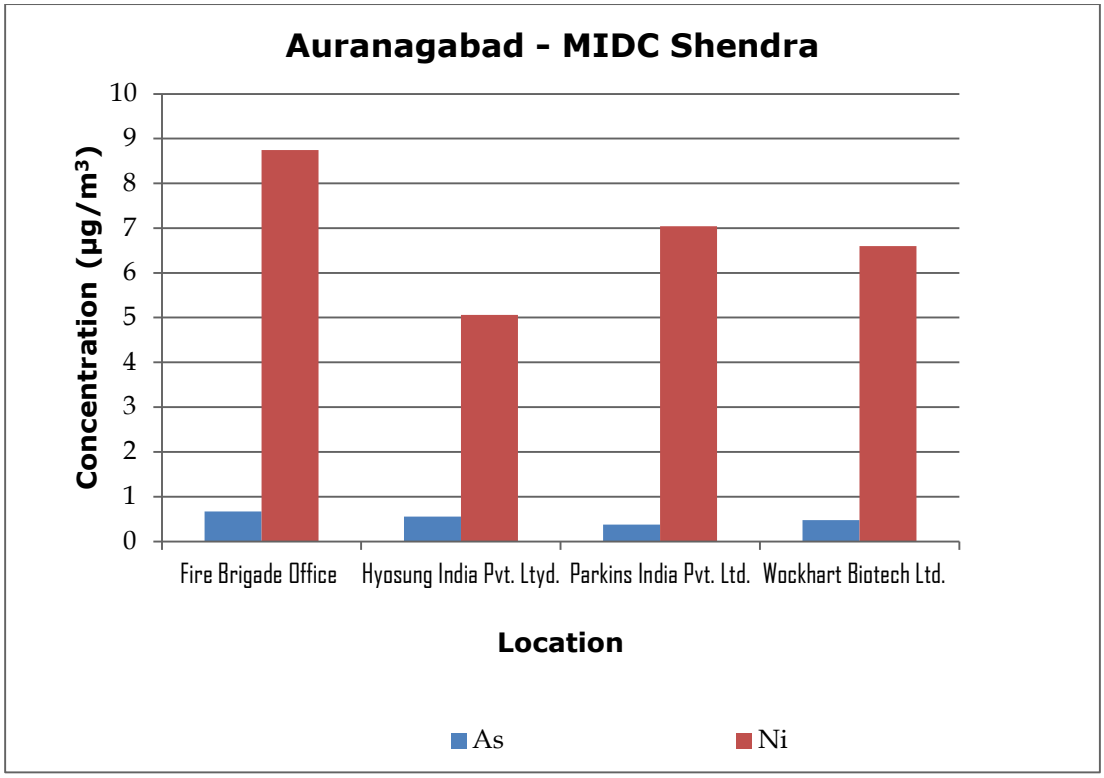
Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	1.67	3.52	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.379	0.357	BDL
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	BDL

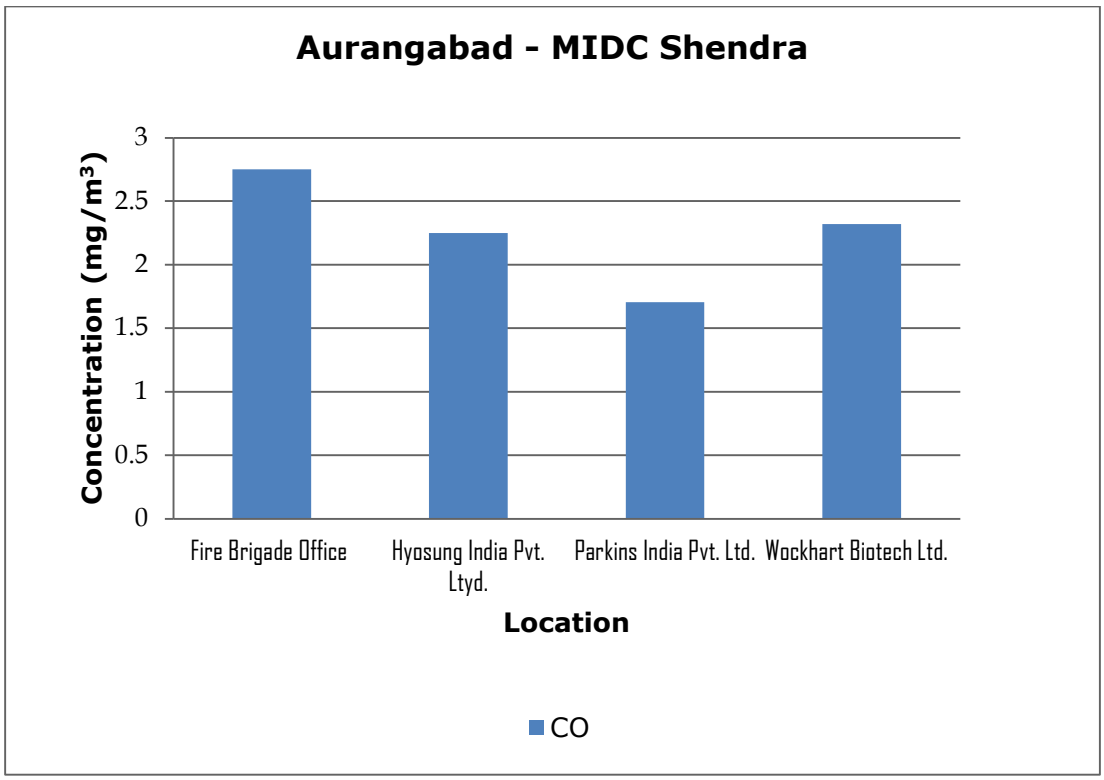
Graphs: Ambient Air Quality of Aurangabad

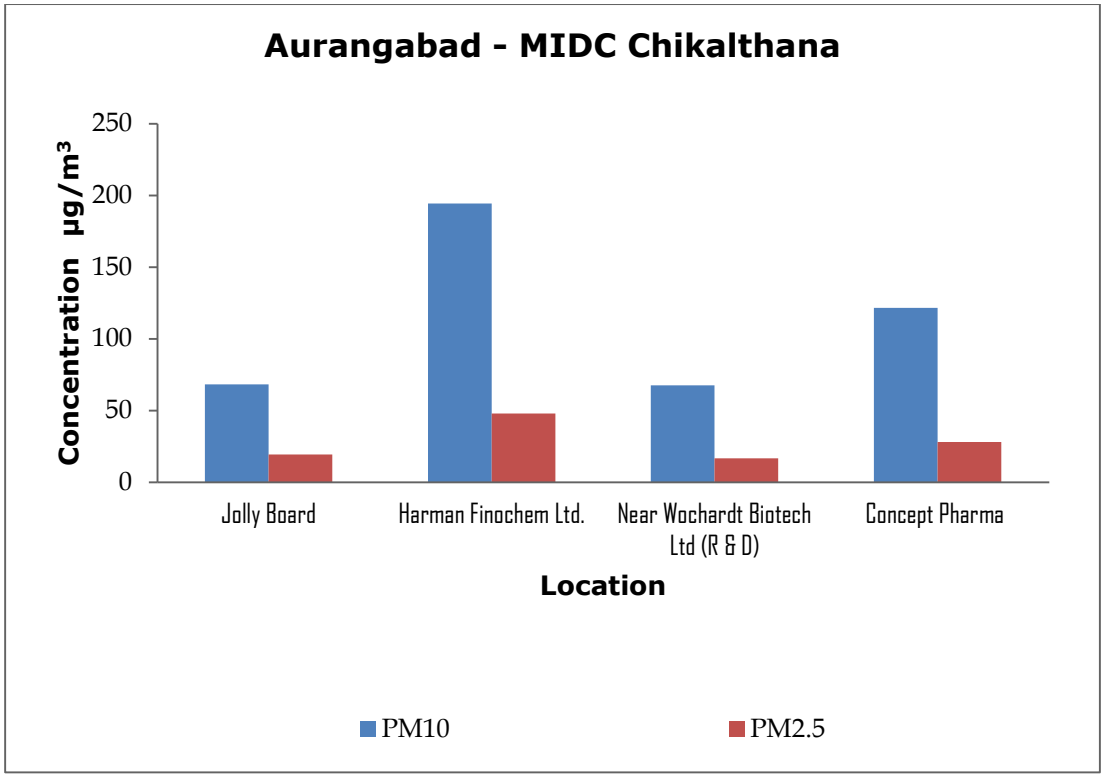


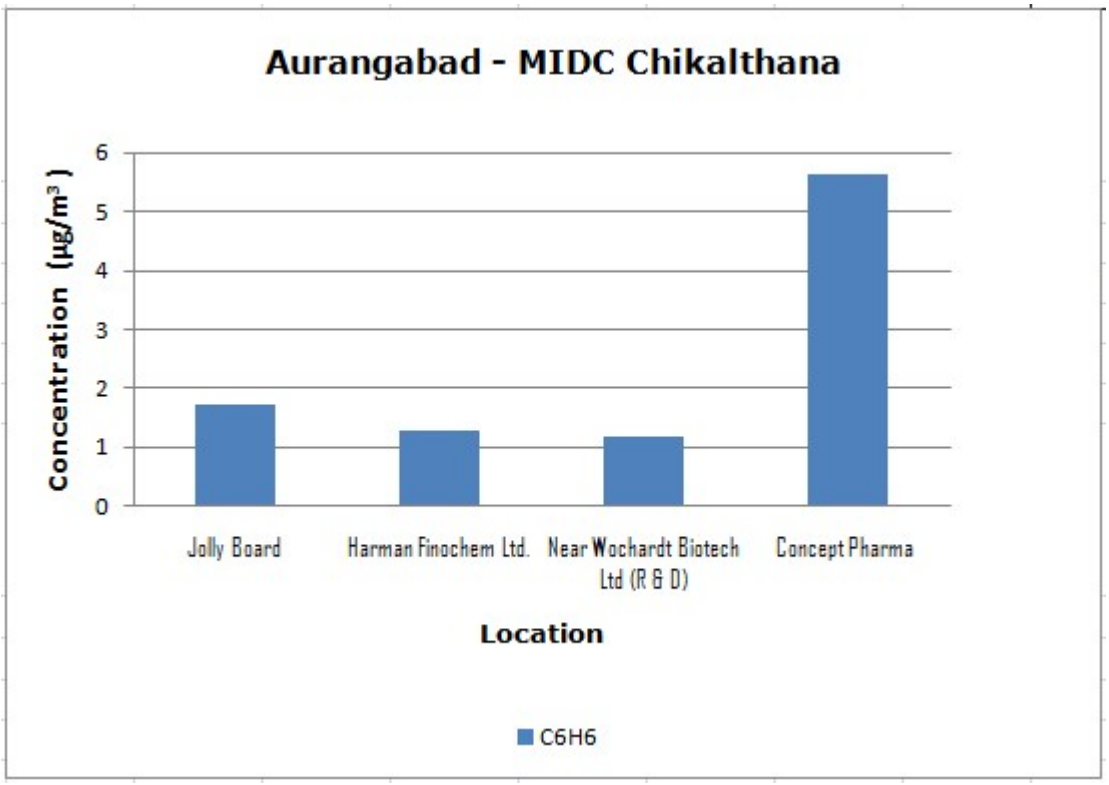

Auranagabad - MIDC Shendra
Concentration µg/m³
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Fire Brigade Office
Hyosung India Pvt. Ltyd.
Parkins India Pvt. Ltd.
Wockhart Biotech Ltd.
Location
C6H6

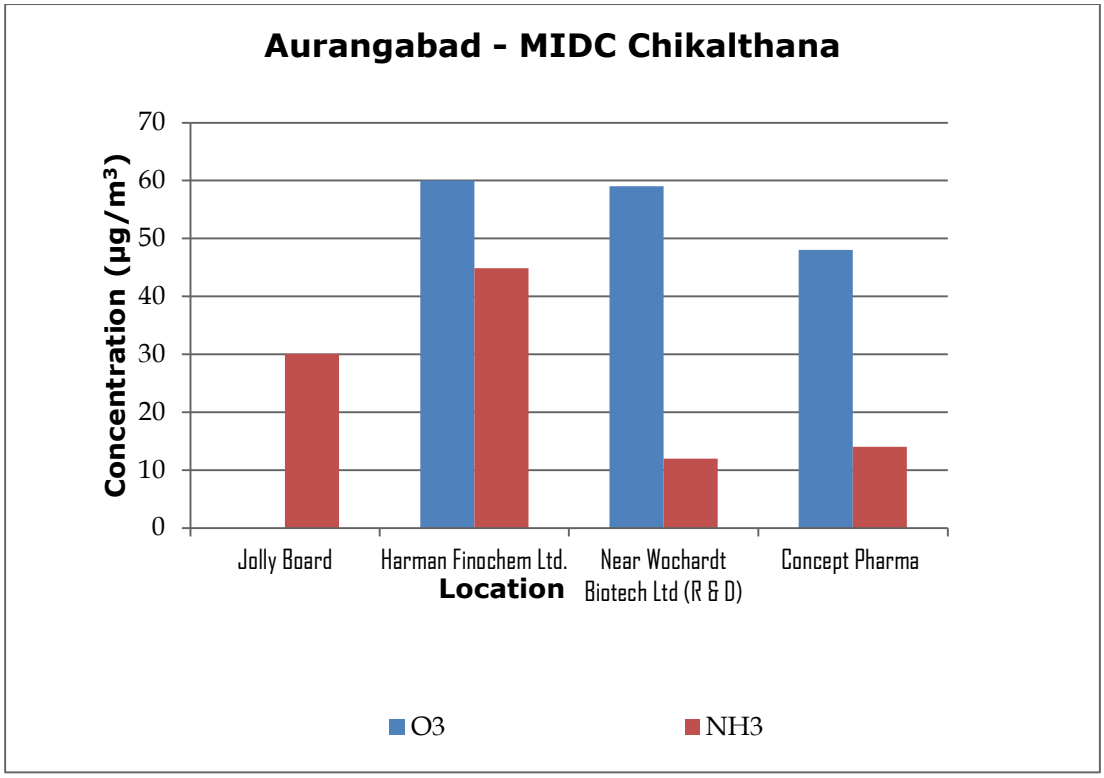

Aurangabad - MIDC Shendra
Concentration (µg/m³)
50
45
40
35
30
25
20
15
10
5
0
Fire Brigade Office
Parkins India Pvt. Ltd.
Wockhart Biotech Ltd.
Location
NH3

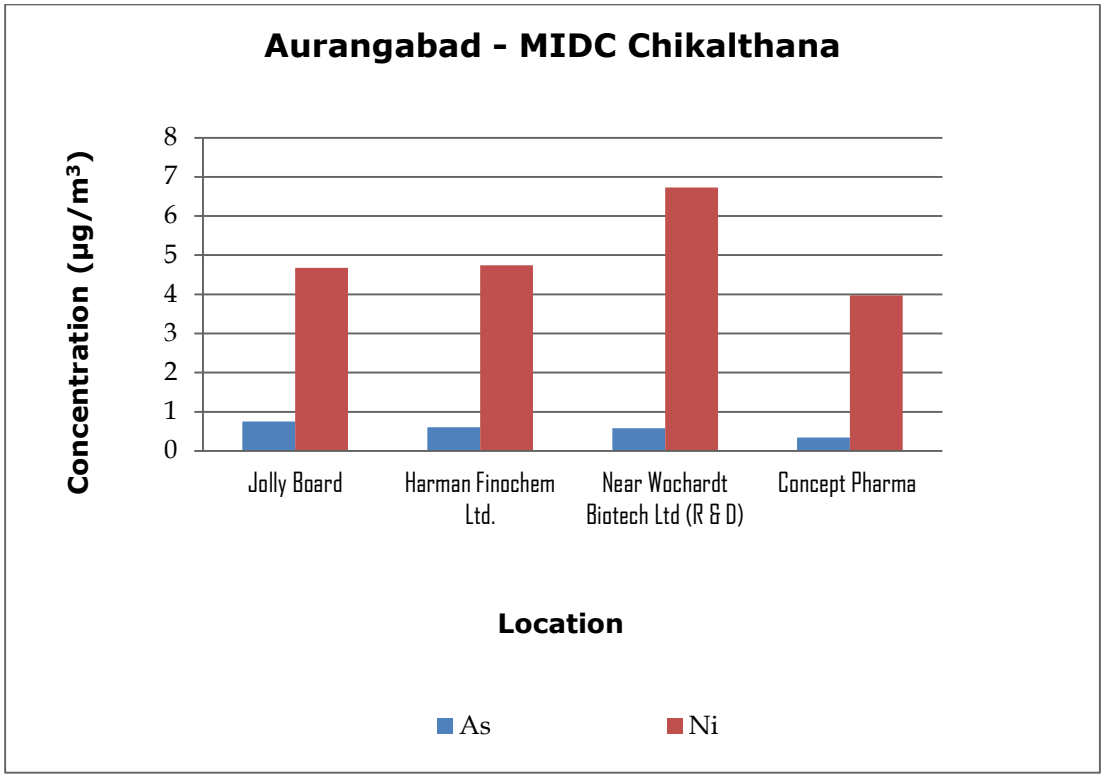

Auranagabad - MIDC Shendra
Concentration (µg/m³)
10
9
8
7
6
5
4
3
2
1
0
Fire Brigade Office
Hyosung India Pvt. Ltyd.
Parkins India Pvt. Ltd.
Wockhart Biotech Ltd.
Location
As
Ni

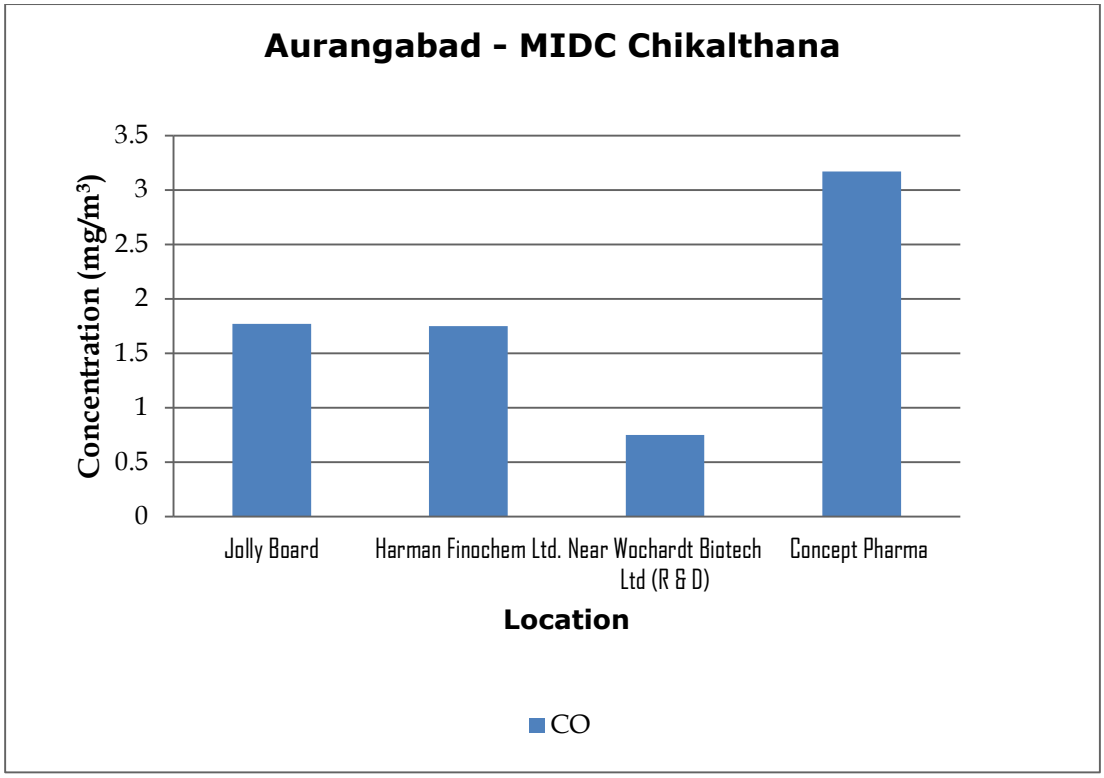

Aurangabad - MIDC Shendra
Concentration (mg/m³)
3
2.5
2
1.5
1
0.5
0
Fire Brigade Office
Hyosung India Pvt. Ltyd.
Parkins India Pvt. Ltd.
Wockhart Biotech Ltd.
Location
CO

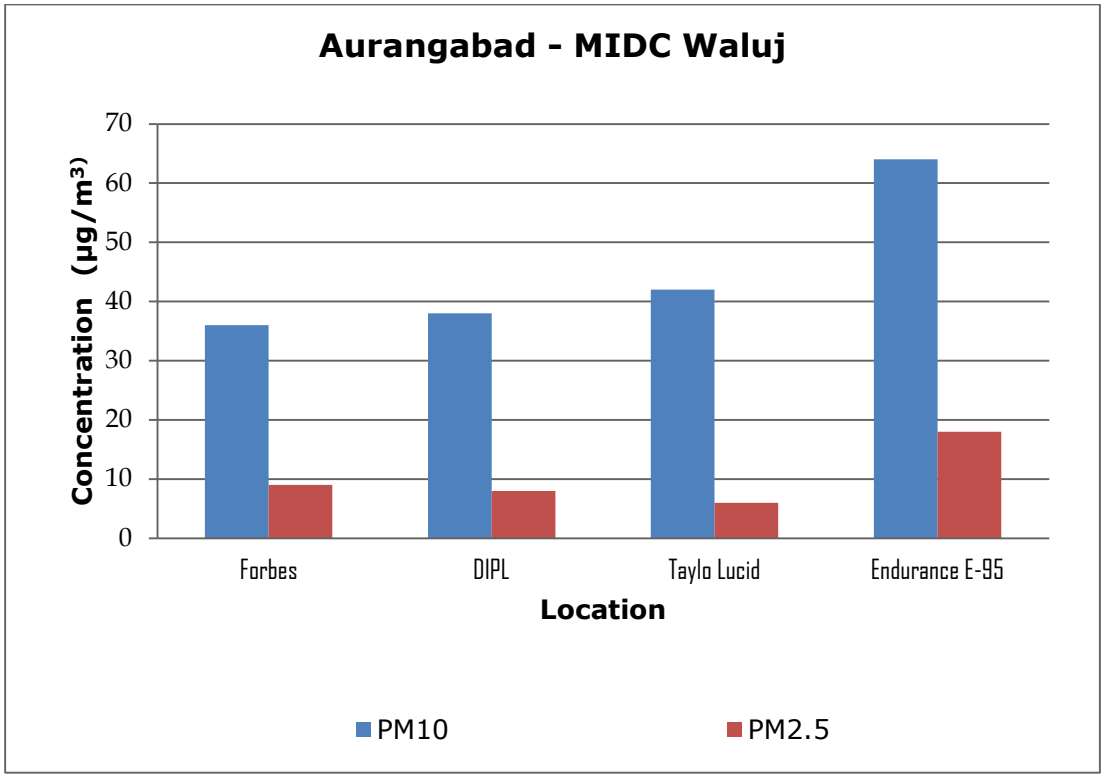

Aurangabad - MIDC Chikalthana
Concentration µg/m³
250
200
150
100
50
0
Jolly Board
Harman Finochem Ltd.
Near Wochardt Biotech Ltd (R & D)
Concept Pharma
Location
PM10
PM2.5

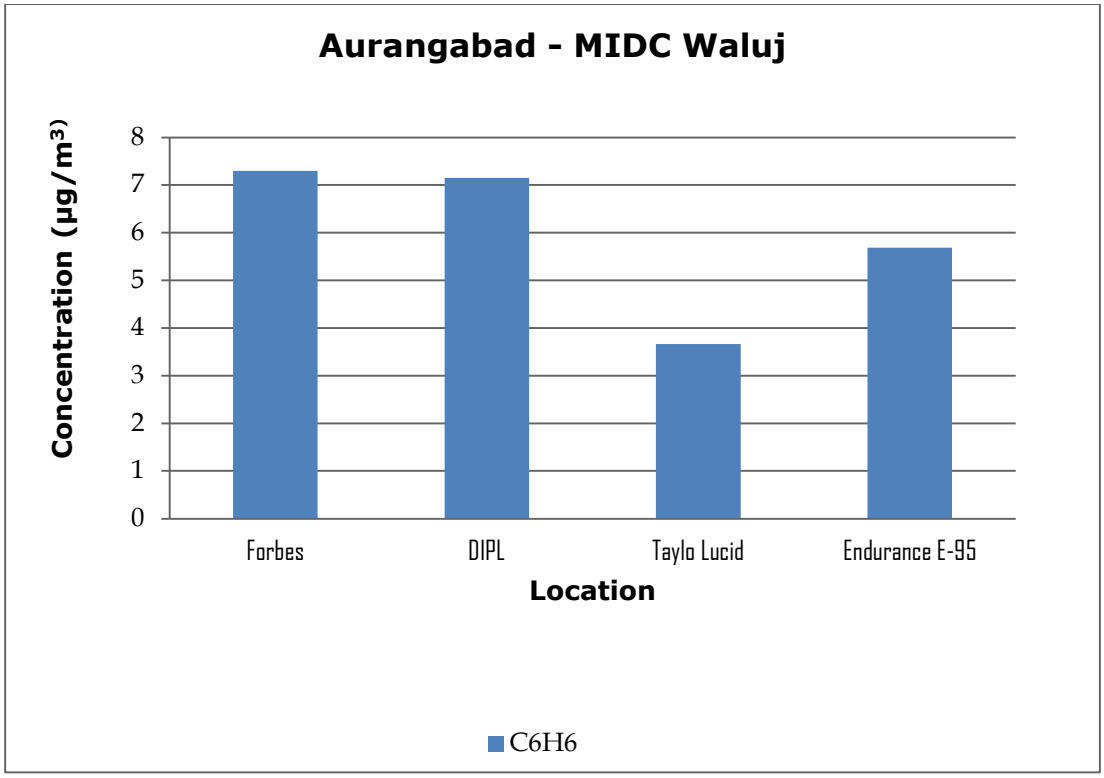

Aurangabad - MIDC Chikalthana
Concentration (µg/m³)
6
5
4
3
2
1
0
Jolly Board
Harman Finochem Ltd.
Near Wochardt Biotech Ltd (R & D)
Concept Pharma
Location
C6H6

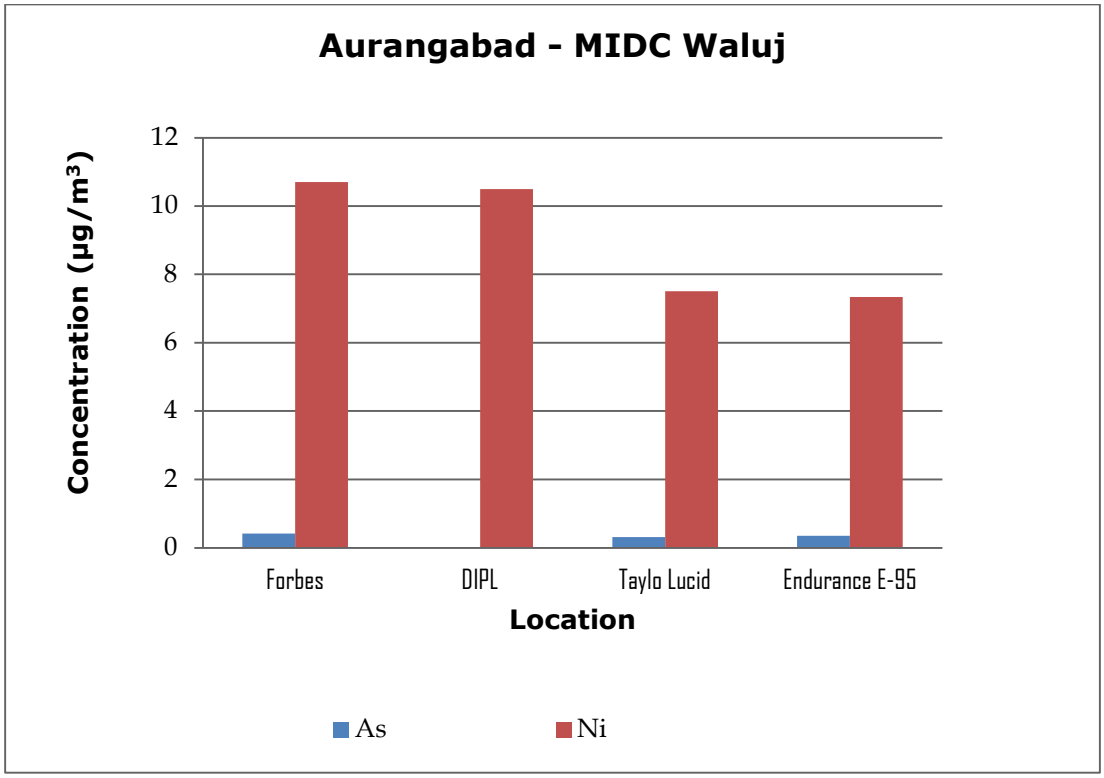

Aurangabad - MIDC Chikalthana
Concentration (µg/m³)
70
60
50
40
30
20
10
0
Jolly Board
Harman Finochem Ltd.
Near Wochardt Biotech Ltd (R & D)
Concept Pharma
Location
O3
NH3

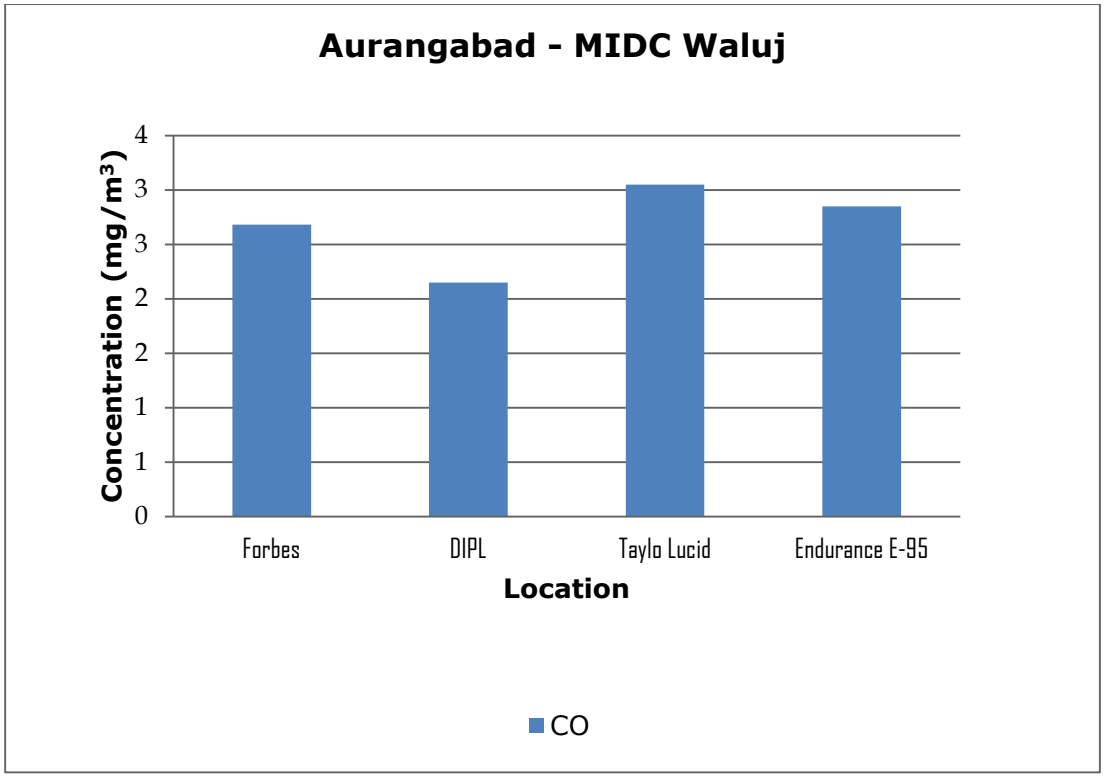

Aurangabad - MIDC Chikalthana
Concentration (µg/m³)
8
7
6
5
4
3
2
1
0
Jolly Board
Harman Finochem Ltd.
Near Wochardt Biotech Ltd (R & D)
Concept Pharma
Location
As
Ni

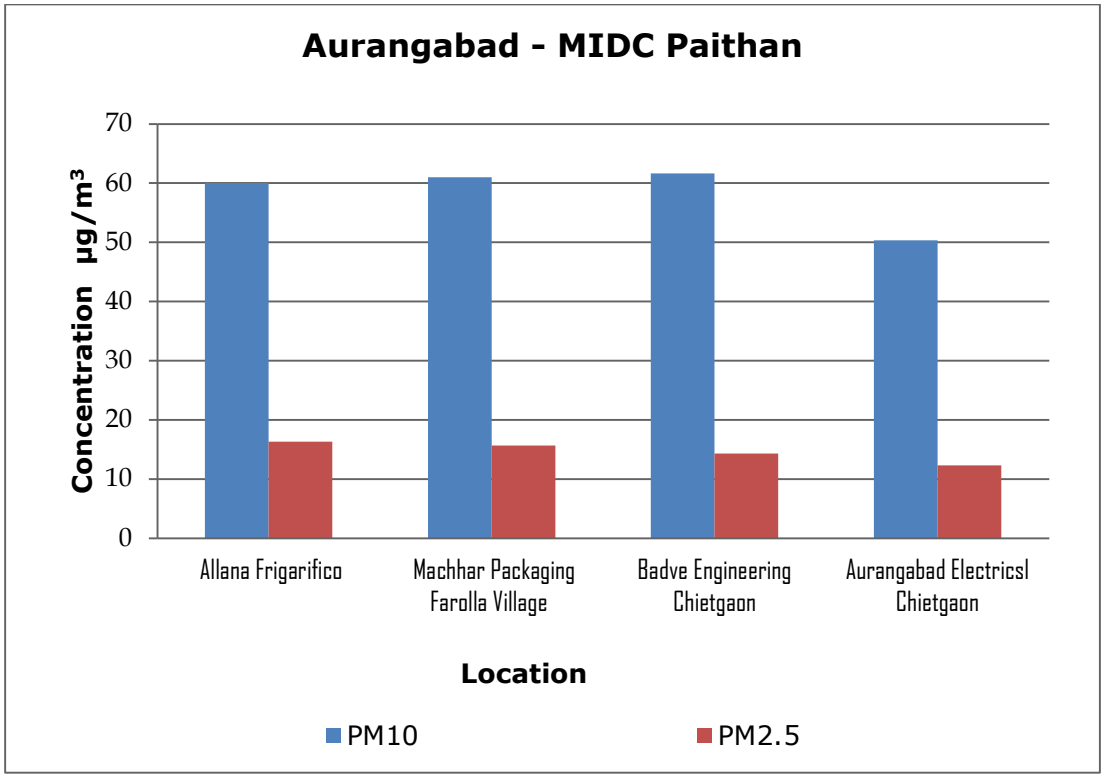

Aurangabad - MIDC Chikalthana
Concentration (mg/m³)
3.5
3
2.5
2
1.5
1
0.5
0
Jolly Board
Harman Finochem Ltd. Near Wochardt Biotech Ltd (R & D)
Concept Pharma
Location
CO

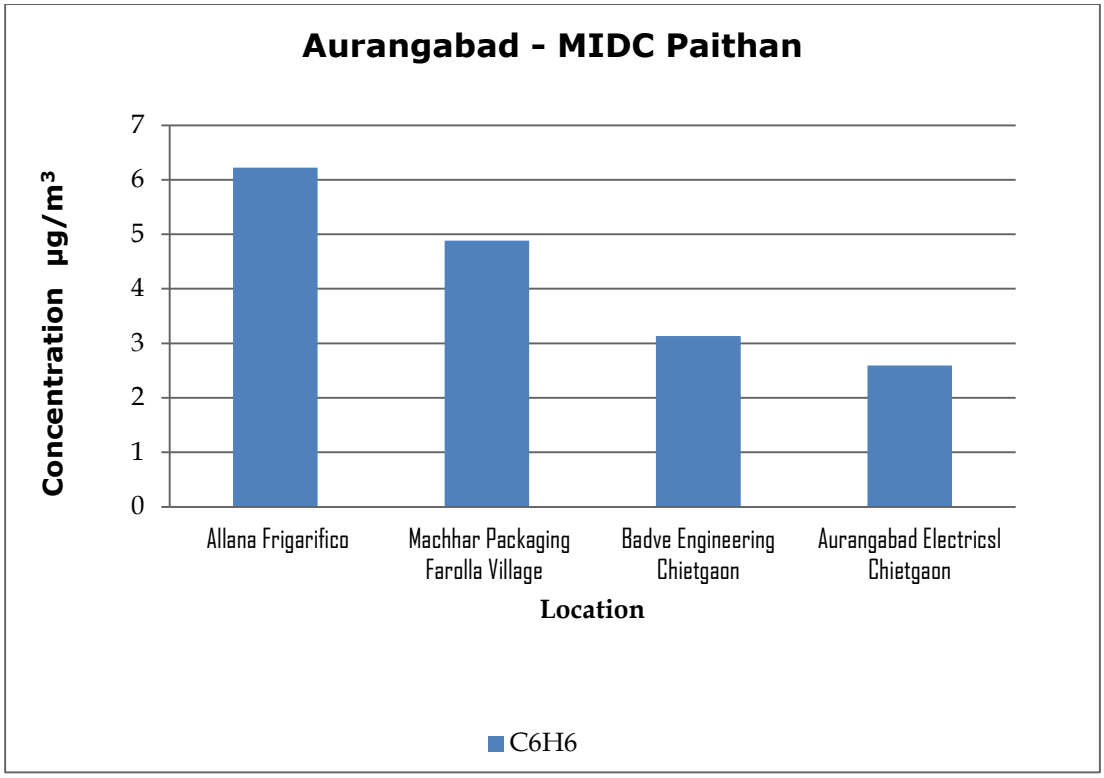

Aurangabad - MIDC Waluj
Concentration (µg/m³)
70
60
50
40
30
20
10
0
Forbes
DIPL
Taylo Lucid
Endurance E-95
Location
PM10
PM2.5

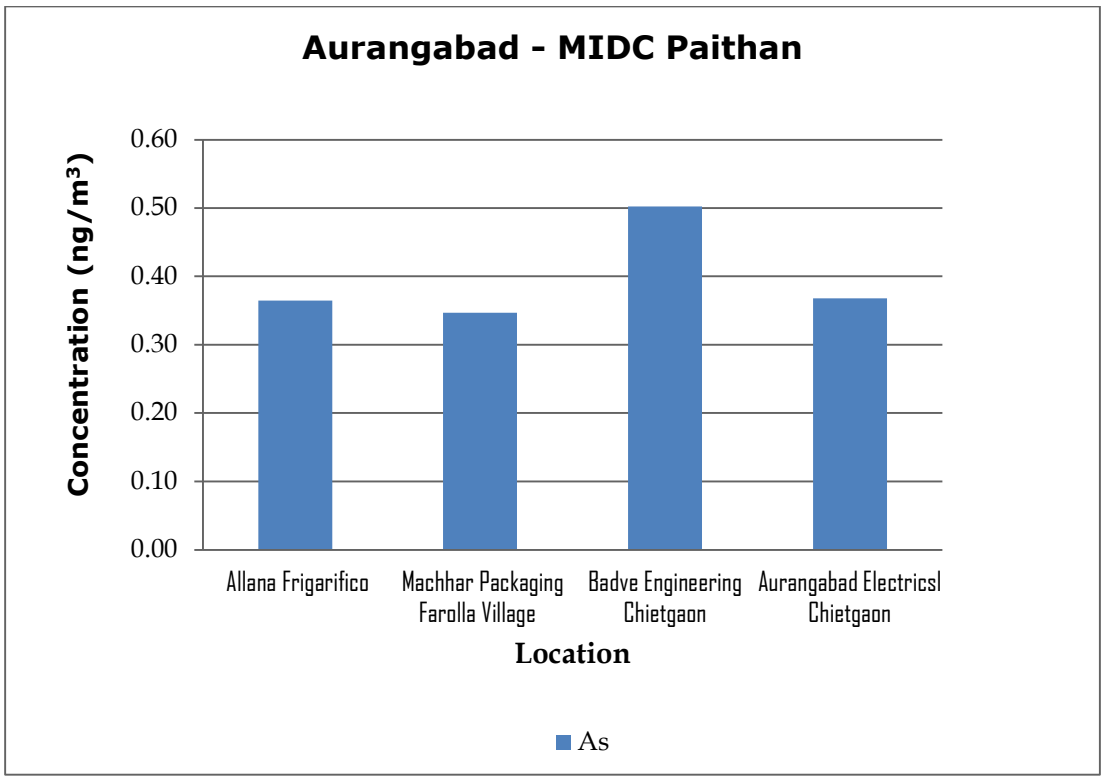

Aurangabad - MIDC Waluj
Concentration (µg/m³)
8
7
6
5
4
3
2
1
0
Forbes
DIPL
Taylo Lucid
Endurance E-95
Location
C6H6

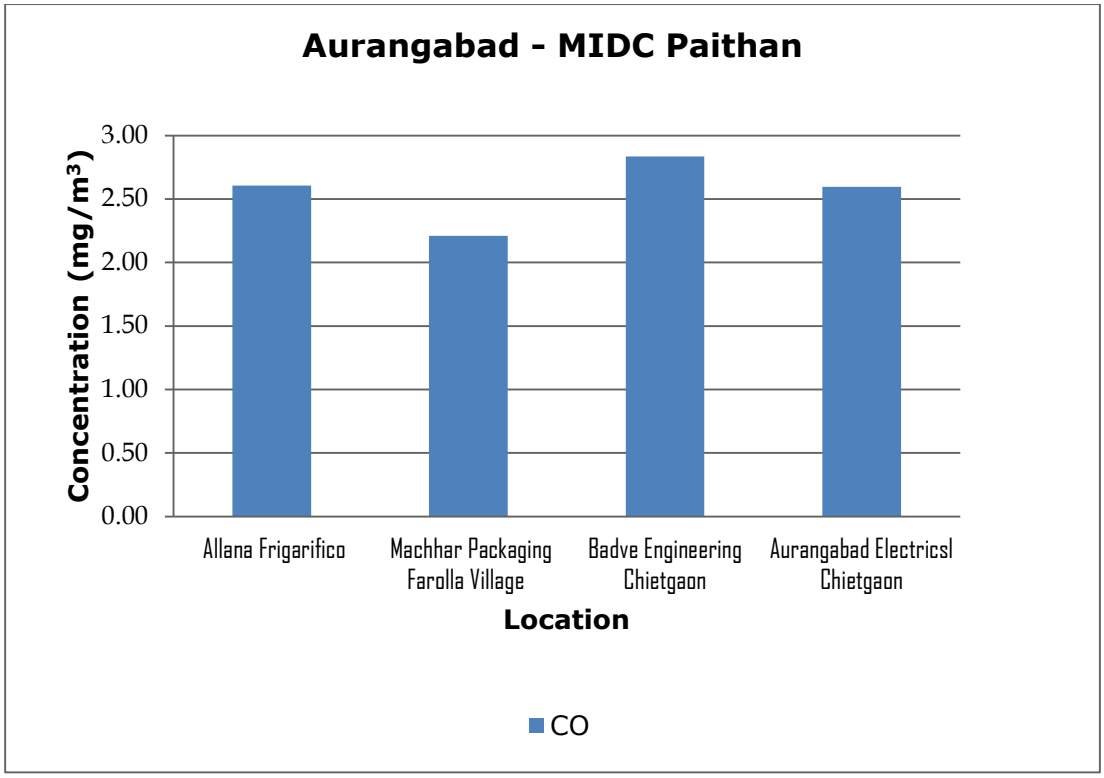

Aurangabad - MIDC Waluj
Concentration (µg/m³)
12
10
8
6
4
2
0
Forbes
DIPL
Taylo Lucid
Endurance E-95
Location
As
Ni


Aurangabad - MIDC Waluj
Concentration (mg/m³)
4
3
3
2
2
1
1
0
Forbes
DIPL
Taylo Lucid
Endurance E-95
Location
CO


Aurangabad - MIDC Paithan
Concentration µg/m³
70
60
50
40
30
20
10
0
Allana Frigarifico
Machhar Packaging Farolla Village
Badve Engineering Chietgaon
Aurangabad Electricsl Chietgaon
Location
PM10
PM2.5


Aurangabad - MIDC Paithan
Concentration µg/m³
7
6
5
4
3
2
1
0
Allana Frigarifico
Machhar Packaging Farolla Village
Badve Engineering Chietgaon
Aurangabad Electricsl Chietgaon
Location
C6H6


Aurangabad - MIDC Paithan
Concentration (ng/m³)
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Allana Frigarifico
Machhar Packaging Farolla Village
Badve Engineering Chietgaon
Aurangabad Electricsl Chietgaon
Location
As



4.3 Surface Water Analysis Results:

Water Analysis Results are compared against CPCB document on criteria for Comprehensive Environmental Assessment of Industrial Clusters-Water Quality Parameters Requirement and Classification **(Annexure IX)**, CPCB Water Quality Criteria **(Annexure VIII)** and Drinking Water Specification, IS 10500:2012 **(Annexure VII)**, Wastewater Analysis Results are compared with General Standards for Discharge of Environmental Pollutants Part A: Effluents, The Environment (Protection) Rules, 1986, Schedule VI **(Annexure V)**.

Location: Nalla Water (Flowing Water), Shendra MIDC

Parameters	**Unit**	**Std. Limit**	**Results**		
			Round-1 (12.02.2020)	**Round-2 (14.02.2020)**	**Round-3 (17.02.2020)**
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	8.21	8.15	8.08
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	20	26	10

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Dissolved Oxygen (% Saturation)	%	**60-140**	0	92	90
Chemical Oxygen Demand	mg/L	**250**	BDL	BDL	6
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	BDL	BDL	2
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	863	682	588
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	54.7	31	34.2
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	54.7	31	34.2
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.6	0.4	0.84
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		1.02	2.52	0.90
Total Coliforms	MPN index/ 100 mL		1600	1600	170
Faecal Coliforms	MPN index/ 100 mL		110	920	17
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	26.9	3.58	4.4

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	0.033
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.056	BDL	BDL
Iron (as Fe)	mg/L	**3**	2.22	BDL	0.435
Vanadium (as V)	mg/L	**0.2**	0.236	BDL	0.186
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	0.011
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		38.9	10.4	11.9

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	70	40	30

Location: Radico Company, Shendra MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Colour	Hazen		15	18	1
Smell	-		Disagreeable	Disagreeable	Agreeable
pH	-	**5.5 -9.0**	7.98	7.76	8.1
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	64	60	68
Dissolved Oxygen (% Saturation)	%	**60-140**	0	12	0
Chemical Oxygen Demand	mg/L	**250**	148	600	68
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	50	176	24
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	6170	4211	1903
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	77	70.9	30
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	77	70.9	30
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.5	1.6	1.2
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	0.66	0.89	BDL
Sodium Absorption Ratio	-		4.65	4.86	4.56
Total Coliforms	MPN index/ 100 mL		1600	350	1600
Faecal Coliforms	MPN index/ 100 mL		140	280	17
Total Phosphorous (as P)	mg/L		0.8	2.56	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	111	90.2	28.8
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	0.34	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	0.019	0.014	0.032
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.979	BDL	0.729
Iron (as Fe)	mg/L	**3**	0.443	0.074	BDL
Vanadium (as V)	mg/L	**0.2**	0.045	0.086	0.05
Selenium (as Se)	mg/L	**0.05**	0.008	BDL	0.011
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		128	106	35.4
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	60	20	30

Location: Nalla Water, Perkins Back Side, Shendra MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
pH	-	**5.5 -9.0**	8.18	8.15	8.22
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	22	20	23
Dissolved Oxygen (% Saturation)	%	**60-140**	70	91	90
Chemical Oxygen Demand	mg/L	**250**	BDL	BDL	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	BDL	BDL	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1190	1125	838
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	4.68	5.6	4.55
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	4.68	5.6	4.55
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.7	0.6	0.7
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		1.26	8.76	1.16
Total Coliforms	MPN index/ 100 mL		350	170	23

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Faecal Coliforms	MPN index/ 100 mL		39	33	7.8
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	0.89	0.22	0.89
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	0.054	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	0.012	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	0.009
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.21	BDL	BDL
Iron (as Fe)	mg/L	**3**	5.1	0.441	0.117

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Vanadium (as V)	mg/L	**0.2**	0.059	0.097	0.123
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	0.007
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		1.92	1.45	1.89
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	90	60	50

Location: Nath Nagar, Shendra MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	8.3	8.07	8.08
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	38	28	38
Dissolved Oxygen (% Saturation)	%	**60-140**	80	85	90
Chemical Oxygen Demand	mg/L	**250**	9	7	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	3	2	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	546	468	331
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Nitrate Nitrogen (as NO_3)	mg/L	**10**	3.65	3.54	6.1
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	3.65	3.54	6.1
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.2	0.3	0.5
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		0.62	1.49	0.57
Total Coliforms	MPN index/ 100 mL		920	70	46
Faecal Coliforms	MPN index/ 100 mL		47	49	4.5
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	1.06	5.04	0.89
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	0.059
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	0.021
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.117	BDL	0.04
Iron (as Fe)	mg/L	**3**	0.84	BDL	0.979
Vanadium (as V)	mg/L	**0.2**	0.17	BDL	0.041
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	0.008
Boron (as B)	mg/L		BDL	0.234	0.283
Total Nitrogen	mg/L		1.86	5.81	2.23
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	70	50	40

Location: Sukana Dam, Chikalthana MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (16.02.2020)	Round-2 (18.02.2020)	Round-3 (20.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.23	7.16	7.37
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	58	15	58
Dissolved Oxygen (% Saturation)	%	**60-140**	96	45	80
Chemical Oxygen Demand	mg/L	**250**	35	5	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	9	1	13
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1737	1119	1239
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	6.22	5.67	10.8
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	6.22	5.67	10.8
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.64	0.1	2.6
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (16.02.2020)	Round-2 (18.02.2020)	Round-3 (20.02.2020)
Sodium Absorption Ratio	-		2.14	2.09	3.36
Total Coliforms	MPN index/ 100 mL		23	140	920
Faecal Coliforms	MPN index/ 100 mL		4.5	94	40
Total Phosphorous (as P)	mg/L		BDL	0.18	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	2.4	3.8	4.7
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	0.23
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (16.02.2020)	Round-2 (18.02.2020)	Round-3 (20.02.2020)
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (16.02.2020)	Round-2 (18.02.2020)	Round-3 (20.02.2020)
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	BDL	BDL	0.087
Iron (as Fe)	mg/L	**3**	BDL	0.086	0.719
Vanadium (as V)	mg/L	**0.2**	0.042	0.112	0.043
Selenium (as Se)	mg/L	**0.05**	BDL	0.008	BDL
Boron (as B)	mg/L		0.293	0.123	0.183
Total Nitrogen	mg/L		3.76	5.04	7.07
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	50	50	70

Location: Zalta Phata STP, Chikalthana MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Disagreeable
pH	-	**5.5 -9.0**	6.74	7.49	7.67
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	40	24	240
Dissolved Oxygen (% Saturation)	%	**60-140**	40.5	70	28
Chemical Oxygen Demand	mg/L	**250**	27	11	90

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	10	3	25
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1106	563	1752
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.02	0.12	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	2.99	14.2	2.92
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	3.01	14.3	2.92
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	BDL	1.4	0.62
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	0.4
Sodium Absorption Ratio	-		1.04	1.48	0.34
Total Coliforms	MPN index/ 100 mL		920	170	1600
Faecal Coliforms	MPN index/ 100 mL		280	79	170
Total Phosphorous (as P)	mg/L		BDL	0.3	0.72
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	3.25	3.92	9.9
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	0.23
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	0.071
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.105	BDL	0.1
Iron (as Fe)	mg/L	**3**	0.768	BDL	0.256
Vanadium (as V)	mg/L	**0.2**	0.041	0.033	BDL
Selenium (as Se)	mg/L	**0.05**	0.008	BDL	0.009
Boron (as B)	mg/L		0.277	BDL	1.47
Total Nitrogen	mg/L		6.46	7.05	10.5
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	40	80	50

Location: Nalla Near NHK Automotive Pvt. Ltd., Chikalthana MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Colour	Hazen		1	1	80
Smell	-		Agreeable	Agreeable	Disagreeable
pH	-	**5.5 -9.0**	7.86	7.5	7.77
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	10	30	242
Dissolved Oxygen (% Saturation)	%	**60-140**	3.7	85	0
Chemical Oxygen Demand	mg/L	**250**	42	13	106
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	11	4	57
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1168	1074	1871
Nitrite Nitrogen (as NO_2)	mg/L	**5**	1.9	0.17	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	12.8	29.7	29
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	14.7	29.9	29
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	2.7	1.6	3.2
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	0.64
Sodium Absorption Ratio	-		3.95	1.07	2.75

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Total Coliforms	MPN index/ 100 mL		1.6 X 10^4	23	540
Faecal Coliforms	MPN index/ 100 mL		5.4 X 10^3	13	240
Total Phosphorous (as P)	mg/L		BDL	BDL	1.88
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	4.7	10.5	7.6
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	2.47
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	0.21
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	0.083
Nickel (as Ni)	mg/L	**200**	BDL	BDL	0.012
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Manganese (as Mn)	mg/L	**2**	BDL	BDL	0.113
Iron (as Fe)	mg/L	**3**	0.086	BDL	0.248
Vanadium (as V)	mg/L	**0.2**	0.11	0.088	0.039
Selenium (as Se)	mg/L	**0.05**	0.01	0.007	0.007
Boron (as B)	mg/L		0.123	0.147	1.78
Total Nitrogen	mg/L		8.08	17.1	14
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	30	80	70

Location: Nalla Water, Uttaranagari, Chikalthana MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (20.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Colour	Hazen		1	12	85
Smell	-		Agreeable	Disagreeable	Disagreeable
pH	-	**5.5 -9.0**	7.71	7.78	7.62
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	20	198	98
Dissolved Oxygen (% Saturation)	%	**60-140**	75	37	75
Chemical Oxygen Demand	mg/L	**250**	31	134	65

Parameters	Unit	Std. Limit	Results		
			Round-1 (20.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	8	42	30
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	888	2080	1718
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	0.05	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	1.52	25.5	14.8
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	1.52	25.6	14.8
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.88	0.56	1.2
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	0.64	0.1
Sodium Absorption Ratio	-		3.73	0.3	2.52
Total Coliforms	MPN index/ 100 mL		23	920	240
Faecal Coliforms	MPN index/ 100 mL		13	220	130
Total Phosphorous (as P)	mg/L		BDL	0.68	0.34
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	3.13	5.6	6.2
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (20.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	0.24	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (20.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	0.059	0.083
Nickel (as Ni)	mg/L	**200**	BDL	0.013	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	BDL	0.117	0.14
Iron (as Fe)	mg/L	**3**	BDL	0.192	1.49
Vanadium (as V)	mg/L	**0.2**	0.028	0.035	0.05
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	0.01
Boron (as B)	mg/L		0.141	1.85	1.01
Total Nitrogen	mg/L		4.46	11.2	21
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	80	60	70

Location: CETP Waluj MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Colour	Hazen		1	1	4
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	6.54	7.78	7.18
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	30	142	18
Dissolved Oxygen (% Saturation)	%	**60-140**	32	65	42
Chemical Oxygen Demand	mg/L	**250**	47	40	32
Biochemical Oxygen Demand (3 days, 27^{o}C)	mg/L	**30**	12	11	12
Electrical Conductivity (at 25^{o}C)	µmho/cm	**4000**	354	1878	1883
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.31	0.19	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	41	42	42.7
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	41.3	42.2	42.7
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	2.5	2	0.90
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	2.26	0.52	1.92
Sodium Absorption Ratio	-		0.52	12.6	3.95

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Total Coliforms	MPN index/ 100 mL		920	23	350
Faecal Coliforms	MPN index/ 100 mL		280	23	240
Total Phosphorous (as P)	mg/L		5.8	6.1	3.42
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	29.4	6.5	7.73
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	2.41	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	0.163	0.168
Nickel (as Ni)	mg/L	**200**	BDL	0.364	0.360
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (22.02.2020)	Round-3 (24.02.2020)
Manganese (as Mn)	mg/L	**2**	0.104	0.025	0.027
Iron (as Fe)	mg/L	**3**	0.758	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.04	BDL	BDL
Selenium (as Se)	mg/L	**0.05**	0.007	BDL	BDL
Boron (as B)	mg/L		0.275	0.768	0.738
Total Nitrogen	mg/L		38.4	15.8	17.1
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	40	90	60

Location: Kham River, Waluj MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Colour	Hazen		5	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	6.76	7.51	7.73
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	45	92	38
Dissolved Oxygen (% Saturation)	%	**60-140**	60	75	80
Chemical Oxygen Demand	mg/L	**250**	56	27	33
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	19	7	12

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1200	1542	1449
Nitrite Nitrogen (as NO_2)	mg/L	**5**	1.84	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	20.7	34.3	40
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	22.5	34.3	40
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.93	0.92	1.2
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	0.42
Sodium Absorption Ratio	-		4.28	6.26	3.45
Total Coliforms	MPN index/ 100 mL		9.2 X 10^3	280	350
Faecal Coliforms	MPN index/ 100 mL		2.8 X 10^3	47	170
Total Phosphorous (as P)	mg/L		BDL	BDL	0.66
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	7.73	6.72	16.1
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	0.12
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	0.065
Nickel (as Ni)	mg/L	**200**	BDL	0.094	0.045
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	0.006	BDL	BDL
Lead (as Pb)	mg/L	**100**	0.011	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.485	0.122	0.218
Iron (as Fe)	mg/L	**3**	1.55	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.026	0.048	0.046
Selenium (as Se)	mg/L	**0.05**	0.006	BDL	0.016
Boron (as B)	mg/L		0.122	0.328	0.344
Total Nitrogen	mg/L		12.8	14.3	24.9
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	30	70	60

Location: Kham River (Upstream), Waluj MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.32	7.87	7.46
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	50	62	108
Dissolved Oxygen (% Saturation)	%	**60-140**	20	80	80
Chemical Oxygen Demand	mg/L	**250**	10	29	54
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	2	5	20
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1725	1464	1380
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	0.09	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	2.8	21.7	11
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	2.8	21.8	11
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.44	1	1.1
Sulphide (as S^{2-})	mg/L	**2**	0.31	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		4.45	3.66	2.60

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Total Coliforms	MPN index/ 100 mL		280	49	220
Faecal Coliforms	MPN index/ 100 mL		140	22	47
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	42.2	2.4	9.29
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	0.116	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	0.25	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	0.014	BDL
Copper (as Cu)	mg/L	**100**	BDL	0.024	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Manganese (as Mn)	mg/L	**2**	BDL	0.749	0.465
Iron (as Fe)	mg/L	**3**	BDL	3.66	BDL
Vanadium (as V)	mg/L	**0.2**	BDL	0.069	0.011
Selenium (as Se)	mg/L	**0.05**	0.007	BDL	0.007
Boron (as B)	mg/L		0.123	0.175	0.126
Total Nitrogen	mg/L		42.8	7.19	11.7
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	40	80	70

Location: Lake water, Waluj MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.6	7.08	7.10
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	14	42	12
Dissolved Oxygen (% Saturation)	%	**60-140**	70	75	75
Chemical Oxygen Demand	mg/L	**250**	39	38	33
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	9	10	13

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1170	2680	910
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.24	0.11	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	22.1	8.14	17.2
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	22.3	8.25	17.2
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.16	1.8	0.3
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		3.21	3.42	2.3
Total Coliforms	MPN index/ 100 mL		79	23	920
Faecal Coliforms	MPN index/ 100 mL		49	13	32
Total Phosphorous (as P)	mg/L		BDL	0.18	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	1.9	6.04	7.72
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	0.023	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	0.008	0.006
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	BDL	BDL	BDL
Iron (as Fe)	mg/L	**3**	0.086	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.111	0.031	0.036
Selenium (as Se)	mg/L	**0.05**	0.007	0.007	0.011
Boron (as B)	mg/L		0.122	0.333	0.343
Total Nitrogen	mg/L		6.83	7.86	11.5
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	30	60	50

Location: Farolla Village, Paithan Road MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.61	7.75	7.52
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	14	28	18
Dissolved Oxygen (% Saturation)	%	**60-140**	80	70.4	70.3
Chemical Oxygen Demand	mg/L	**250**	9	6	18
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	3	2	6
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	574	379	597
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	3.53	3.52	4.11
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	3.53	3.52	4.11
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.5	1.3	1.1
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		1.19	1.2	0.27

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Total Coliforms	MPN index/ 100 mL		4.5	920	1600
Faecal Coliforms	MPN index/ 100 mL		4.5	540	540
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	5.48	3.2	6.49
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	0.063	BDL	0.098
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Manganese (as Mn)	mg/L	**2**	BDL	0.179	BDL
Iron (as Fe)	mg/L	**3**	BDL	1.07	BDL
Vanadium (as V)	mg/L	**0.2**	0.039	0.012	0.111
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	0.009
Boron (as B)	mg/L		BDL	BDL	0.135
Total Nitrogen	mg/L		6.25	3.97	7.39
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	90	70	40

Location: Nalla Water, Railway Station, Paithan Road MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Colour	Hazen		20	1	3
Smell	-		Disagreeable	Agreeable	Disagreeable
pH	-	**5.5 -9.0**	7.74	7.22	7.15
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	106	108	128
Dissolved Oxygen (% Saturation)	%	**60-140**	80	75	31
Chemical Oxygen Demand	mg/L	**250**	66	84	26
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	25	30	9

Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	2600	1333	1485
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	19.6	14.1	39.1
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	19.6	14.1	39.1
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.92	0.8	1.4
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	2.48	2.8	BDL
Sodium Absorption Ratio	-		3.31	2.37	2.57
Total Coliforms	MPN index/ 100 mL		BDL.8	5.4×10^3	9.2×10^3
Faecal Coliforms	MPN index/ 100 mL		BDL.8	3.5×10^3	2.4×10^3
Total Phosphorous (as P)	mg/L		2.59	4.3	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	6.72	4.25	4.25
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	2.3	BDL	0.25
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	0.023	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.183	0.646	0.356
Iron (as Fe)	mg/L	**3**	0.358	3.07	0.088
Vanadium (as V)	mg/L	**0.2**	0.022	0.05	BDL
Selenium (as Se)	mg/L	**0.05**	0.01	0.009	0.007
Boron (as B)	mg/L		2.14	0.126	0.107
Total Nitrogen	mg/L		11	7.35	12.8
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	80	40	40

Location: Nalla Water, Paithan Road MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Colour	Hazen		1	30	2
Smell	-		Agreeable	Disagreeable	Agreeable
pH	-	**5.5 -9.0**	7.09	7.37	7.66
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	10	58	38
Dissolved Oxygen (% Saturation)	%	**60-140**	75	70	46
Chemical Oxygen Demand	mg/L	**250**	34	56	29
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	13	25	10
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	2080	859	1410
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	0.03	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	1.33	33.5	7.11
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	1.33	33.5	7.11
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.5	0.76	0.69
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	5.4	1.73	BDL
Sodium Absorption Ratio	-		2.56	1.62	2.11

Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Total Coliforms	MPN index/ 100 mL		240	9.2×10^3	1.6×10^4
Faecal Coliforms	MPN index/ 100 mL		34	5.4×10^3	2.2×10^3
Total Phosphorous (as P)	mg/L		5.53	1.8	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	7.84	3.36	5.15
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	0.37	0.57	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	0.16	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Manganese (as Mn)	mg/L	**2**	BDL	BDL	BDL
Iron (as Fe)	mg/L	**3**	BDL	0.26	0.069
Vanadium (as V)	mg/L	**0.2**	0.094	0.086	0.019
Selenium (as Se)	mg/L	**0.05**	0.016	0.013	BDL
Boron (as B)	mg/L		0.133	0.129	BDL
Total Nitrogen	mg/L		8.13	10.7	6.71
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	50	50	50

Location: Nalla Water Kanchanwadi, Paithan Road MIDC

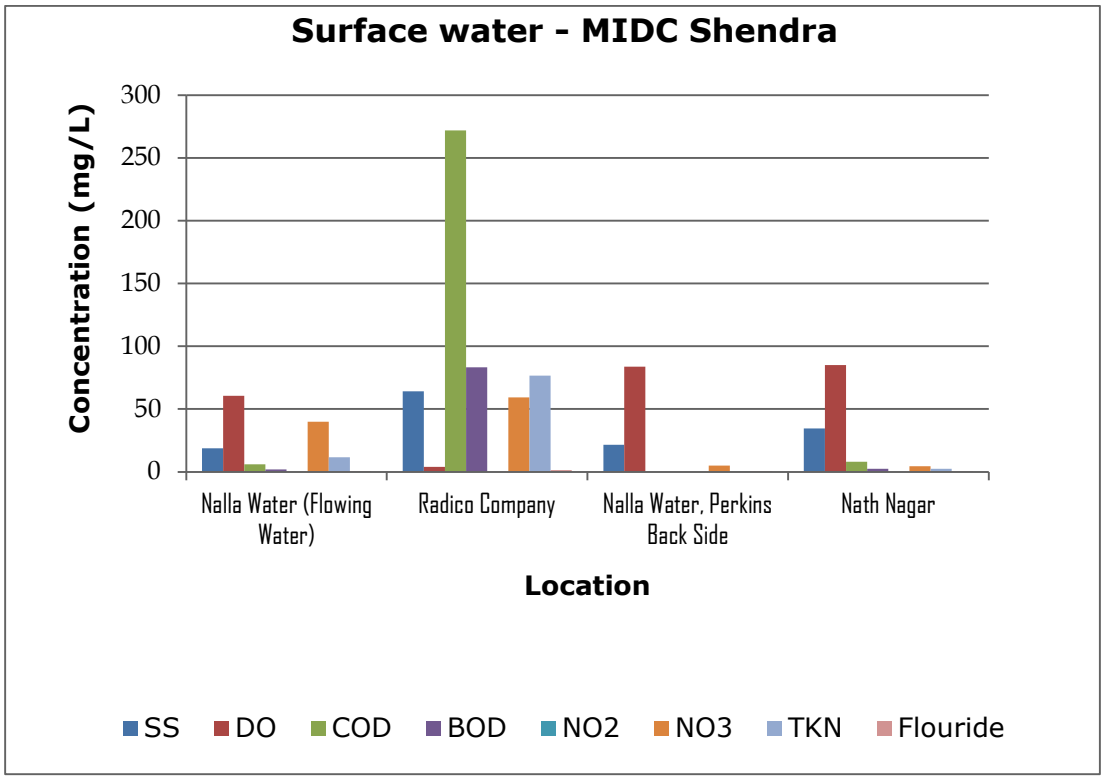
Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Colour	Hazen		5	1	1
Smell	-		Disagreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.52	7.39	7.47
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	18	92	108
Dissolved Oxygen (% Saturation)	%	**60-140**	60	70	55
Chemical Oxygen Demand	mg/L	**250**	43	42	160
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	11	20	56

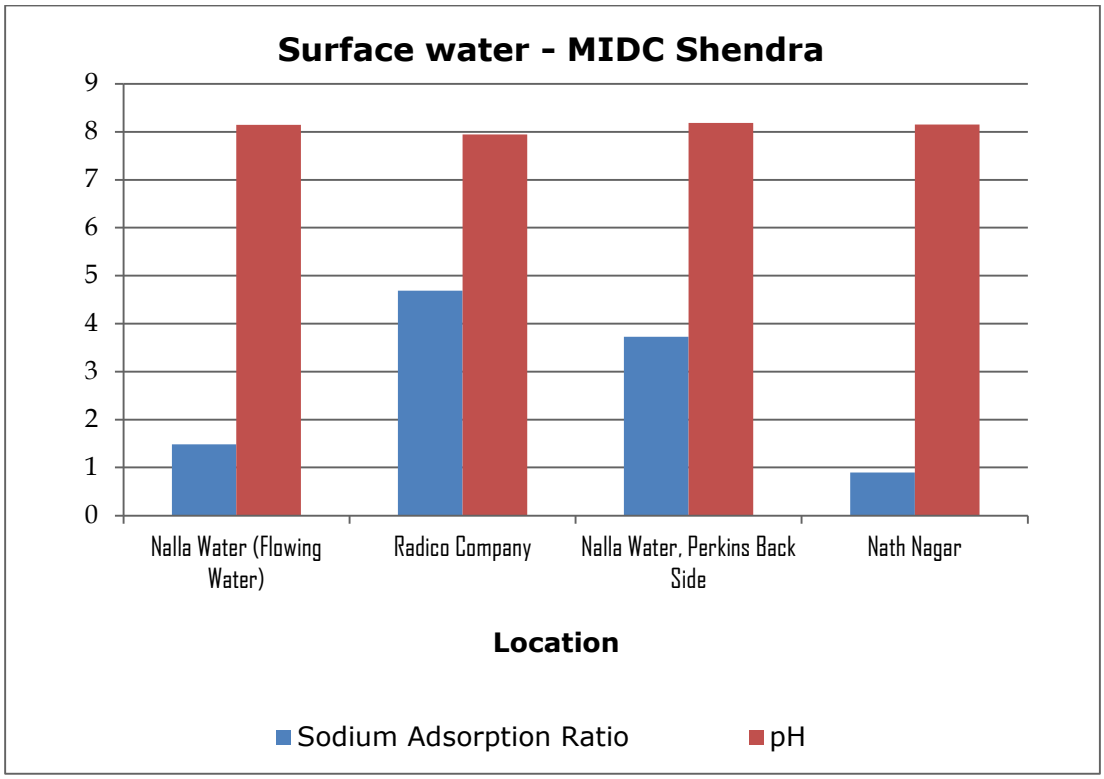
Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1470	1508	1512
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	15.3	21	20.3
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	15.3	21	20.3
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.9	0.8	0.7
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		1.99	1.83	3.23
Total Coliforms	MPN index/ 100 mL		1.6×10^4	2.4×10^3	9.2×10^3
Faecal Coliforms	MPN index/ 100 mL		3.5×10^3	2.4×10^3	2.8×10^3
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	4.7	5.48	5.49
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL

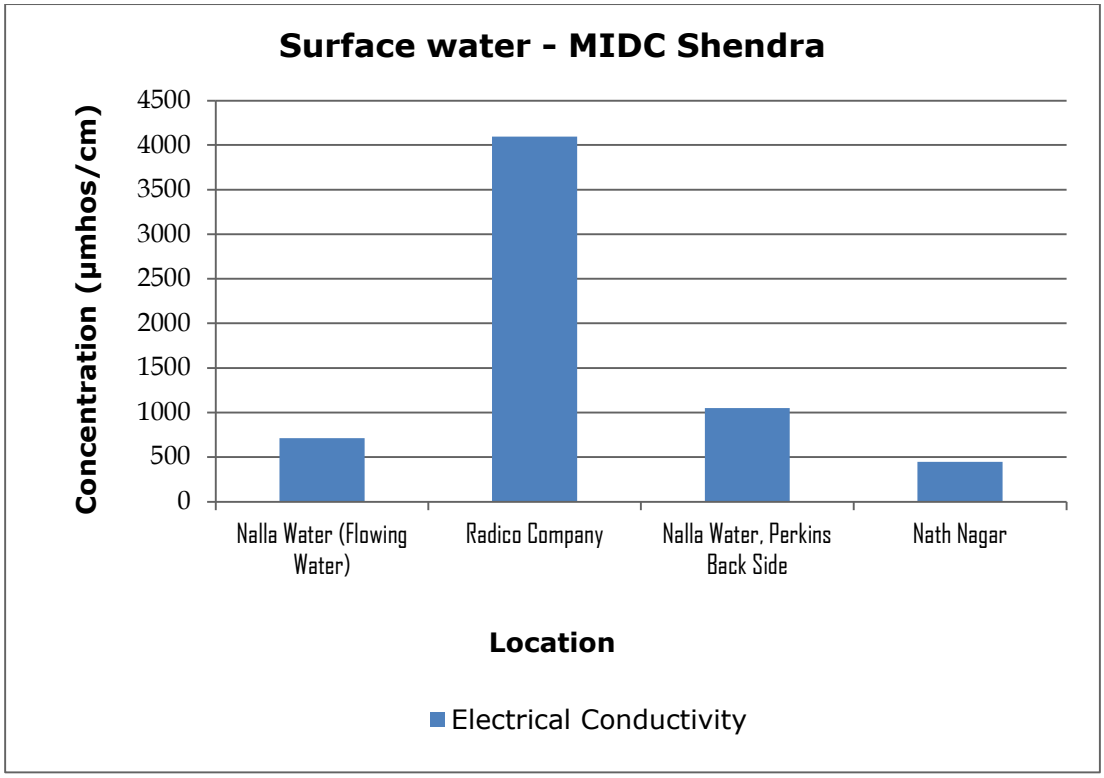
Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL

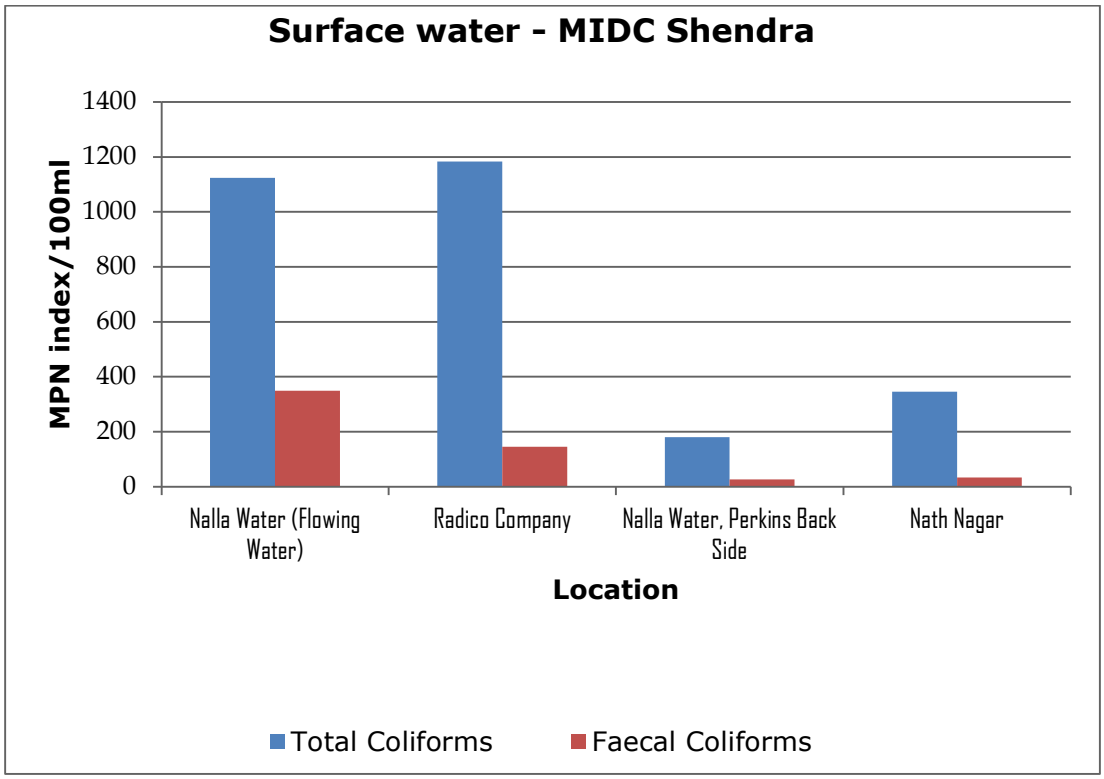
Parameters	Unit	Std. Limit	Results		
			Round-1 (24.02.2020)	Round-2 (26.02.2020)	Round-3 (28.02.2020)
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	0.109
Nickel (as Ni)	mg/L	**200**	BDL	0.015	0.011
Copper (as Cu)	mg/L	**100**	BDL	BDL	0.052
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.177	1.7	0.438
Iron (as Fe)	mg/L	**3**	1.06	1.35	6.08
Vanadium (as V)	mg/L	**0.2**	0.012	0.044	0.098
Selenium (as Se)	mg/L	**0.05**	BDL	0.009	0.01
Boron (as B)	mg/L		BDL	0.156	0.11
Total Nitrogen	mg/L		8.06	10.1	9.95
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	60	30	50

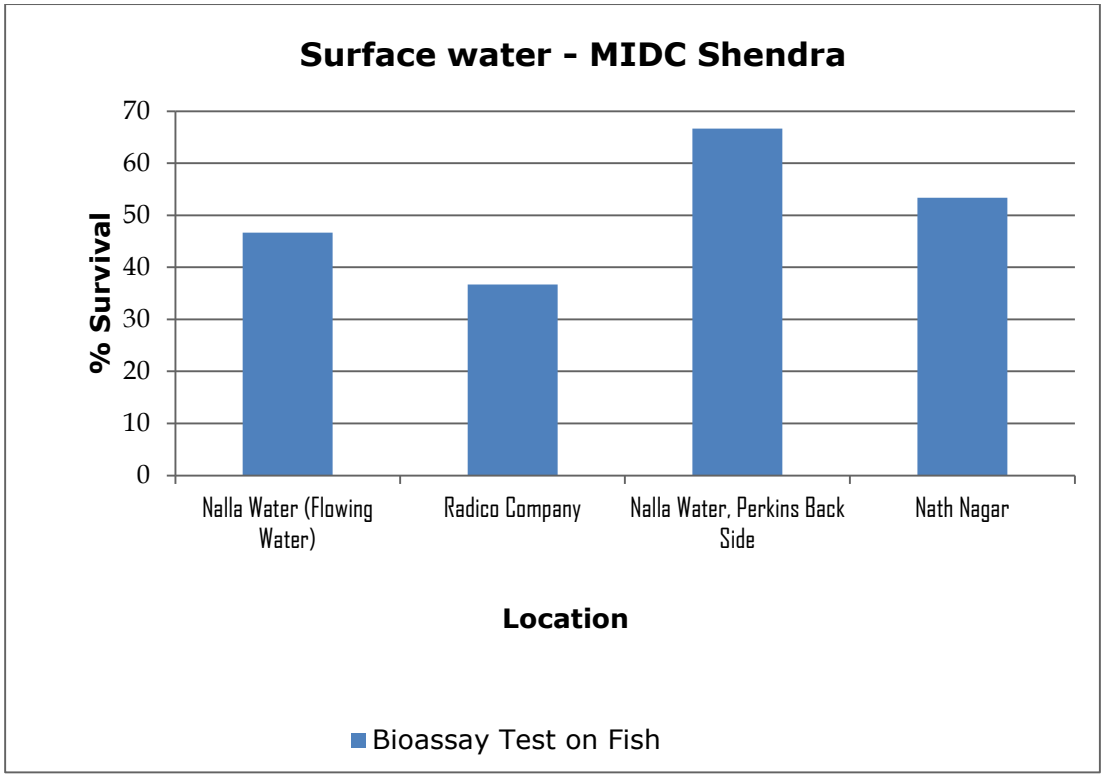
Graphs: Surface Water Analysis

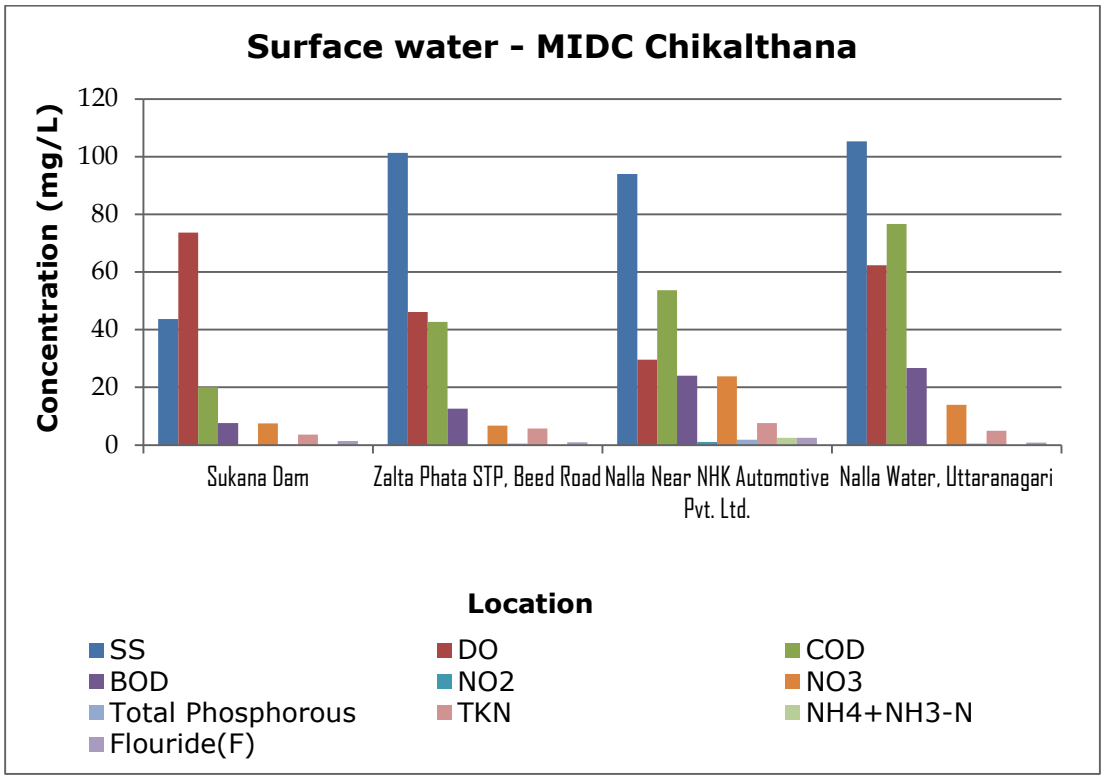


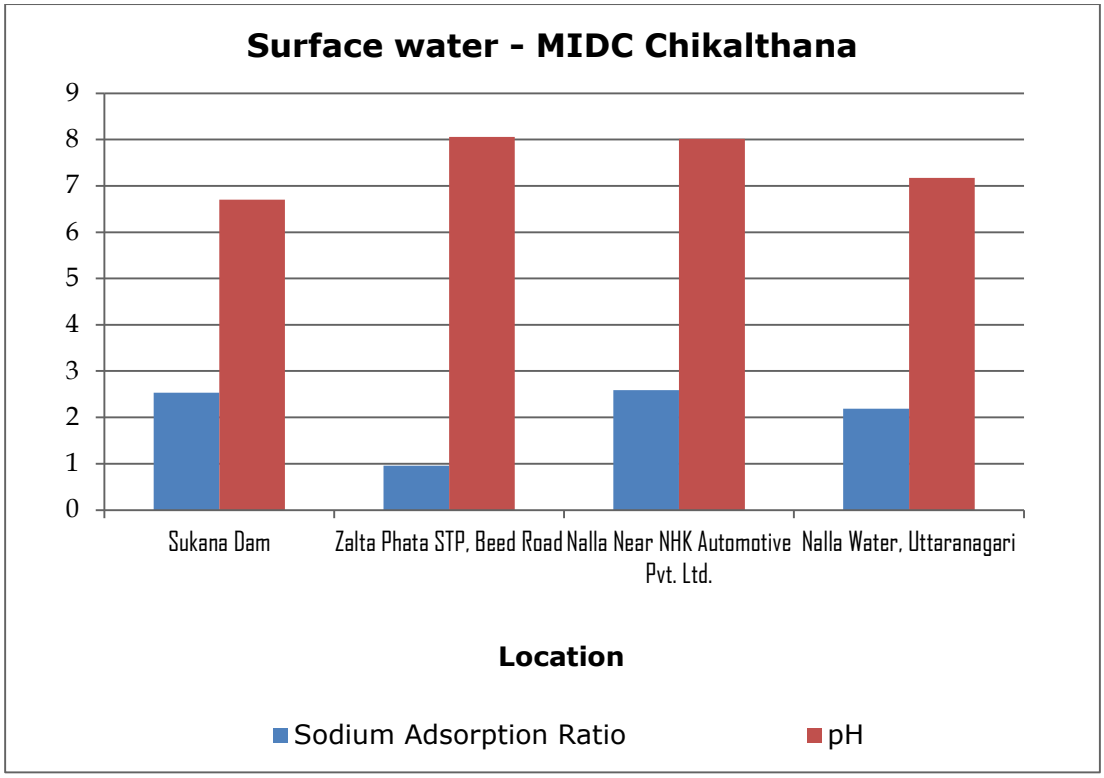


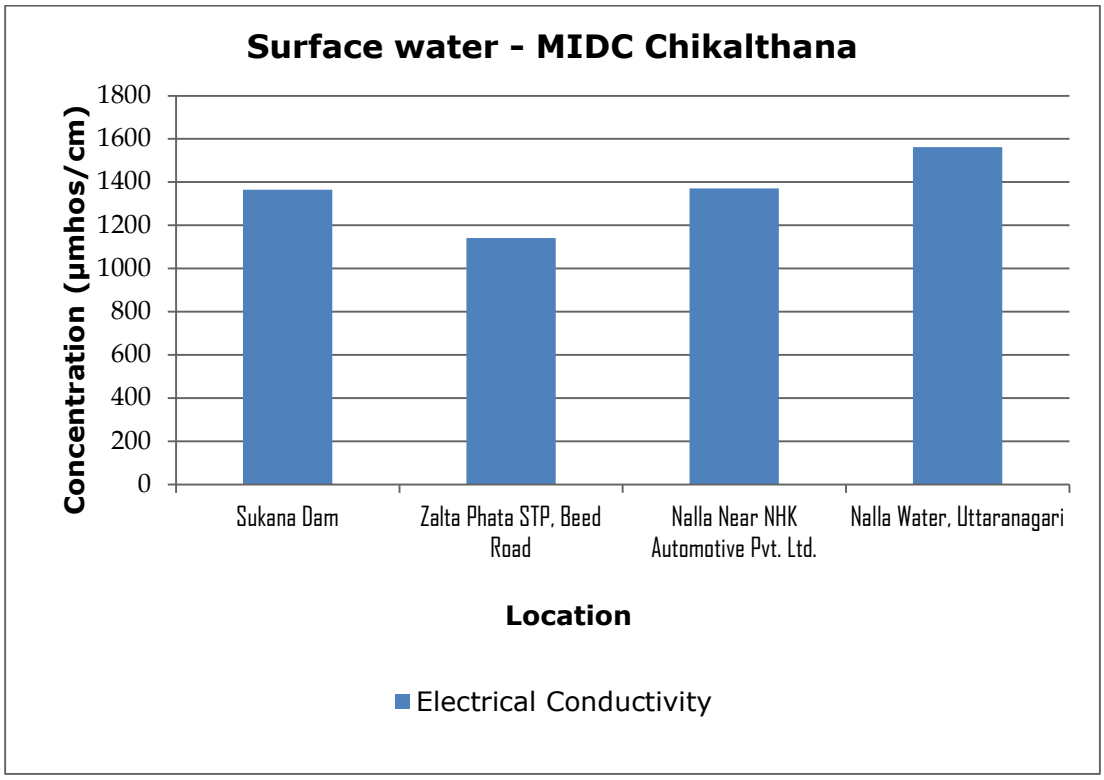

Surface water - MIDC Shendra
Concentration (µmhos/cm)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Nalla Water (Flowing Water)
Radico Company
Nalla Water, Perkins Back Side
Nath Nagar
Location
Electrical Conductivity

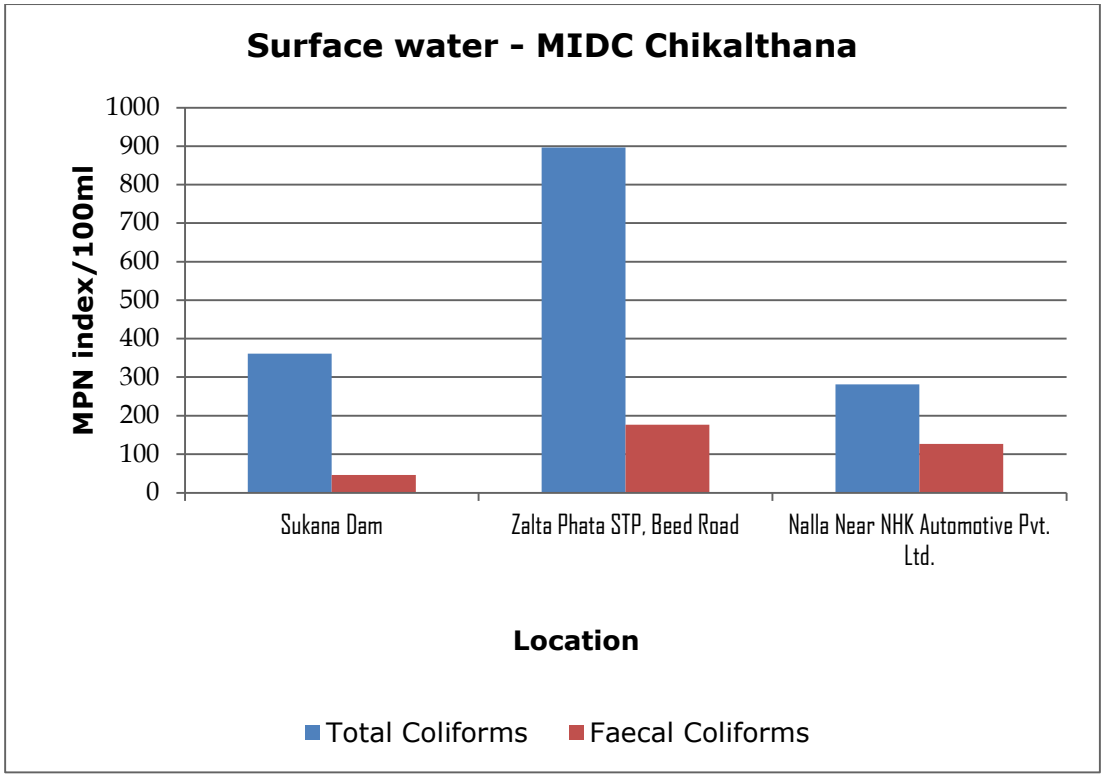

Surface water - MIDC Shendra
MPN index/100ml
1400
1200
1000
800
600
400
200
0
Nalla Water (Flowing Water)
Radico Company
Nalla Water, Perkins Back Side
Nath Nagar
Location
Total Coliforms
Faecal Coliforms

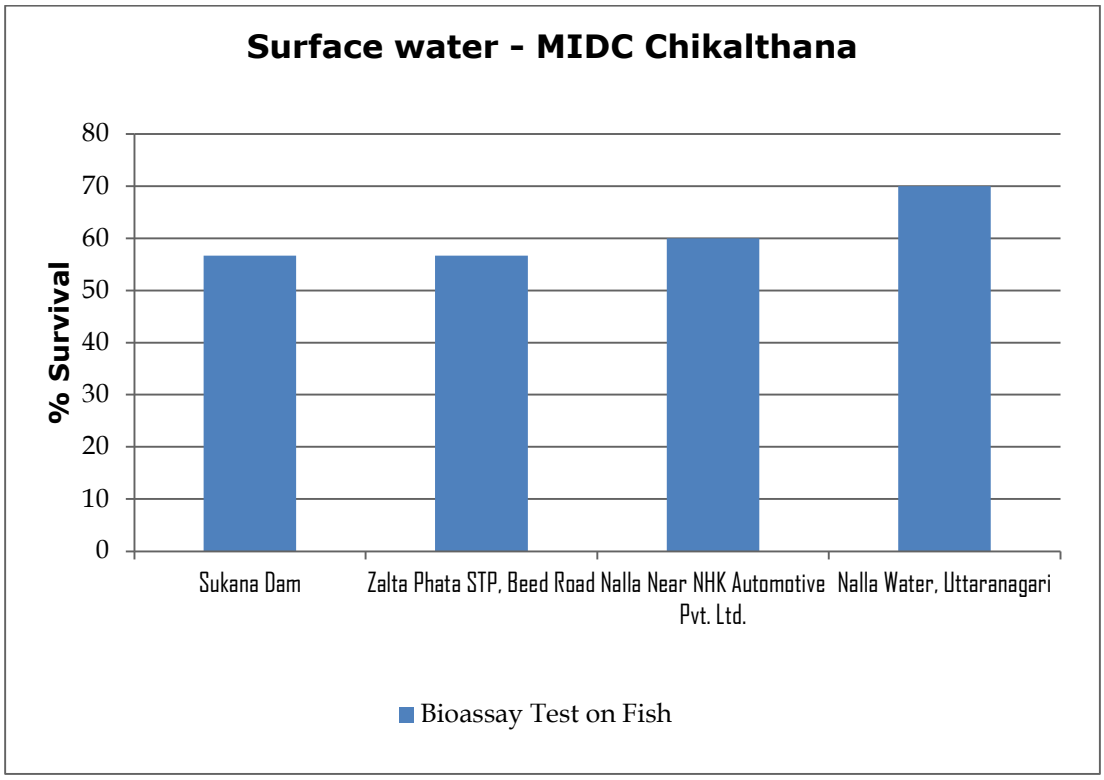

Surface water - MIDC Shendra
% Survival
70
60
50
40
30
20
10
0
Nalla Water (Flowing Water)
Radico Company
Nalla Water, Perkins Back Side
Nath Nagar
Location
Bioassay Test on Fish

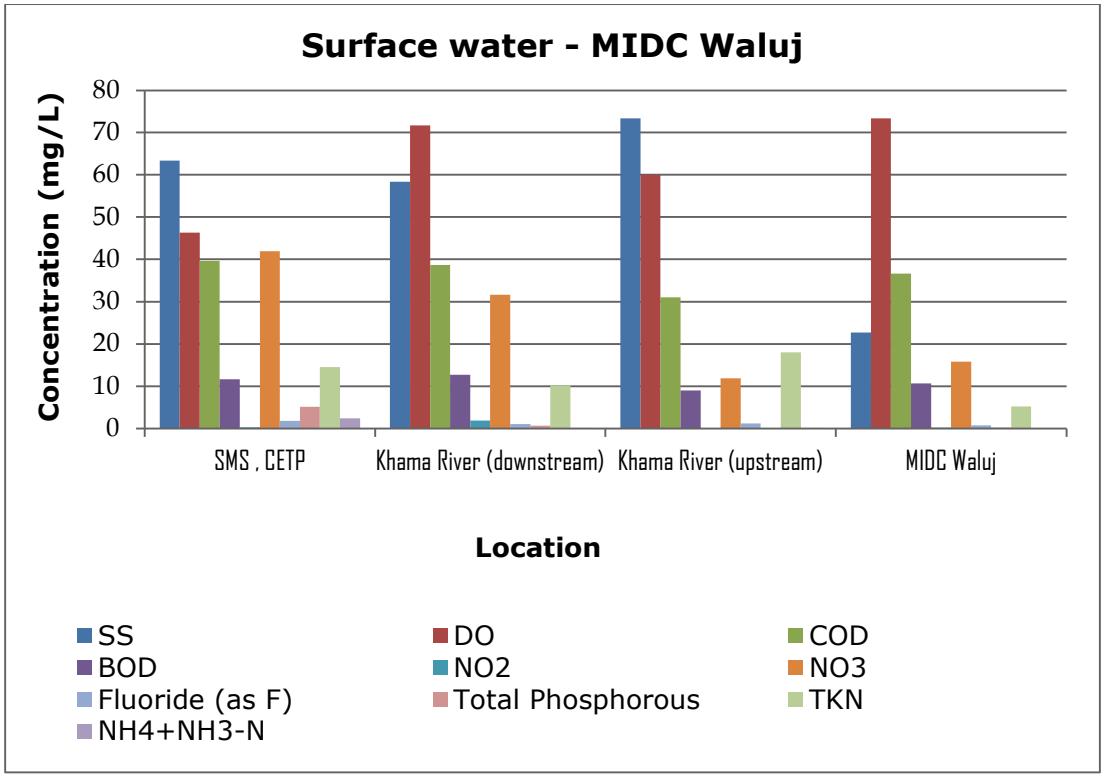

Surface water - MIDC Chikalthana
Concentration (mg/L)
120
100
80
60
40
20
0
Sukana Dam
Zalta Phata STP, Beed Road
Nalla Near NHK Automotive Pvt. Ltd.
Nalla Water, Uttaranagari
Location
SS
DO
COD
BOD
NO2
NO3
Total Phosphorous
TKN
NH4+NH3-N
Flouride(F)

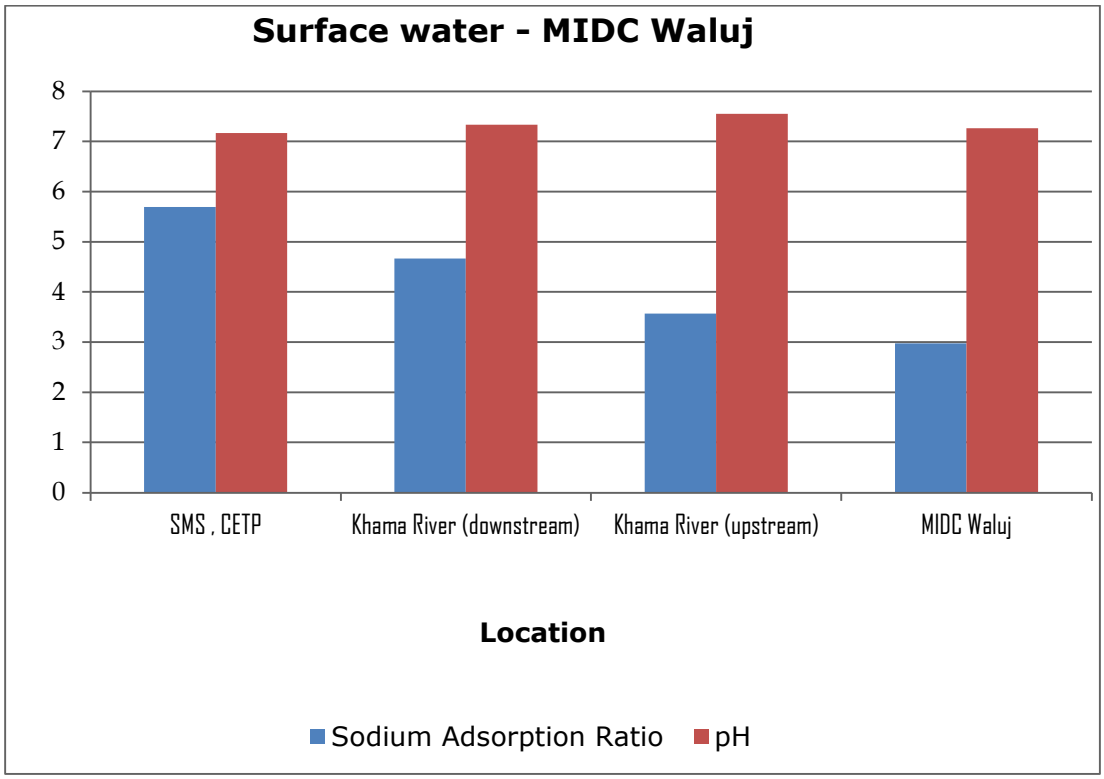

Surface water - MIDC Chikalthana
9
8
7
6
5
4
3
2
1
0
Sukana Dam
Zalta Phata STP, Beed Road
Nalla Near NHK Automotive Pvt. Ltd.
Nalla Water, Uttaranagari
Location
Sodium Adsorption Ratio
pH

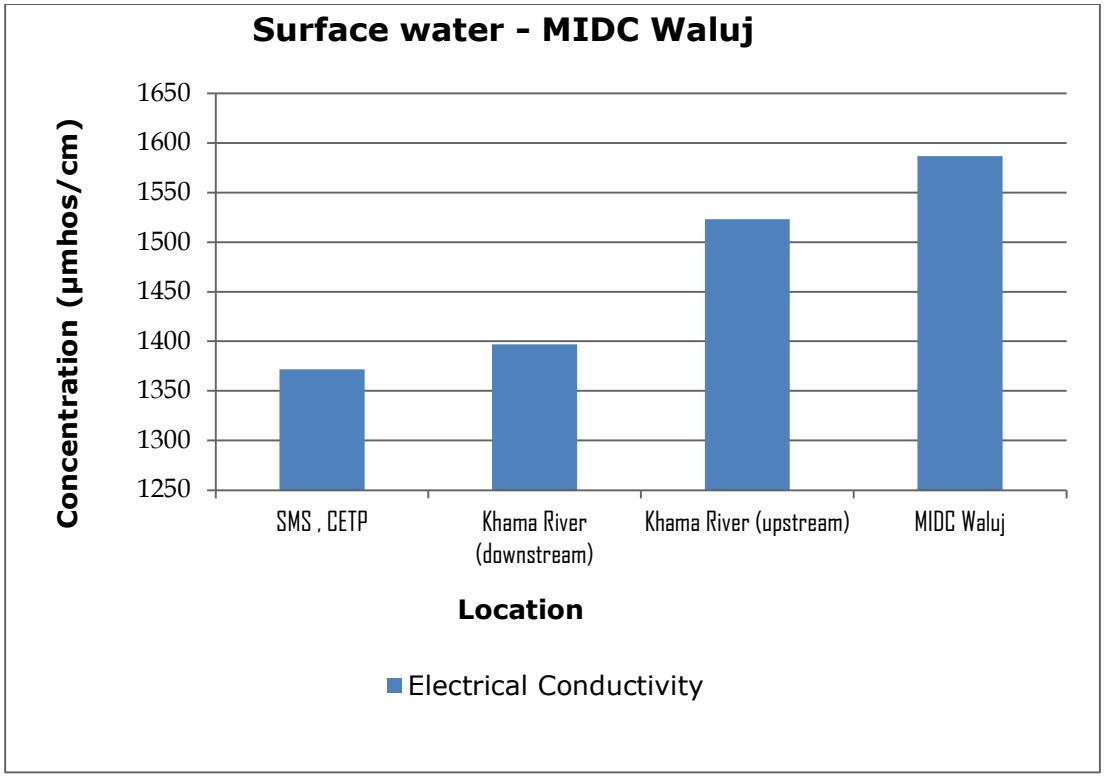

Surface water - MIDC Chikalthana
Concentration (µmhos/cm)
1800
1600
1400
1200
1000
800
600
400
200
0
Sukana Dam
Zalta Phata STP, Beed Road
Nalla Near NHK Automotive Pvt. Ltd.
Nalla Water, Uttaranagari
Location
Electrical Conductivity

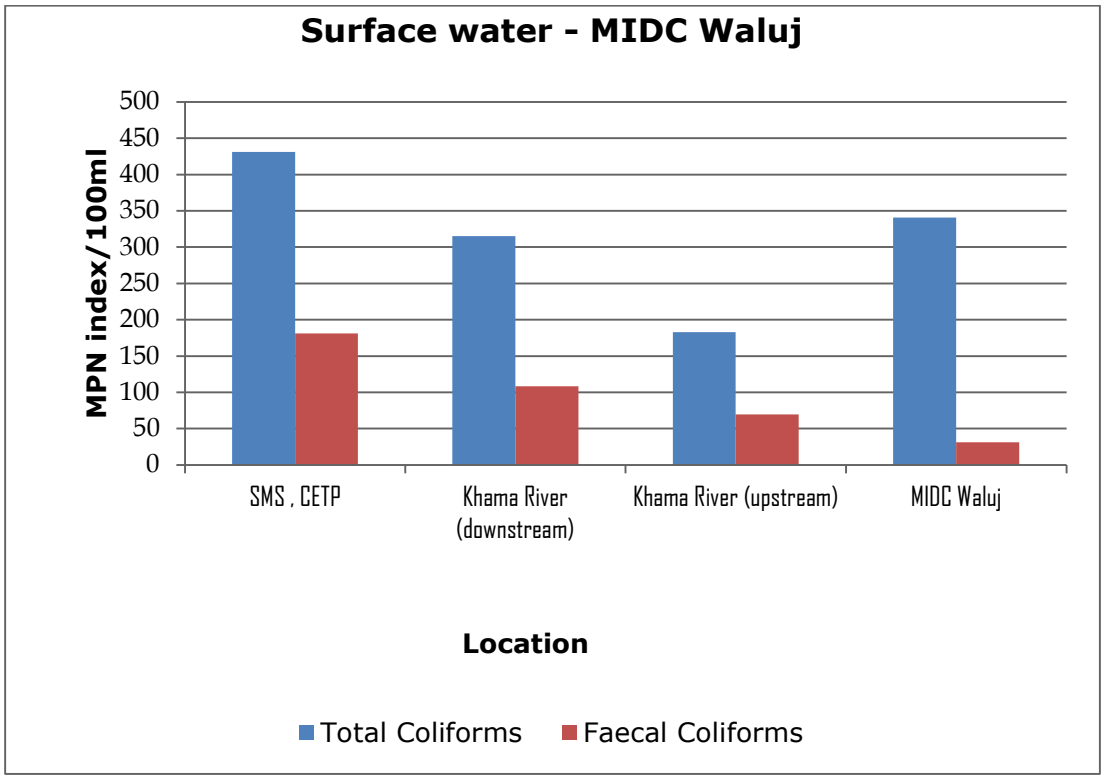

Surface water - MIDC Chikalthana
MPN index/100ml
1000
900
800
700
600
500
400
300
200
100
0
Sukana Dam
Zalta Phata STP, Beed Road
Nalla Near NHK Automotive Pvt. Ltd.
Location
Total Coliforms
Faecal Coliforms

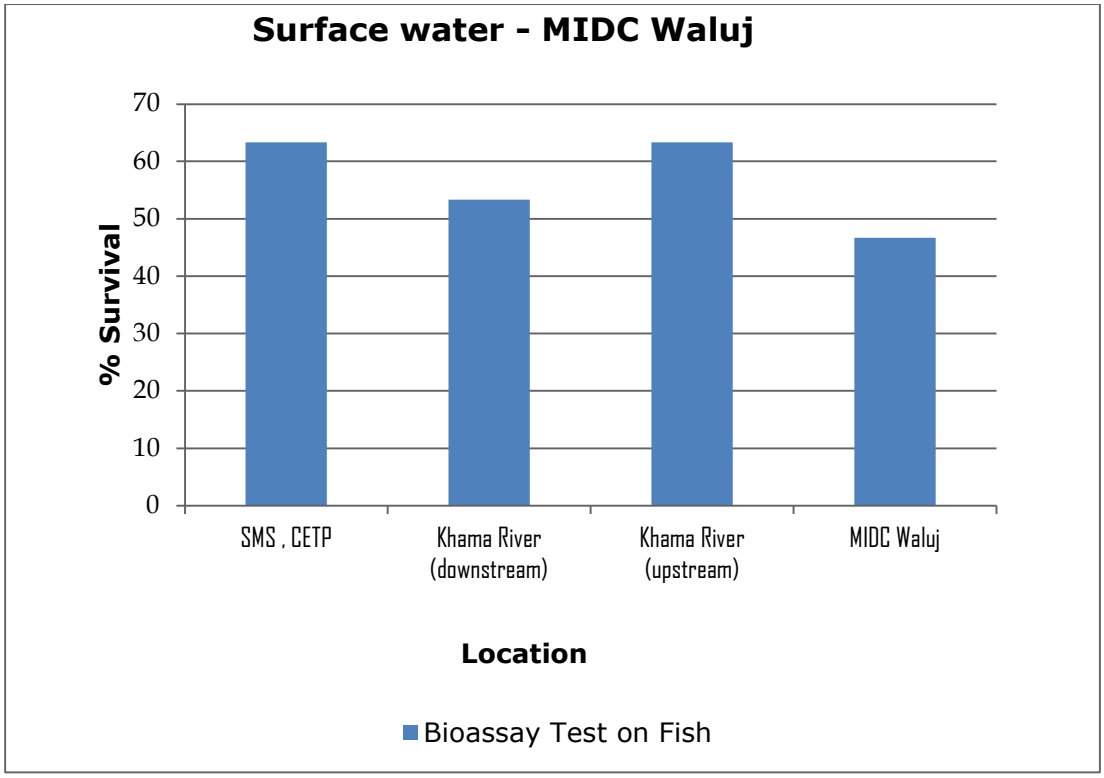

Surface water - MIDC Chikalthana
% Survival
80
70
60
50
40
30
20
10
0
Sukana Dam
Zalta Phata STP, Beed Road
Nalla Near NHK Automotive Pvt. Ltd.
Nalla Water, Uttaranagari
Bioassay Test on Fish

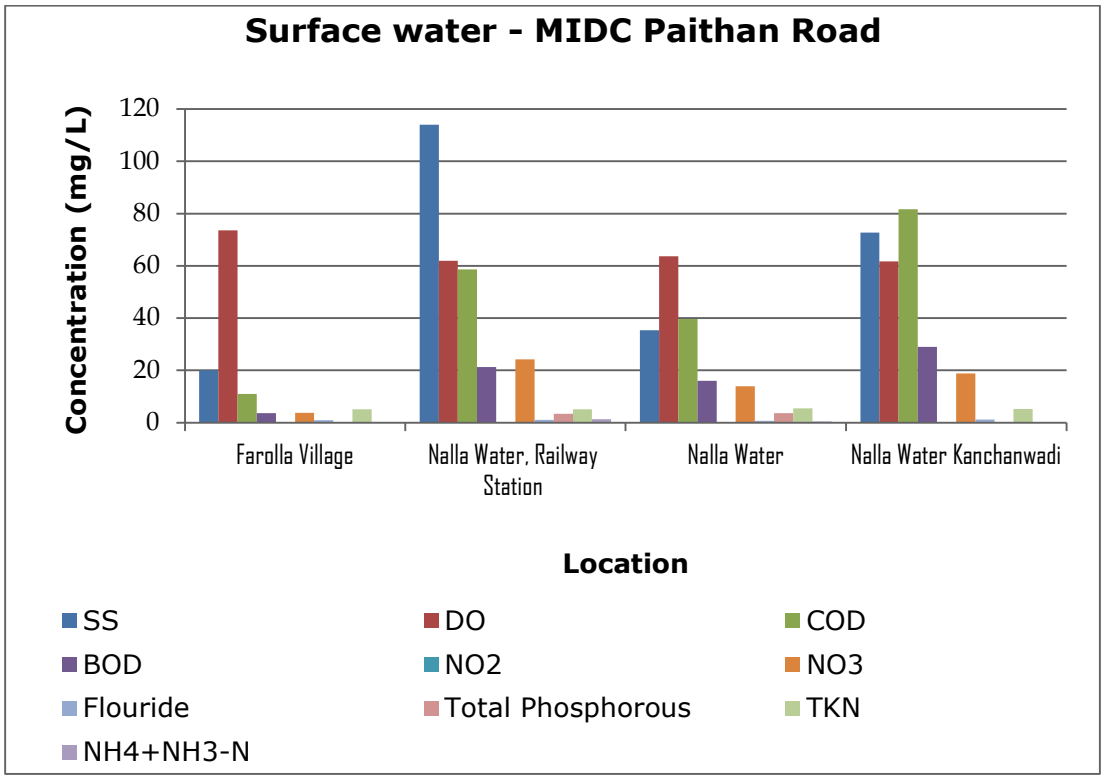

Surface water - MIDC Waluj
Concentration (mg/L)
80
70
60
50
40
30
20
10
0
SMS , CETP
Khama River (downstream)
Khama River (upstream)
MIDC Waluj
Location
SS
DO
COD
BOD
NO2
NO3
Fluoride (as F)
Total Phosphorous
TKN
NH4+NH3-N

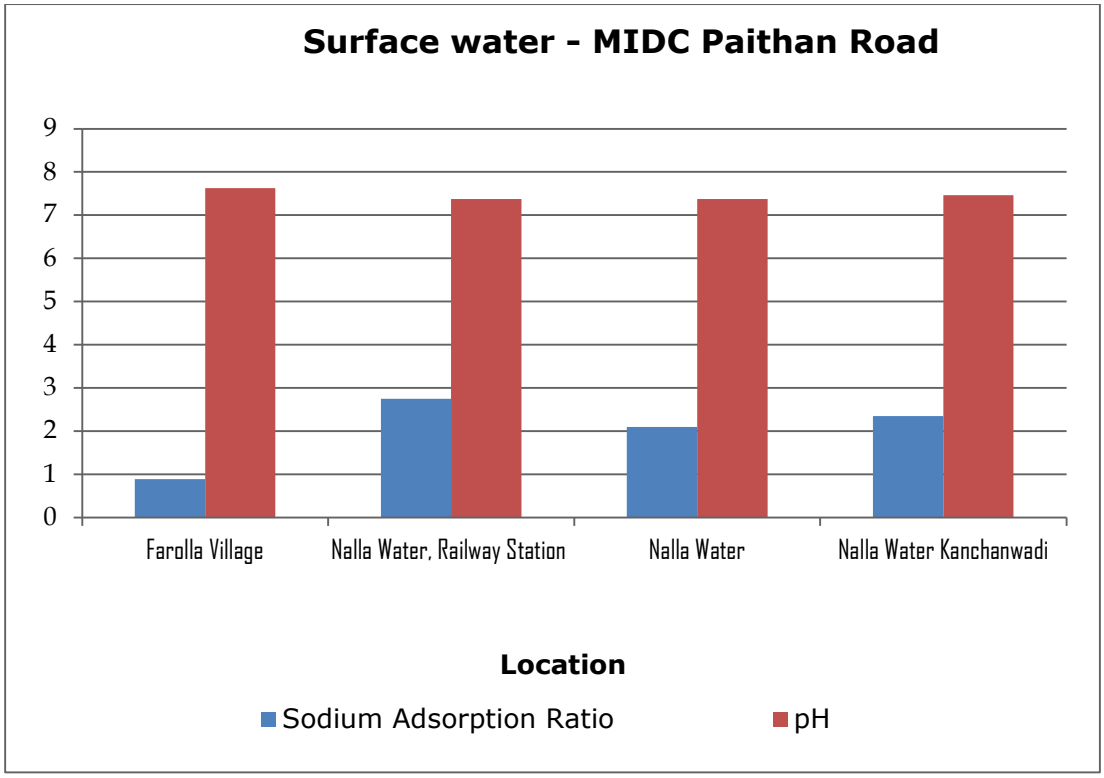

Surface water - MIDC Waluj
8
7
6
5
4
3
2
1
0
SMS , CETP
Khama River (downstream)
Khama River (upstream)
MIDC Waluj
Location
Sodium Adsorption Ratio
pH

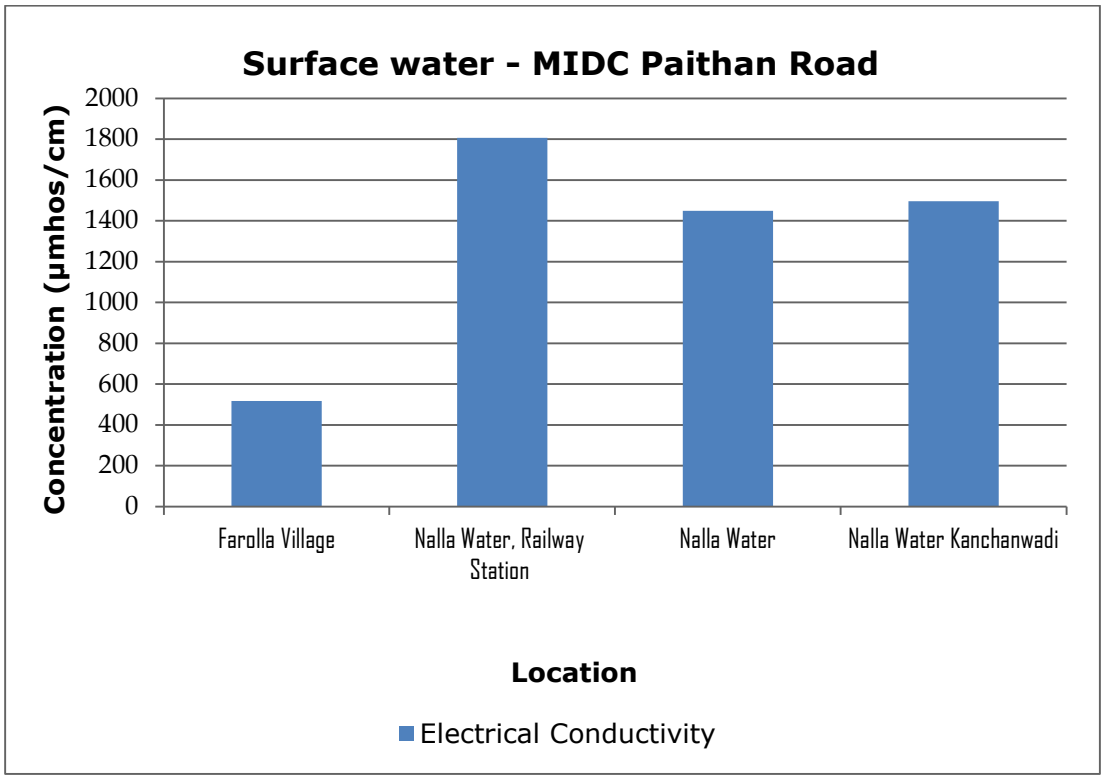

Surface water - MIDC Waluj
Concentration (µmhos/cm)
1650
1600
1550
1500
1450
1400
1350
1300
1250
SMS , CETP
Khama River (downstream)
Khama River (upstream)
MIDC Waluj
Location
Electrical Conductivity

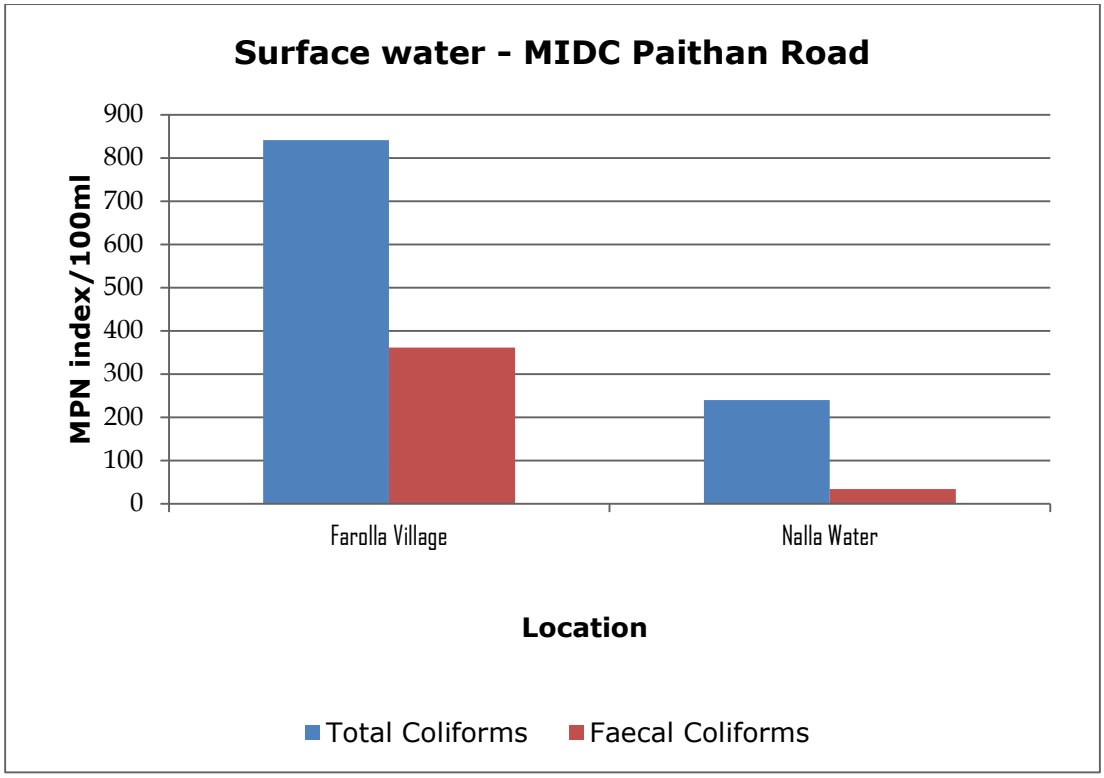

Surface water - MIDC Waluj
MPN index/100ml
500
450
400
350
300
250
200
150
100
50
0
SMS , CETP
Khama River (downstream)
Khama River (upstream)
MIDC Waluj
Location
Total Coliforms
Faecal Coliforms

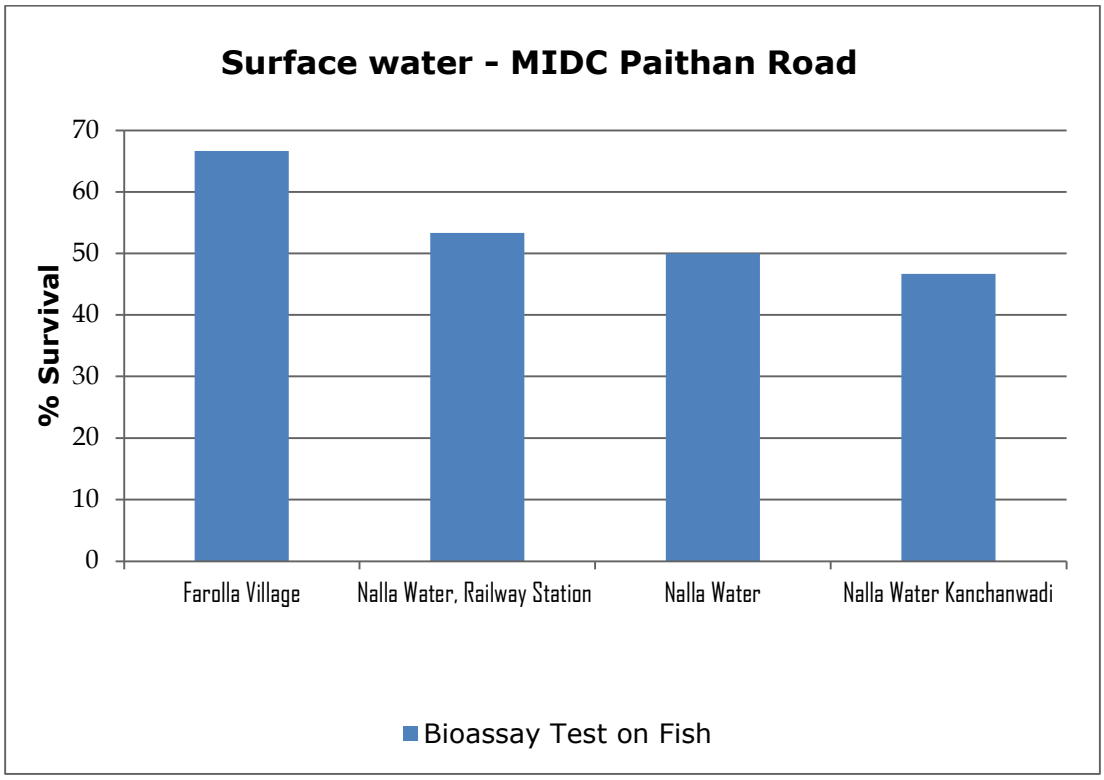

Surface water - MIDC Waluj
% Survival
70
60
50
40
30
20
10
0
SMS , CETP
Khama River (downstream)
Khama River (upstream)
MIDC Waluj
Location
Bioassay Test on Fish


Surface water - MIDC Paithan Road
Concentration (mg/L)
120
100
80
60
40
20
0
Farolla Village
Nalla Water, Railway Station
Nalla Water
Nalla Water Kanchanwadi
Location
SS
DO
COD
BOD
NO2
NO3
Flouride
Total Phosphorous
TKN
NH4+NH3-N


Surface water - MIDC Paithan Road
9
8
7
6
5
4
3
2
1
0
Farolla Village
Nalla Water, Railway Station
Nalla Water
Nalla Water Kanchanwadi
Location
Sodium Adsorption Ratio
pH


Surface water - MIDC Paithan Road
Concentration (µmhos/cm)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Farolla Village
Nalla Water, Railway Station
Nalla Water
Nalla Water Kanchanwadi
Location
Electrical Conductivity


Surface water - MIDC Paithan Road
MPN index/100ml
900
800
700
600
500
400
300
200
100
0
Farolla Village
Nalla Water
Location
Total Coliforms
Faecal Coliforms


Surface water - MIDC Paithan Road
% Survival
70
60
50
40
30
20
10
0
Farolla Village
Nalla Water, Railway Station
Nalla Water
Nalla Water Kanchanwadi
Bioassay Test on Fish

4.4 Ground Water Analysis

Name of the Location: Wockhardt Ltd., Shendra MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (11.02.2020)	Round-2 (13.02.2020)	Round-3 (16.02.2020)
Colour	Hazen		1	28	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.45	7.63	6.88
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	BDL	6	BDL
Chemical Oxygen Demand	mg/L		BDL	15	BDL
Biochemical Oxygen Demand (3 days,27°C)	mg/L		BDL	5	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1596	1418	1883
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		33.8	31	29.1
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	33.8	31	29.1
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.9	0.9	0.93
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		1.44	3.23	1.08
Total Coliforms	MPN index/ 100 mL		1600	94	23
Faecal Coliforms	MPN index/ 100 mL		540	32	7.8

Parameters	Unit	Std. Limit	Results		
			Round-1 (11.02.2020)	Round-2 (13.02.2020)	Round-3 (16.02.2020)
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	7.44	3.58	6.2
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (11.02.2020)	Round-2 (13.02.2020)	Round-3 (16.02.2020)
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	0.057	0.069	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		0.026	0.029	BDL
Iron (as Fe)	mg/L		0.289	0.643	BDL
Vanadium (as V)	mg/L		0.034	0.033	0.031
Selenium (as Se)	mg/L		0.016	BDL	0.006
Total Nitrogen	mg/L		BDL	BDL	BDL
Boron (as B)	mg/L		14.8	10.4	12.6
Bioassay Test on fish	% survival		50	50	60

Name of the Location: Gut No. 95, Kambhelphal, Shendra MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (11.02.2020)	Round-2 (13.02.2020)	Round-3 (16.02.2020)
Colour	Hazen		1	28	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.43	7.88	7.67
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	6	6	6
Chemical Oxygen Demand	mg/L		BDL	11	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		BDL	3	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	3760	3110	2310
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		58.9	30.6	31.9
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	58.9	30.6	31.9
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		1.3	0.9	1.1
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		1.18	0.48	0.97
Total Coliforms	MPN index/ 100 mL		350	79	4.5
Faecal Coliforms	MPN index/ 100 mL		130	49	BDL.8
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (11.02.2020)	Round-2 (13.02.2020)	Round-3 (16.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	3.13	6.27	3.69
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (11.02.2020)	Round-2 (13.02.2020)	Round-3 (16.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	0.015	0.014	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	0.007	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		0.014	BDL	BDL
Iron (as Fe)	mg/L		0.061	0.072	BDL
Vanadium (as V)	mg/L		0.086	0.084	0.068
Selenium (as Se)	mg/L		0.012	BDL	0.014
Total Nitrogen	mg/L		0.125	BDL	0.171
Boron (as B)	mg/L		16	13	10.7
Bioassay Test on fish	% survival		70	60	90

Name of the Location: Gut No. 96 Shendra Kamanagar, shendra MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (11.02.2020)	Round-2 (13.02.2020)	Round-3 (16.02.2020)
Colour	Hazen		1	26	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.34	7.71	7.56
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	6	6	6
Chemical Oxygen Demand	mg/L		BDL	BDL	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		BDL	BDL	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	3300	2540	1838
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		62.7	30.7	29.5
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	62.7	30.7	29.5
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		1.5	0.9	0.94
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		1.1	0.12	3.69
Total Coliforms	MPN index/ 100 mL		BDL.8	23	BDL.8
Faecal Coliforms	MPN index/ 100 mL		BDL.8	7.8	BDL.8
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (11.02.2020)	Round-2 (13.02.2020)	Round-3 (16.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	5.26	4.36	5.4
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (11.02.2020)	Round-2 (13.02.2020)	Round-3 (16.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	0.019	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	0.048
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	0.037
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.365	0.074	0.429
Vanadium (as V)	mg/L		0.098	0.085	0.086
Selenium (as Se)	mg/L		BDL	BDL	0.016
Total Nitrogen	mg/L		0.283	BDL	0.521
Boron (as B)	mg/L		18.9	11.1	11.9
Bioassay Test on fish	% survival		80	70	100

Name of the Location: Shree Shani Ashram, Chikalthana MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.21	7.25	7.67
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	BDL	6	6
Chemical Oxygen Demand	mg/L		BDL	7	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		BDL	2	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	4560	3420	2620
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		68	30.9	32.1
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	68	30.9	32.1
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		1.5	0.9	0.84
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		0.4	BDL	BDL
Sodium Absorption Ratio	-		3.84	8.46	3.93
Total Coliforms	MPN index/ 100 mL		47	23	7.8
Faecal Coliforms	MPN index/ 100 mL		20	13	BDL.8
Total Phosphorous (as P)	mg/L	**0.3**	0.7	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	3.47	3.58	9
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	0.054	BDL
Nickel (as Ni)	mg/L	**200**	BDL	0.021	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		BDL	0.1	BDL
Vanadium (as V)	mg/L		0.162	0.099	0.138
Selenium (as Se)	mg/L		0.015	BDL	0.015
Total Nitrogen	mg/L		0.452	BDL	0.757
Boron (as B)	mg/L		18.3	10.3	16.1
Bioassay Test on fish	% survival		80	60	70

Name of the Location: Naregaon, Chikalthana MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Colour	Hazen		1	25	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.19	7.34	7.34
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	32	18	18
Chemical Oxygen Demand	mg/L		BDL	BDL	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		BDL	BDL	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	2100	1941	1560
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		59.7	30	33.2
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	59.7	30	33.2
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		1.4	1.1	1.44
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		0.44	BDL	BDL
Sodium Absorption Ratio	-		1.81	6.49	1.44
Total Coliforms	MPN index/ 100 mL		1600	13	4.5
Faecal Coliforms	MPN index/ 100 mL		280	13	BDL.8
Total Phosphorous (as P)	mg/L	**0.3**	0.62	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	3.24	2.8	5
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	1.84	0.055	0.252
Nickel (as Ni)	mg/L	**200**	BDL	0.021	BDL
Copper (as Cu)	mg/L	**100**	0.09	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	0.088	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		0.038	BDL	0.026
Iron (as Fe)	mg/L		15.4	0.106	0.465
Vanadium (as V)	mg/L		0.473	0.103	0.055
Selenium (as Se)	mg/L		0.008	BDL	0.009
Total Nitrogen	mg/L		0.499	BDL	0.265
Boron (as B)	mg/L		16.3	9.4	12.3
Bioassay Test on fish	% survival		60	70	80

Name of the Location: Mahada Colony, Chikalthana MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Colour	Hazen		1	26	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.48	7.65	7.55
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	6	8	BDL
Chemical Oxygen Demand	mg/L		BDL	BDL	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		BDL	BDL	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1604	1370	1039
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		34.9	29.2	39.3
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	34.9	29.2	39.3
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.9	0.8	0.8
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		0.64	2.84	0.66
Total Coliforms	MPN index/ 100 mL		70	13	23
Faecal Coliforms	MPN index/ 100 mL		46	7.8	4.5
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	3.14	2.35	1.12
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (12.02.2020)	Round-2 (14.02.2020)	Round-3 (17.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	0.071	0.055	0.083
Nickel (as Ni)	mg/L	**200**	BDL	0.017	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.329	0.105	BDL
Vanadium (as V)	mg/L		0.128	0.101	0.131
Selenium (as Se)	mg/L		0.013	BDL	0.008
Total Nitrogen	mg/L		0.113	BDL	0.268
Boron (as B)	mg/L		10.8	8.75	9.76
Bioassay Test on fish	% survival		70	70	60

Name of the Location: Gayake Gut No. 71/72, Ghanegaon., Waluj MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Colour	Hazen		1	27.2	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.61	7.53	7.33
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	6	12	10
Chemical Oxygen Demand	mg/L		10	13	6
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		4	3	3
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	712	1162	1156
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		28.5	14.5	33.6
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	28.5	14.5	33.6
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.97	0.8	0.3
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		0.92	1.19	1.99
Total Coliforms	MPN index/ 100 mL		920	170	920
Faecal Coliforms	MPN index/ 100 mL		220	40	240
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	4.5	5.2	5.6
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	0.015	0.012
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	0.008	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.086	BDL	BDL
Vanadium (as V)	mg/L		0.112	0.096	0.110
Selenium (as Se)	mg/L		0.005	0.007	0.013
Total Nitrogen	mg/L		0.123	0.141	0.166
Boron (as B)	mg/L		10.8	8.39	13
Bioassay Test on fish	% survival		20	70	50

Name of the Location: Hiwale Open Well, Near Ransangaon, Waluj MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Colour	Hazen		1	27.2	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.68	7.26	6.81
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	10	16	BDL
Chemical Oxygen Demand	mg/L		11	12	11
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		3	3	5
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1772	2040	1800
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		32.1	34	42.2
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	32.1	34	42.2
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.8	1.4	0.4
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	0.1
Sodium Absorption Ratio	-		2.7	11.1	2.17
Total Coliforms	MPN index/ 100 mL		220	13	350
Faecal Coliforms	MPN index/ 100 mL		110	13	47
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	0.3

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	5.6	3.1	2.24
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	0.006	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.086	BDL	BDL
Vanadium (as V)	mg/L		0.112	0.079	0.024
Selenium (as Se)	mg/L		0.005	BDL	0.013
Total Nitrogen	mg/L		0.894	0.641	BDL
Boron (as B)	mg/L		12.7	3.1	11.5
Bioassay Test on fish	% survival		30	90	60

Name of the Location: Near Sanskar School, CIDCO, WALUJ MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Colour	Hazen		1	28	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.14	7.17	7.82
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	13	32	6
Chemical Oxygen Demand	mg/L		5	5	7
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		2	2	3
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1380	1230	1257
Nitrite Nitrogen (as NO_2)	mg/L		0.29	0.03	BDL
Nitrate Nitrogen (as NO_3)	mg/L		32.3	32.4	41
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	32.6	32.4	41
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.8	0.84	0.5
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		2.82	2.22	1.61
Total Coliforms	MPN index/ 100 mL		280	46	1600
Faecal Coliforms	MPN index/ 100 mL		170	13	540
Total Phosphorous (as P)	mg/L	**0.3**	0.3	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	9.07	2.12	1.34
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (19.02.2020)	Round-2 (21.02.2020)	Round-3 (23.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	0.005	0.008	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.235	BDL	BDL
Vanadium (as V)	mg/L		0.028	0.031	0.024
Selenium (as Se)	mg/L		0.008	BDL	0.009
Total Nitrogen	mg/L		0.136	0.121	BDL
Boron (as B)	mg/L		16.3	9.26	10.3
Bioassay Test on fish	% survival		30	80	60

Name of the Location: Farolla Village, Paithan MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Colour	Hazen		1	28	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.91	7.73	7.43
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	11	6	10
Chemical Oxygen Demand	mg/L		BDL	5	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		BDL	2	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	591	589	1043
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		5.52	8.26	35.5
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	5.52	8.26	35.5
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.74	1.06	0.62
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		0.1	0.9	BDL
Sodium Absorption Ratio	-		1.5	1.4	1.8
Total Coliforms	MPN index/ 100 mL		13	23	5.4×10^3
Faecal Coliforms	MPN index/ 100 mL		13	13	5.4×10^3
Total Phosphorous (as P)	mg/L	**0.3**	0.12	1.5	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	3.13	7.60	15.6
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.112	BDL	BDL
Vanadium (as V)	mg/L		0.026	0.03	0.117
Selenium (as Se)	mg/L		BDL	0.007	0.011
Total Nitrogen	mg/L		BDL	BDL	0.144
Boron (as B)	mg/L		4.34	9.41	23.4
Bioassay Test on fish	% survival		80	80	70

Name of the Location: Allana Frigarico Campus, Paithan MIDC

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Colour	Hazen		1	27	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.86	7.55	7.16
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	10	6	6
Chemical Oxygen Demand	mg/L		17	47	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		6	17	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1291	595	1080
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		1.84	17.2	35.8
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	1.84	17.2	35.8
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.62	0.9	1.6
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		2.41	1.41	1.87
Total Coliforms	MPN index/ 100 mL		23	33	1.6×10^4
Faecal Coliforms	MPN index/ 100 mL		7.8	13	5.4×10^3
Total Phosphorous (as P)	mg/L	**0.3**	BDL	0.1	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	4.7	12.3	1.79
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	0.007
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		BDL	BDL	0.478
Vanadium (as V)	mg/L		0.073	0.122	BDL
Selenium (as Se)	mg/L		BDL	0.01	0.012
Total Nitrogen	mg/L		0.107	0.228	2.03
Boron (as B)	mg/L		5.1	16	9.66
Bioassay Test on fish	% survival		70	80	60

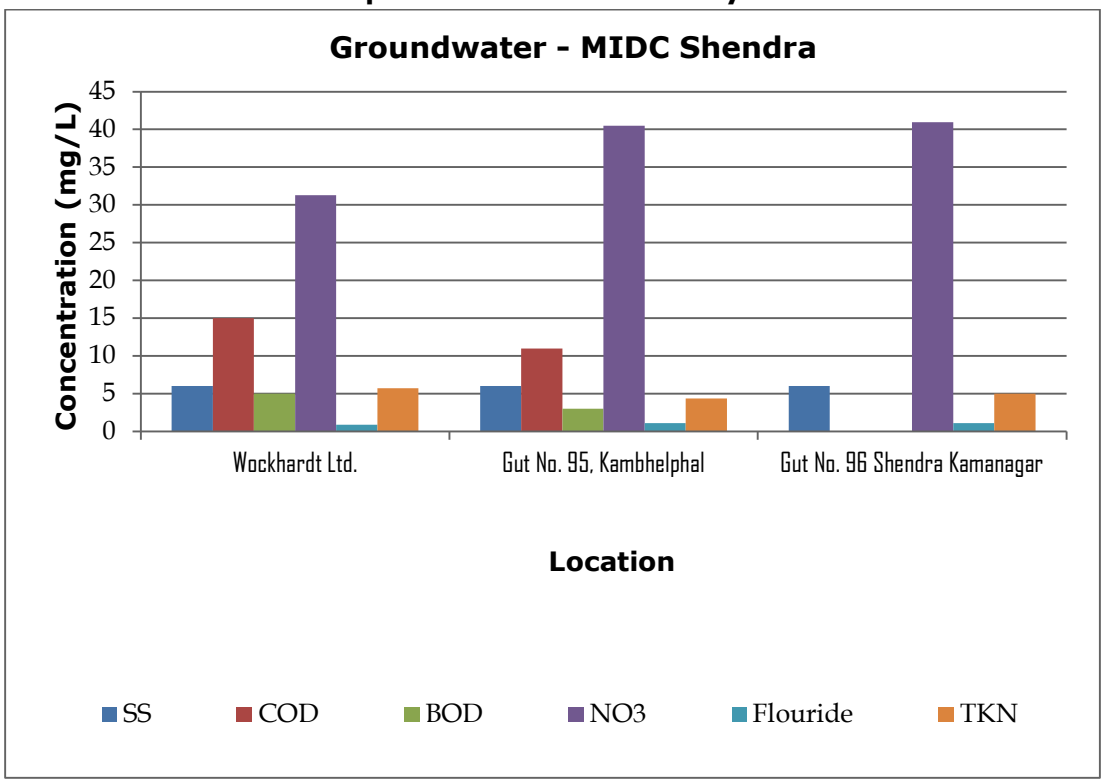
Name of the Location: Hasare Patil, Paithan MIDC

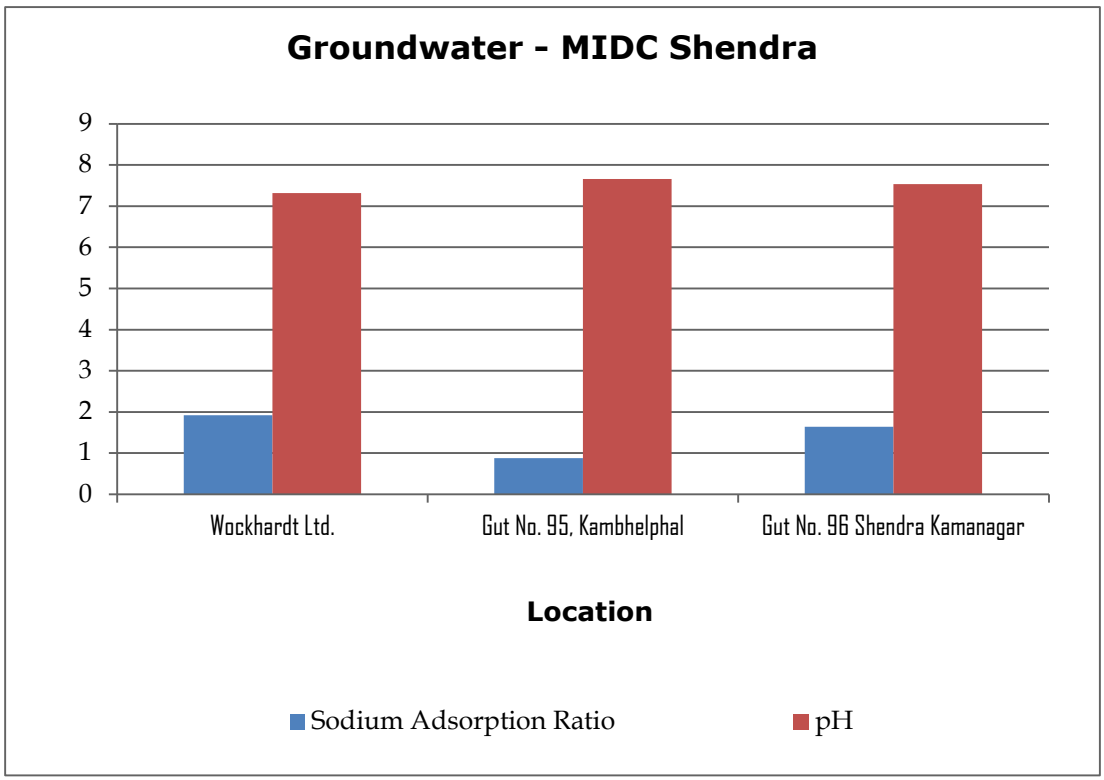
Parameters	Unit	Std. Limit	Results		
			Round-2 (24.02.2020)	Round-3 (26.02.2020)	Round-3 (28.02.2020)
Colour	Hazen		1	28	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.71	7.22	7.14
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	10	6	BDL
Chemical Oxygen Demand	mg/L		15	8	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		6	3	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	383	618	1146
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		3.76	36.5	36.5
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	3.76	36.5	36.5
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		1.3	2.01	0.6
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		0.12	BDL	BDL
Sodium Absorption Ratio	-		1.12	1.7	1.8
Total Coliforms	MPN index/ 100 mL		240	9.2×10^3	9.2×10^3
Faecal Coliforms	MPN index/ 100 mL		130	3.5×10^3	2.2×10^3
Total Phosphorous (as P)	mg/L	**0.3**	0.8	BDL	BDL

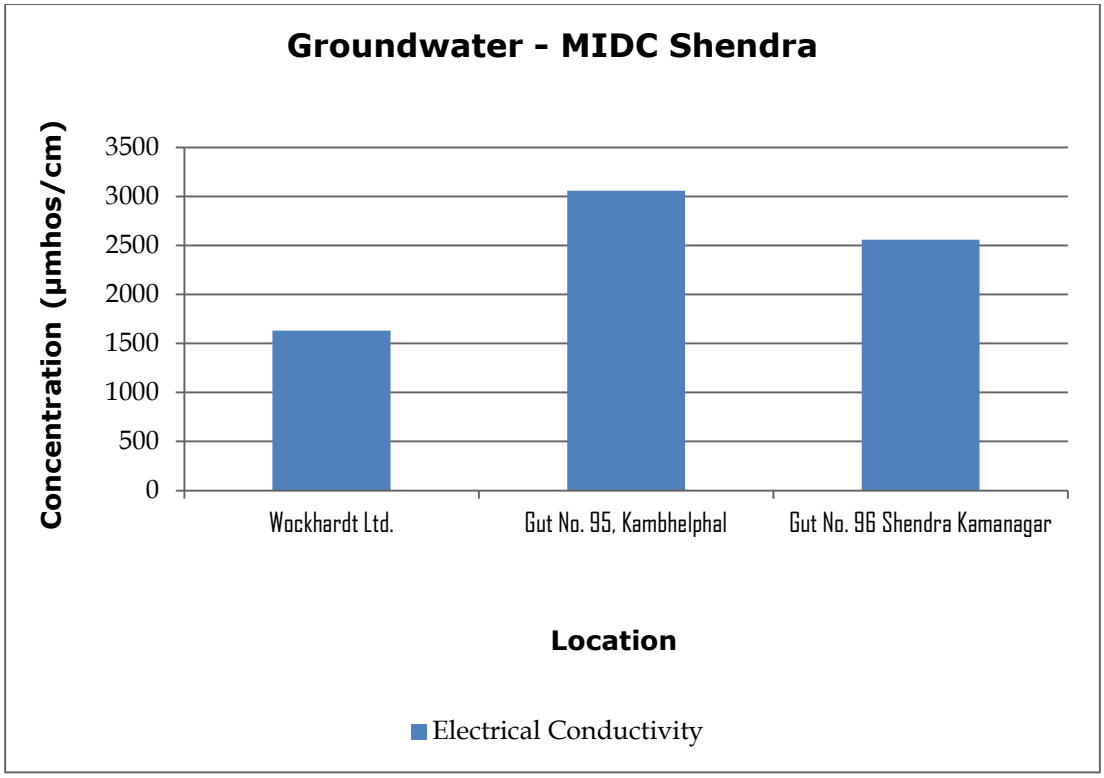
Parameters	Unit	Std. Limit	Results		
			Round-2 (24.02.2020)	Round-3 (26.02.2020)	Round-3 (28.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	5.6	3.24	6.27
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

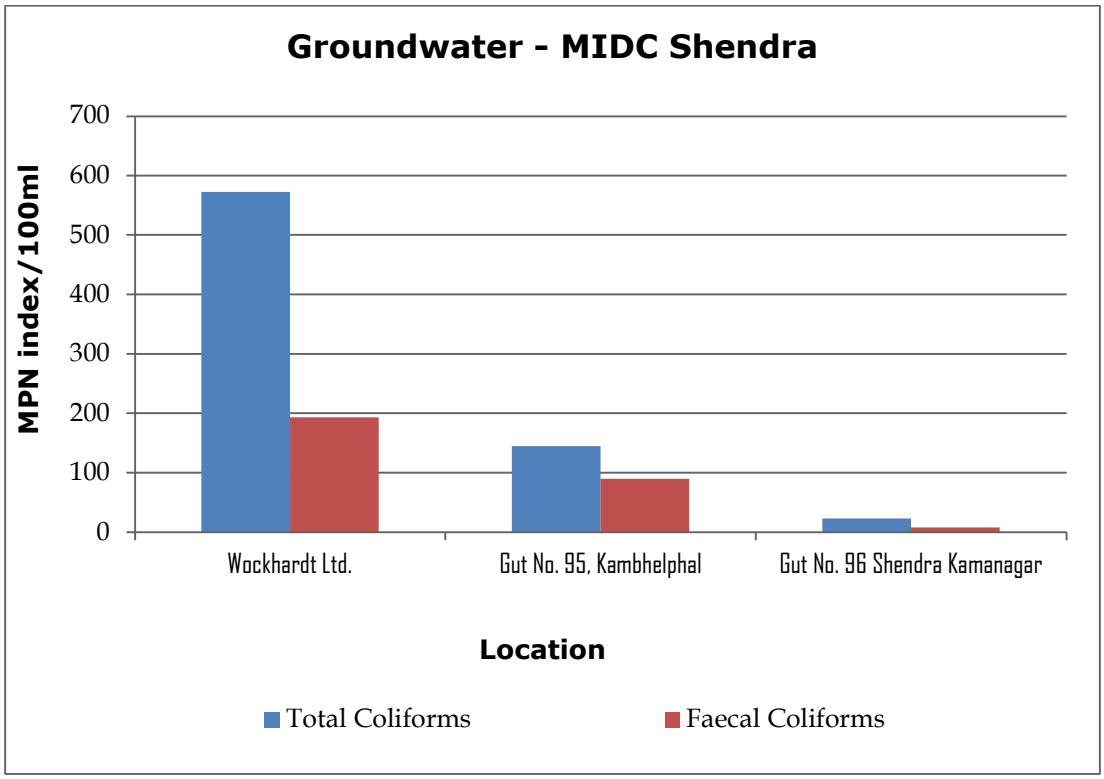
Parameters	Unit	Std. Limit	Results		
			Round-2 (24.02.2020)	Round-3 (26.02.2020)	Round-3 (28.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	0.099	0.124
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		0.203	BDL	BDL
Iron (as Fe)	mg/L		1.11	BDL	BDL
Vanadium (as V)	mg/L		0.014	0.111	0.115
Selenium (as Se)	mg/L		0.007	0.009	0.012
Total Nitrogen	mg/L		BDL	0.137	0.144
Boron (as B)	mg/L		6.42	11.2	14.3
Bioassay Test on fish	% survival		60	50	40

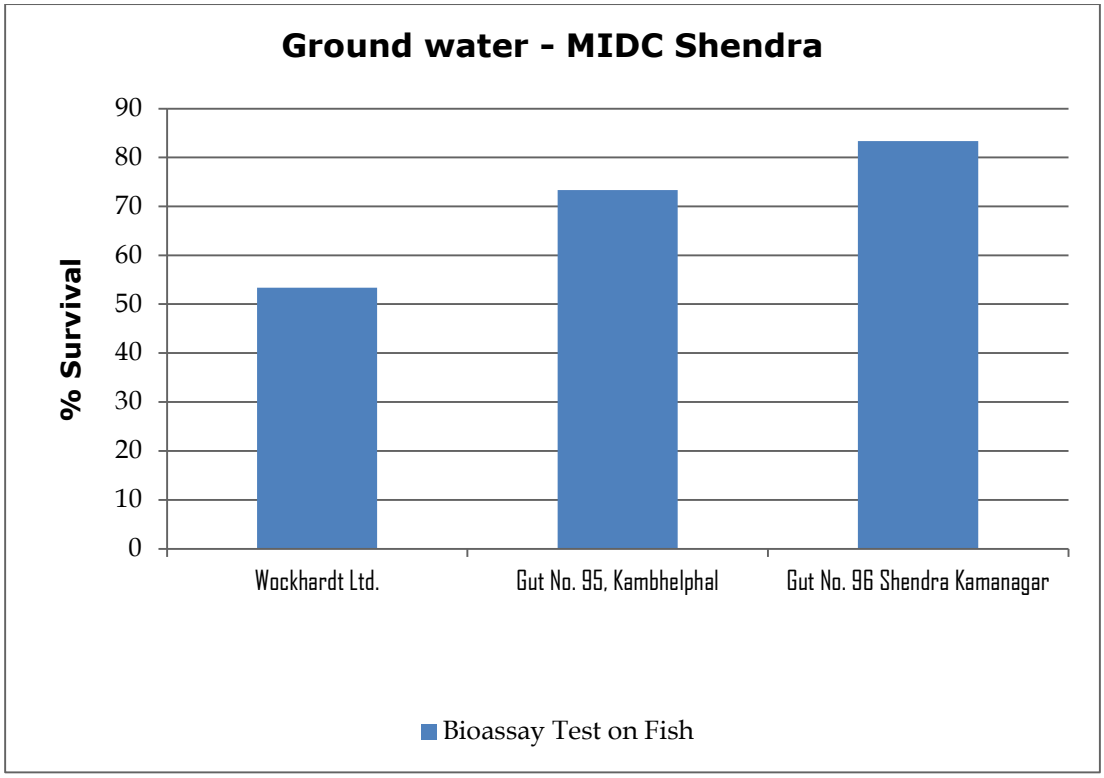
Graphs: Ground Water Analysis:

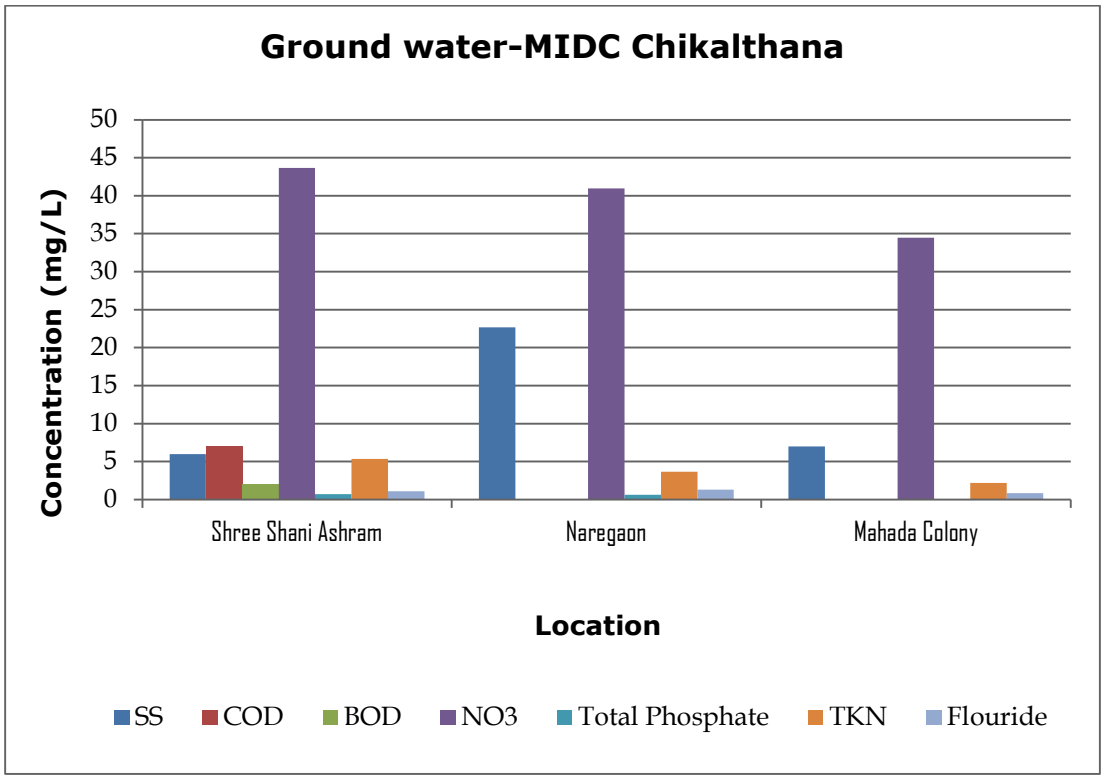


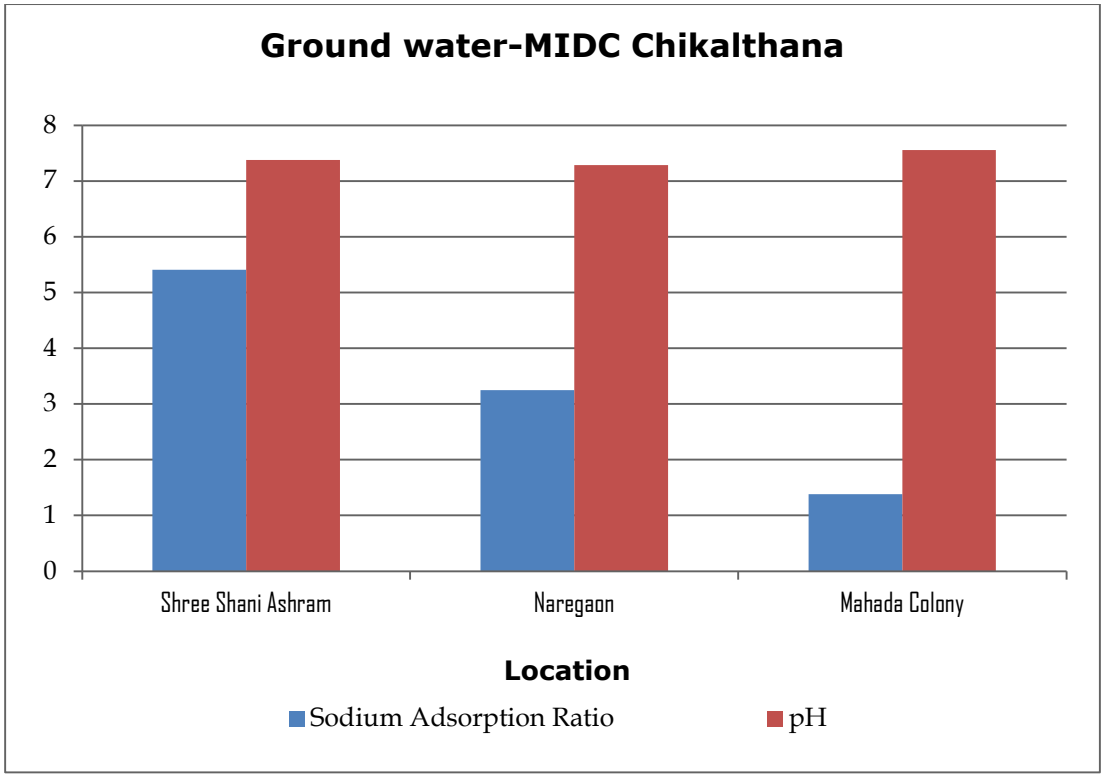


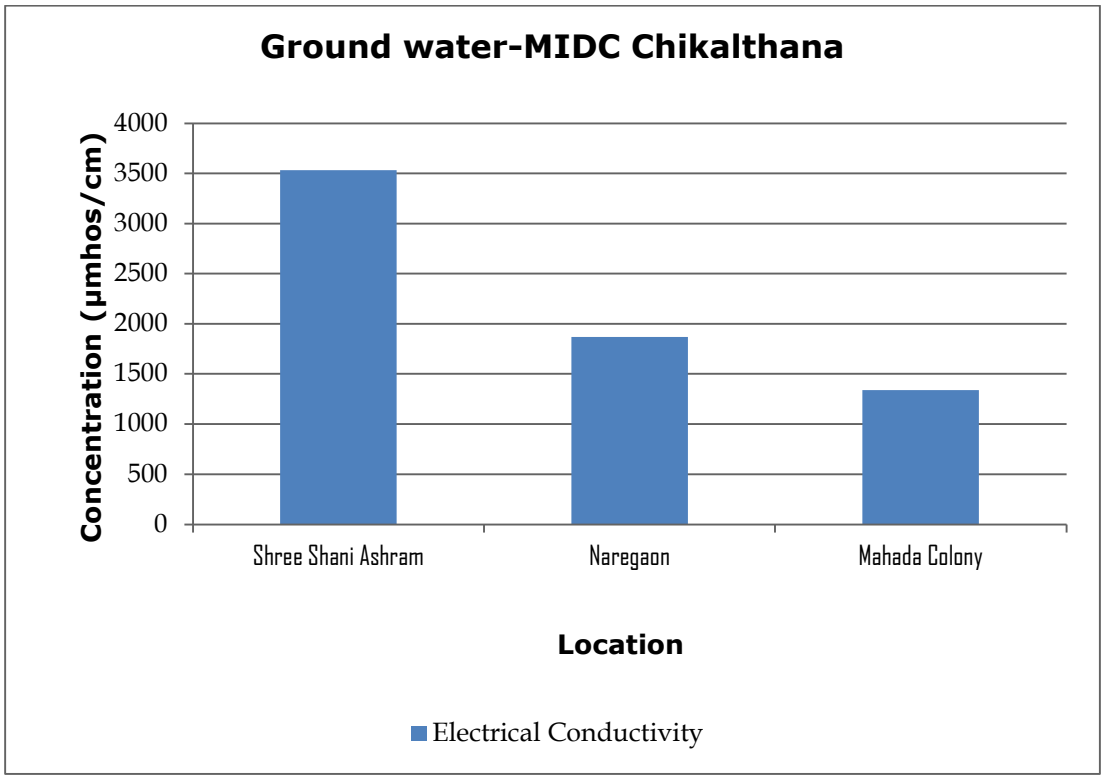

Groundwater - MIDC Shendra
Concentration (µmhos/cm)
3500
3000
2500
2000
1500
1000
500
0
Wockhardt Ltd.
Gut No. 95, Kambhelphal
Gut No. 96 Shendra Kamanagar
Location
Electrical Conductivity

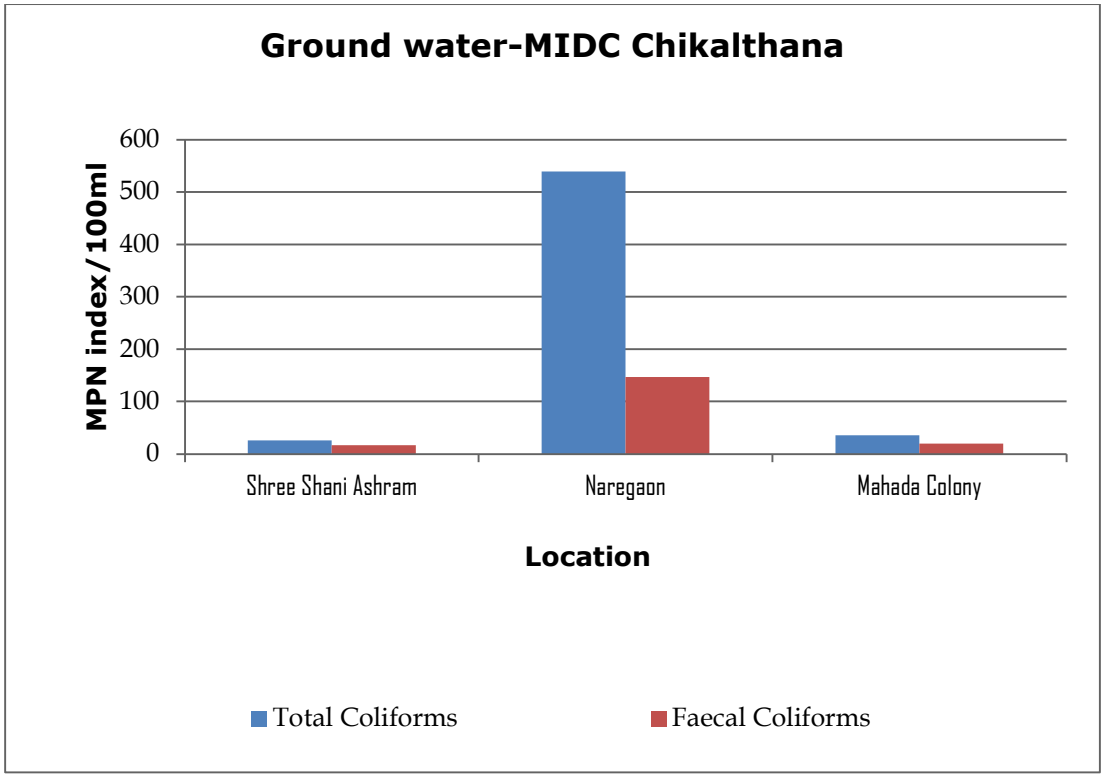

Groundwater - MIDC Shendra
MPN index/100ml
700
600
500
400
300
200
100
0
Wockhardt Ltd.
Gut No. 95, Kambhelphal
Gut No. 96 Shendra Kamanagar
Location
Total Coliforms
Faecal Coliforms

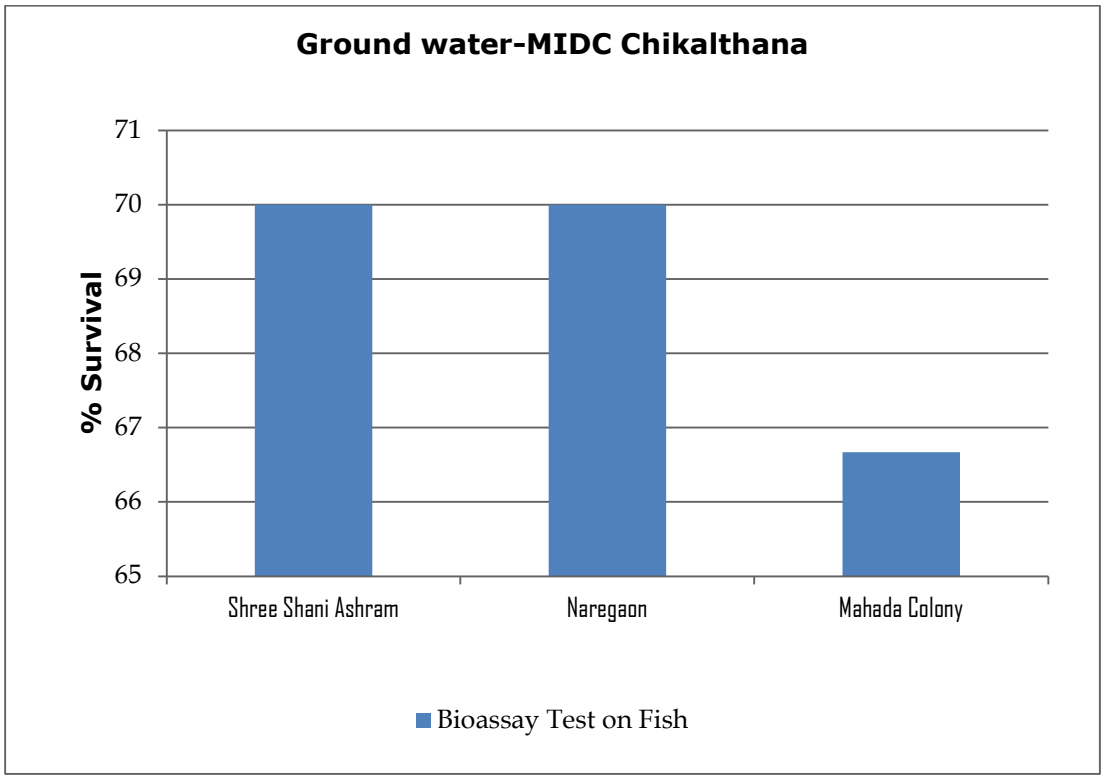

Ground water - MIDC Shendra
% Survival
90
80
70
60
50
40
30
20
10
0
Wockhardt Ltd.
Gut No. 95, Kambhelphal
Gut No. 96 Shendra Kamanagar
Bioassay Test on Fish

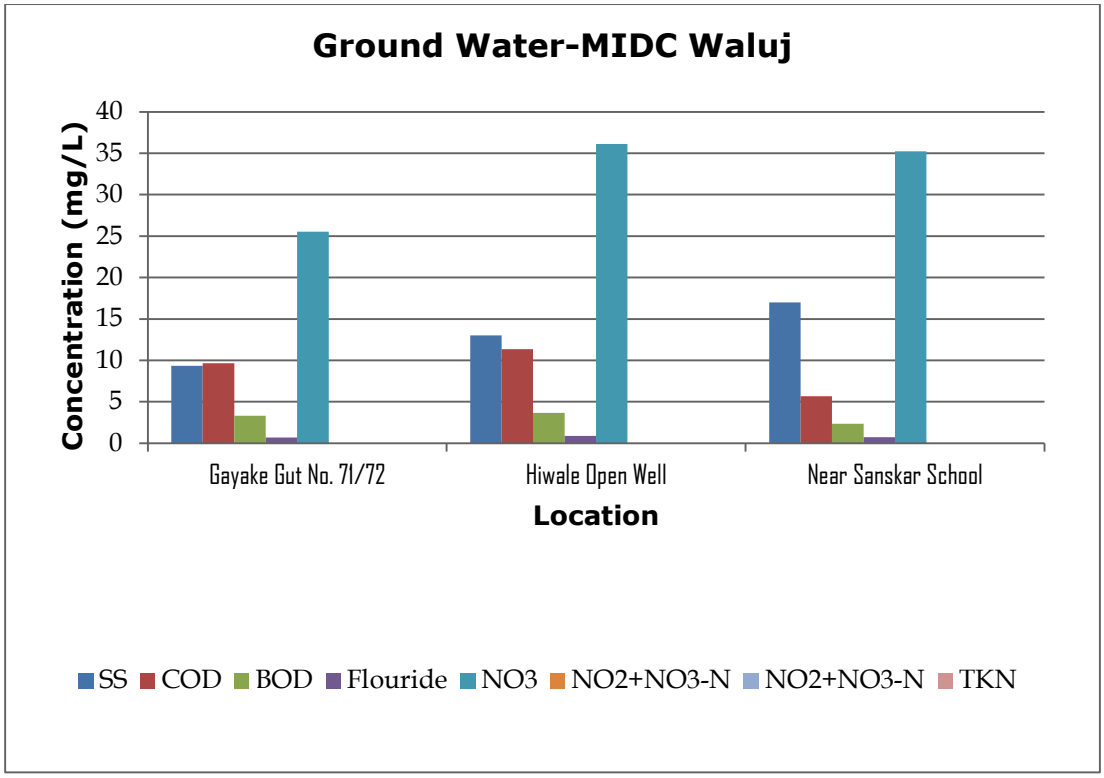

Ground water-MIDC Chikalthana
Concentration (mg/L)
50
45
40
35
30
25
20
15
10
5
0
Shree Shani Ashram
Naregaon
Mahada Colony
Location
SS
COD
BOD
NO3
Total Phosphate
TKN
Flouride

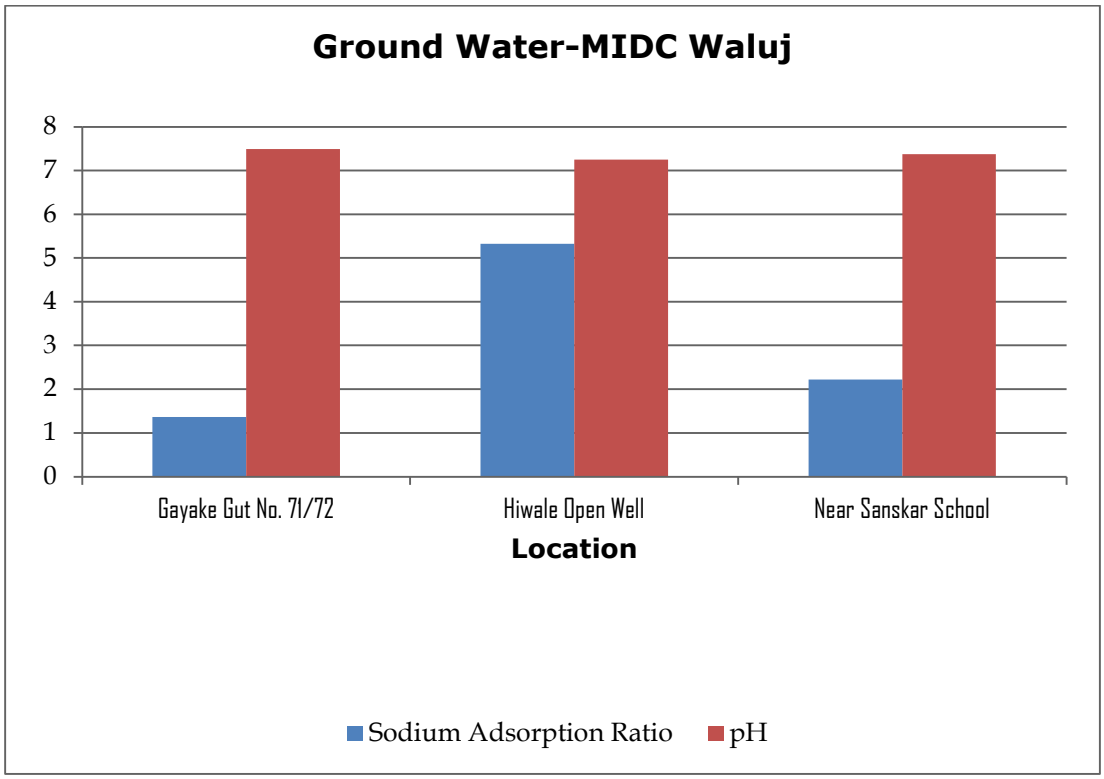

Ground water-MIDC Chikalthana
8
7
6
5
4
3
2
1
0
Shree Shani Ashram
Naregaon
Mahada Colony
Location
Sodium Adsorption Ratio
pH

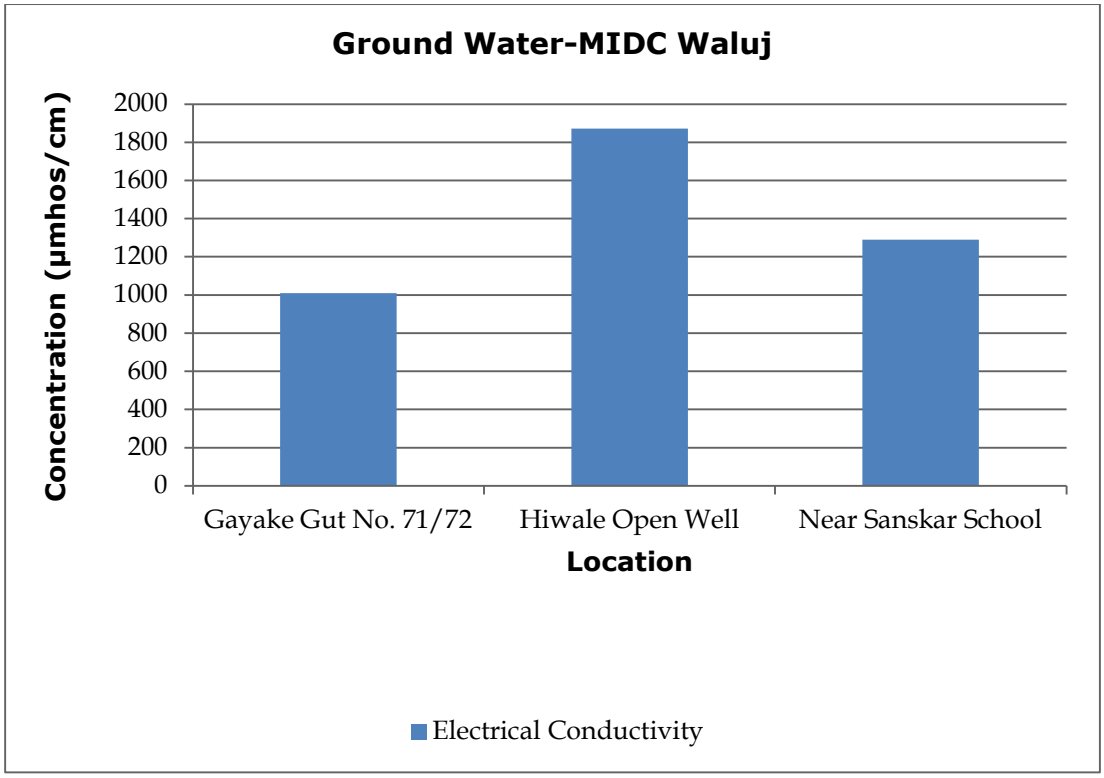

Ground water-MIDC Chikalthana
Concentration (µmhos/cm)
4000
3500
3000
2500
2000
1500
1000
500
0
Shree Shani Ashram
Naregaon
Mahada Colony
Location
Electrical Conductivity

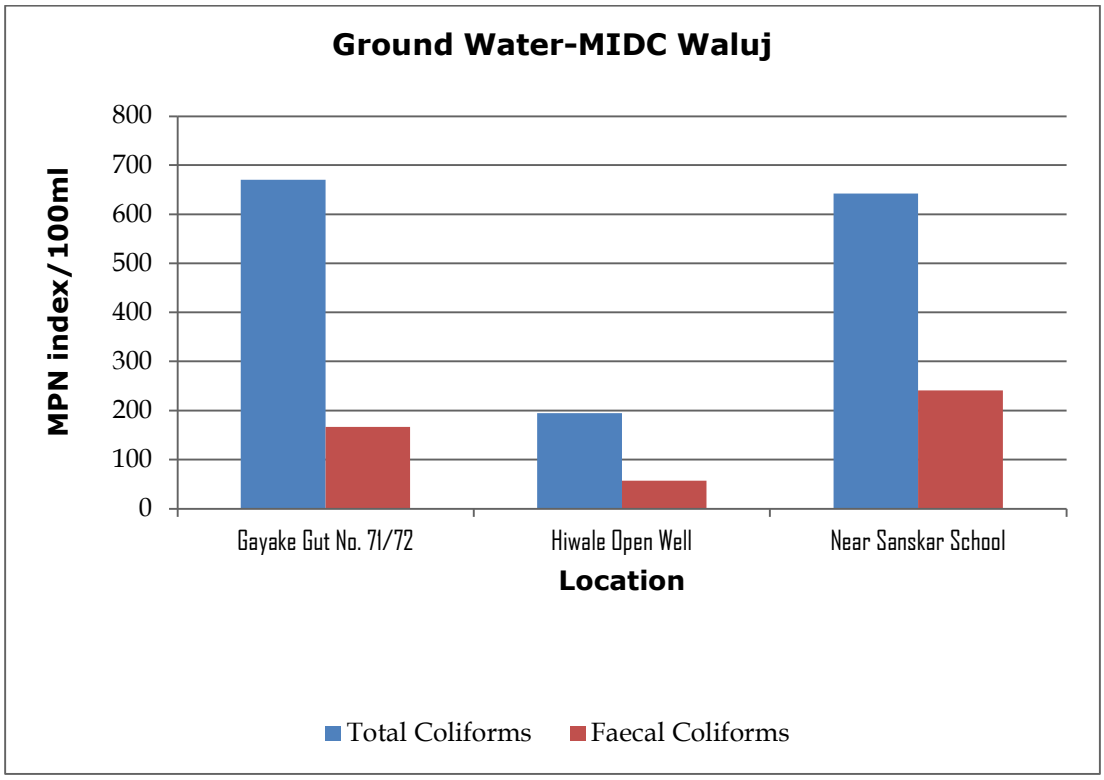

Ground water-MIDC Chikalthana
MPN index/100ml
600
500
400
300
200
100
0
Shree Shani Ashram
Naregaon
Mahada Colony
Location
Total Coliforms
Faecal Coliforms

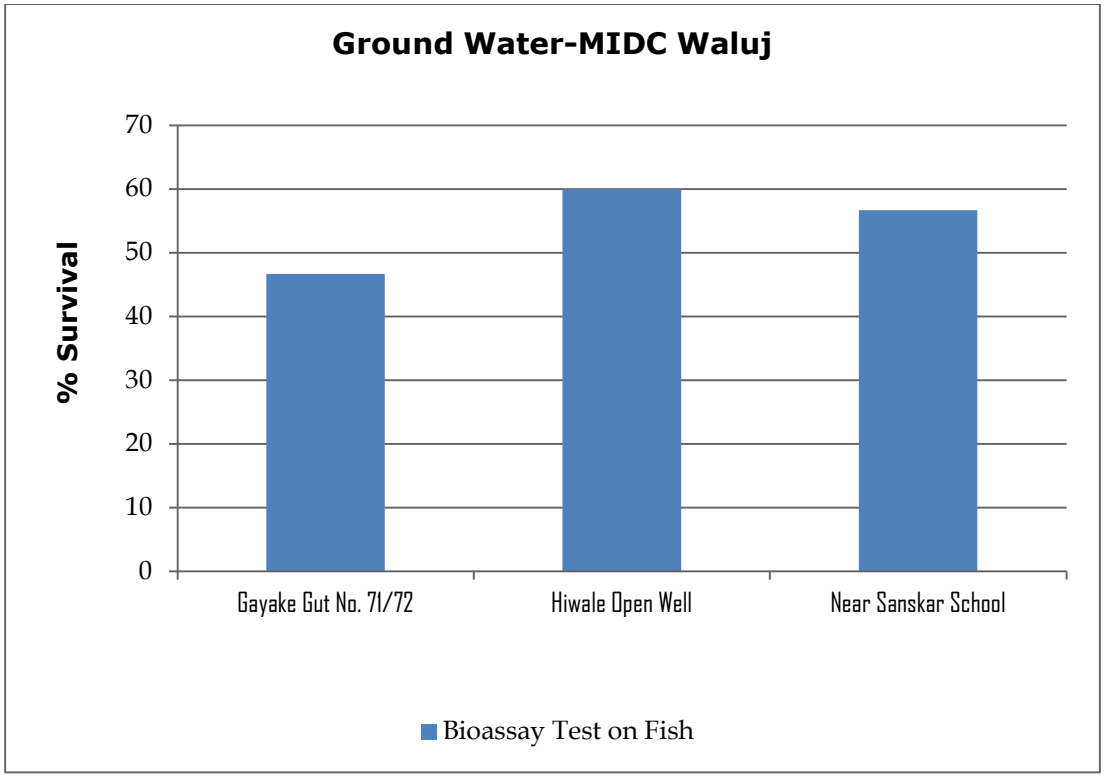

Ground water-MIDC Chikalthana
% Survival
71
70
69
68
67
66
65
Shree Shani Ashram
Naregaon
Mahada Colony
Bioassay Test on Fish

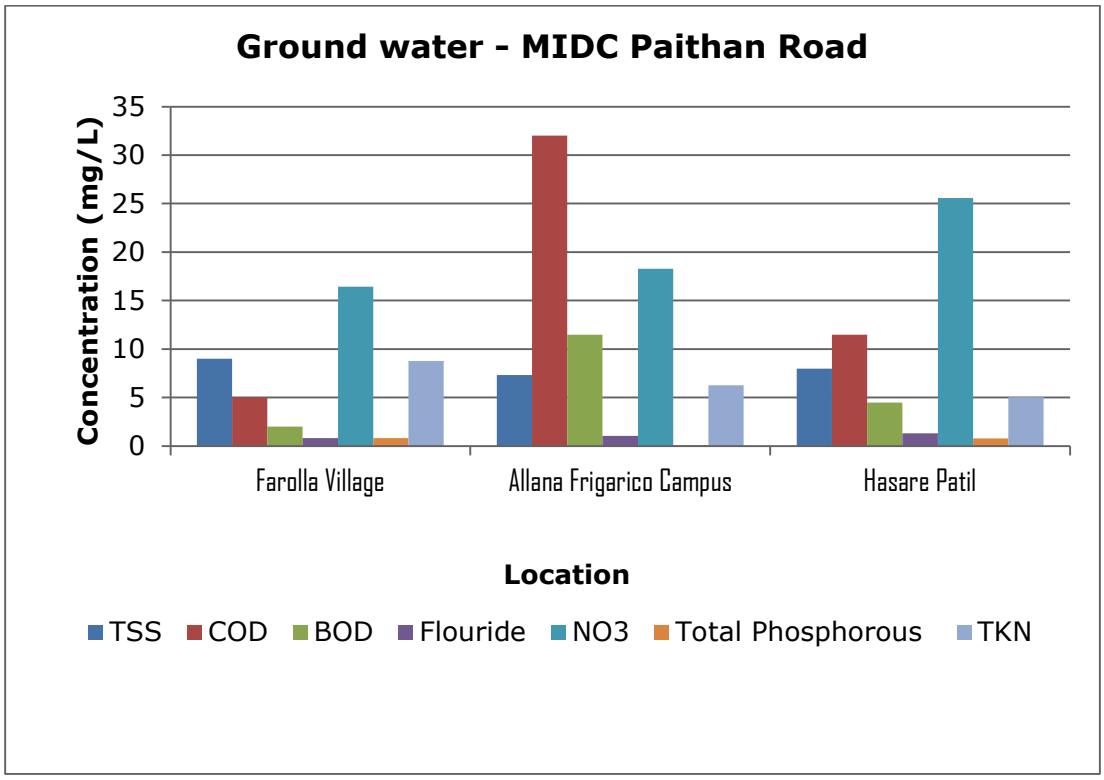

Ground Water-MIDC Waluj
Concentration (mg/L)
40
35
30
25
20
15
10
5
0
Gayake Gut No. 71/72
Hiwale Open Well
Near Sanskar School
Location
SS
COD
BOD
Flouride
NO3
NO2+NO3-N
NO2+NO3-N
TKN

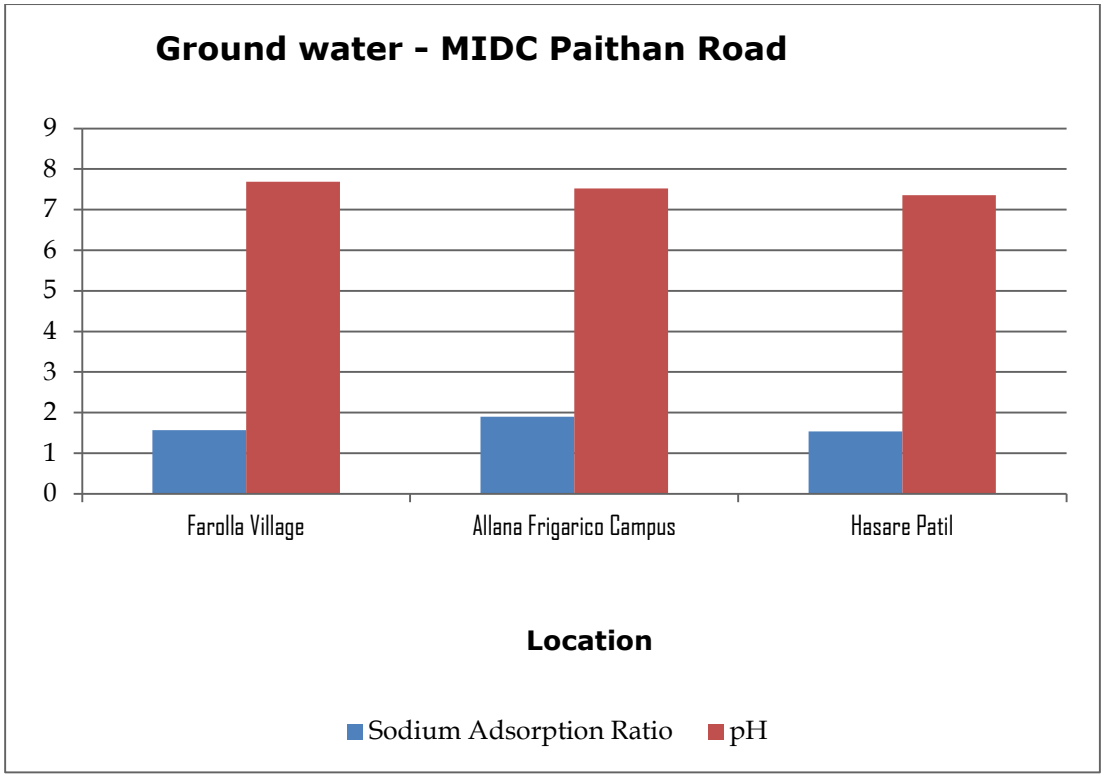

Ground Water-MIDC Waluj
8
7
6
5
4
3
2
1
0
Gayake Gut No. 71/72
Hiwale Open Well
Near Sanskar School
Location
Sodium Adsorption Ratio
pH

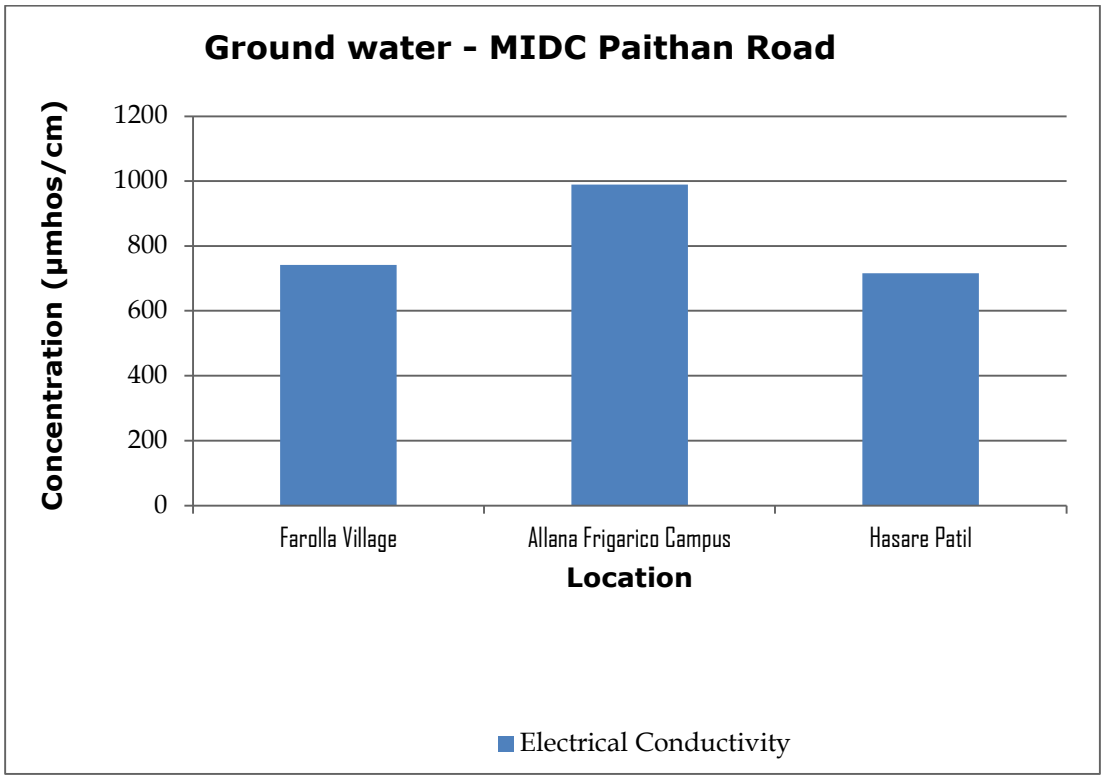

Ground Water-MIDC Waluj
Concentration (µmhos/cm)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Gayake Gut No. 71/72
Hiwale Open Well
Near Sanskar School
Location
Electrical Conductivity

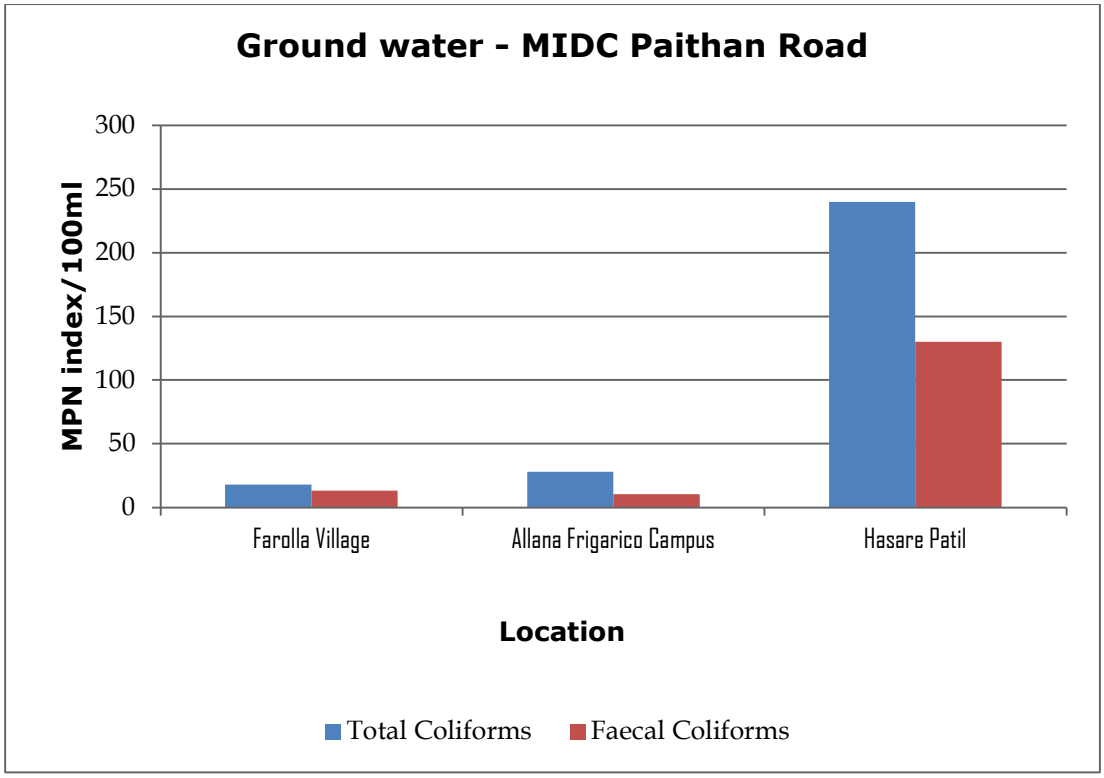

Ground Water-MIDC Waluj
MPN index/100ml
800
700
600
500
400
300
200
100
0
Gayake Gut No. 71/72
Hiwale Open Well
Near Sanskar School
Location
Total Coliforms
Faecal Coliforms

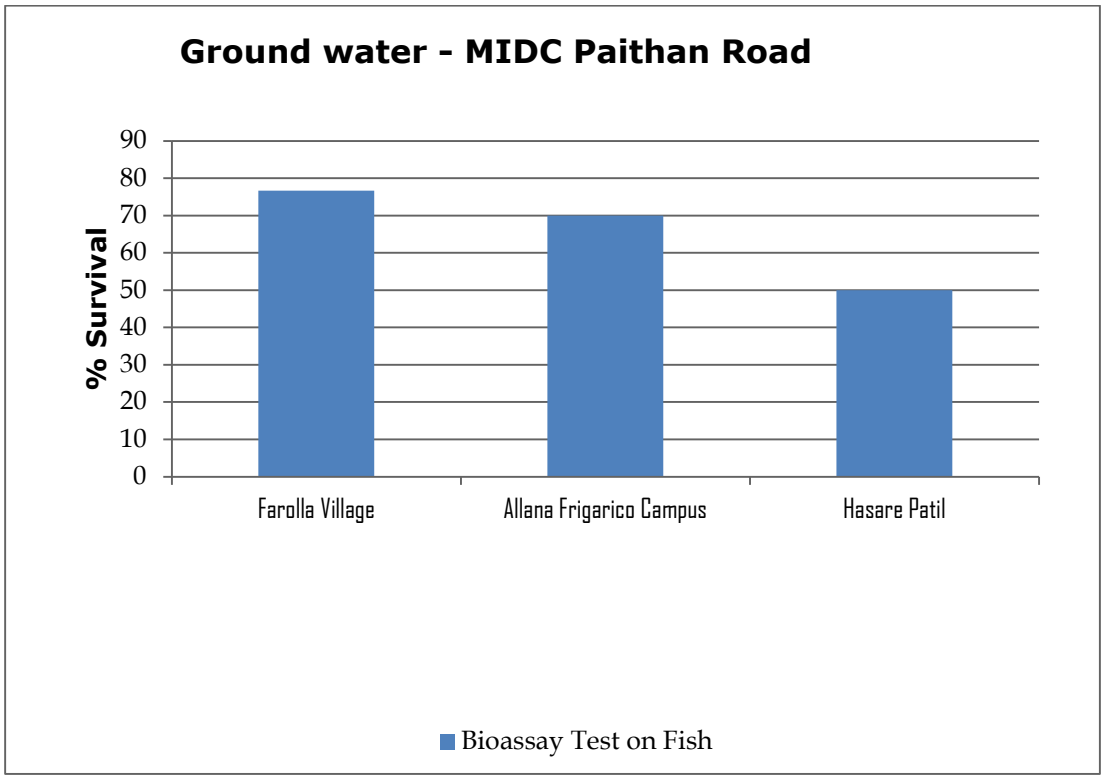

Ground Water-MIDC Waluj
% Survival
70
60
50
40
30
20
10
0
Gayake Gut No. 71/72
Hiwale Open Well
Near Sanskar School
Bioassay Test on Fish


Ground water - MIDC Paithan Road
Concentration (mg/L)
35
30
25
20
15
10
5
0
Farolla Village
Allana Frigarico Campus
Hasare Patil
Location
TSS
COD
BOD
Flouride
NO3
Total Phosphorous
TKN


Ground water - MIDC Paithan Road
9
8
7
6
5
4
3
2
1
0
Farolla Village
Allana Frigarico Campus
Hasare Patil
Location
Sodium Adsorption Ratio
pH


Ground water - MIDC Paithan Road
Concentration (µmhos/cm)
1200
1000
800
600
400
200
0
Farolla Village
Allana Frigarico Campus
Hasare Patil
Location
Electrical Conductivity


Ground water - MIDC Paithan Road
MPN index/100ml
300
250
200
150
100
50
0
Farolla Village
Allana Frigarico Campus
Hasare Patil
Location
Total Coliforms
Faecal Coliforms


Ground water - MIDC Paithan Road
% Survival
90
80
70
60
50
40
30
20
10
0
Farolla Village
Allana Frigarico Campus
Hasare Patil
Bioassay Test on Fish

5. Summary and Conclusions:

The results are summarized and concluded based on various standards mentioned in the previous chapter.

5.1 Stack Emission Monitoring:

Stack monitoring was done at four MIDC clusters having Twenty two locations in total. Volatile Organic Carbons (VOCs) are not detected in any of the collected seven samples. However, concentration of other parameters like particulate matter and Sulphur dioxide is discussed below:

A. Chikalthana MIDC includes five stacks at different industries. The status of stack parameters in these industrial clusters is discussed below:

1. **Particulate Matter:** At all the five locations of MIDC Chikalthana, obtained values for particulate matter are below the standard limit of 150 mg/Nm^3. It is observed in the range from 11 to 14.67 mg/Nm^3.
2. **Sulphur Dioxide:** All industries in this MIDC displayed different concentrations depending on fuel and load. Sulphur dioxide is found in the range of 8.9 to 21.9 mg/Nm^3.
3. **Nitrogen dioxide:** It is observed in the range of 16.4 to 24.4 mg/Nm^3

B. Waluj MIDC also includes six locations under study. The concentration of various parameters in these industrial clusters is observed as follows:

1. **Particulate Matter:** All obtained values for particulate matter are below the standard limit of 150 mg/Nm^3. It is observed in the range of 12.3 to 16 mg/Nm^3.
2. **Sulphur Dioxide:** Sulphur dioxide is found in the range of 6.34 to 9.83 mg/Nm^3.
3. **Nitrogen dioxide:** It is observed in the range of 13.6 to 20.4 mg/Nm^3.

C. Shendra MIDC also includes five locations under study. The status of stack parameters in these industrial clusters is discussed below:

1. **Particulate Matter:** All obtained values for particulate matter are below the standard limit of 150mg/Nm^3. It is observed in the range of 12.67 to 21 mg/Nm^3.
2. **Sulphur Dioxide:** Sulphur dioxide is found in the range of BDL to 11.8 mg/Nm^3.
3. **Nitrogen dioxide**: It is observed in the range of 11.7 to 24.3 mg/Nm^3

D. Paithan MIDC also includes six locations under study. The status of stack parameters in these industrial clusters is discussed below:

1. **Particulate Matter:** All obtained values for particulate matter are below the standard limit of 150 mg/Nm^3. It is observed in the range of 12 to 16.67 mg/Nm^3.
2. **Sulphur Dioxide:** Sulphur dioxide is found in the range of BDL to 11.83 mg/Nm^3.
3. **Nitrogen dioxide:** It is observed in the range of 11.7 to 25.37 mg/Nm^3.

5.2 Ambient Air Quality:

Ambient Air Quality parameters are compared with NAAQ, 2009 by CPCB. All the four MIDCs covered with 4 locations each under study.

A. MIDC Chikalthana is covered by studying 4 locations namely Jolly Board, Harman Finochem Ltd., Wochardt Biotech Ltd (R & D) and Concept Pharma.

1. **Sulphur dioxide:** Sulphur dioxide at all the four locations of MIDC Chikalthana is observed very low in concentration i.e. below detection limit (BDL).
2. **Nitrogen Dioxide:** similar to the sulphur dioxide, nitrogen dioxide is also observed in very low concentration i.e. below detection limit (BDL).
3. **Particulate Matter (PM_{10}):** It is observed in the range from minimum of 67.67 µg/$m^3$and maximum of 194.33 µg/m^3 at Chikalthana MIDC.
4. **Particulate Matter ($PM_{2.5}$):** Range between minimum of 16.67 µg/m^3 at Harman Finochem Limited and maximum of 48 µg/m^3at MPCB Office.
5. **(O_3):** It is detected below detection limits BDL at all the studied locations.
6. **Lead (Pb):** It is also observed below detection limit at all locations.
7. **Carbon monoxide (CO):** It is also observed in very low concentrations and well below standard limit i.e. in the range of 0.75 to 3.17 mg/m^3.
8. **Nickel and Arsenic:** Being carcinogenic in nature high concentration of nickel and Arsenic may become fatal for all human beings. Nickel is observed in the range of 3.97 to 6.73 ng/m^3, however arsenic is observed in the range of 0.34 to 0.75 ng/m^3 at all the studied locations.
9. **Ammonia:** It is also observed below detection limits BDL at all the studied locations.
10. **Benzene:** Benzene is categorized as a known carcinogen in CEPI guidelines. It is present in all the collected samples in the range of 1.19 to 5.62 µg/m^3.
11. **Benzo(a)Pyrene:** All values are observed BDL at all the locations.

B. MIDC Waluj includes 4 locations namely: Forbes, DIPL, Taylo Lucid and Endurance E-95.

1. **Sulphur dioxide:** Sulphur dioxide at all the four locations of MIDC Waluj is observed very low in concentration i.e. below detection limit (BDL).
2. **Nitrogen Dioxide:** similar to the sulphur dioxide, nitrogen dioxide is also observed in low concentration i.e. below detection limit (BDL).
3. **Particulate Matter (PM_{10}):** All the values of Particulate Matter are found below the standard limit of NAAQ Standards, 2009. It is ranged from minimum of 62 µg/m^3 at DIPL and maximum of 71.3 µg/m^3 at Forbes.
4. **Particulate Matter ($PM_{2.5}$):** Range between minimum of 15.67 µg/m^3 and maximum of 19.67 µg/m^3.
5. **Ozone (O_3):** Well within the limit and it is detected below detection limits (BDL) at all the locations.
6. **Lead (Pb):** It is observed below detection limit at all locations.
7. **Carbon monoxide (CO):** It is also observed in very low concentrations and well below standard limit i.e. in the range of 2.15 to 3.05 mg/m^3.
8. **Nickel and Arsenic:** Being carcinogenic in nature high concentration of nickel and Arsenic may become fatal for all human beings. In the present study, Nickel is

observed in the range of 7.34 to 10.70 ng/m^3 and Arsenic is observed in the range of BDL to 0.42 ng/m^3 at all the ambient air locations of Waluj MIDC.

9. **Ammonia:** It is observed BDL in all the ambient air samples studied.
10. **Benzene:** Benzene is categorized as a known carcinogen in CEPI guidelines. It is present in all the collected samples in the range of 3.67 to 7.3 µg/m^3.
11. **Benzo(a)Pyrene:** All values are observed BDL at all the locations.

C. MIDC Shendra includes 4 locations namely: Fire Brigade Office, Hyosung India Pvt. Ltd., Parkins India Pvt. Ltd. and Wockhart Biotech Ltd.

1. **Sulphur dioxide:** Sulphur dioxide at all the four locations of MIDC Shendra is observed very low in concentration i.e. below detection limit (BDL).
2. **Nitrogen Dioxide:** Similar to the Sulphur dioxide, nitrogen dioxide is also observed in low concentration i.e. below detection limit (BDL).
3. **Particulate Matter (PM_{10}):** Particulate Matter is found within the standard limit of NAAQ Standards, 2009 at all the three locations. It is ranged from minimum of 62 µg/m^3 and maximum of 270.33 µg/m^3.
4. **Particulate Matter ($PM_{2.5}$):** Range between minimum of 17.67 µg/m^3 and maximum of 66 g/m^3.
5. **Ozone (O_3):** Well within the limit and it is detected below detection limits at all the locations.
6. **Lead (Pb):** It is observed below detection limit all locations.
7. **Carbon monoxide (CO):** It is also observed in very low concentrations and well below standard limit i.e. in the range of 1.71 to 2.75 mg/m^3.
8. **Nickel and Arsenic:** Being carcinogenic in nature high concentration of nickel and Arsenic may become fatal for all human beings. Nickel is observed in the range of 5.06 to 8.74 ng/$m^3$and Arsenic is observed in the range of 0.37 to 0.67 ng/m^3.
9. **Ammonia:** It is also observed BDL in all the ambient air samples studied.
10. **Benzene:** Benzene is categorized as a known carcinogen in CEPI guidelines. It is detected in the range of 1.04 to 1.39 µg/m^3.
11. **Benzo (a) Pyrene:** All values are observed BDL at all the locations.

D. MIDC Paithan Road includes 4 locations namely: Allana Frigarifico, Machhar Packaging Farolla Village, Badve Engineering Chietgaon and Aurangabad Electrical Chietgaon

1. **Sulphur dioxide:** Sulphur dioxide at all the three locations of MIDC Paithan is observed very low in concentration i.e. below detection limit (BDL).
2. **Nitrogen Dioxide:** Similar to the Sulphur dioxide, nitrogen dioxide is also observed in low concentration i.e. below detection limit (BDL).
3. **Particulate Matter (PM_{10}):** All the values of Particulate Matter are found above the standard limit of NAAQ Standards, 2009. It is ranged from minimum of 50.3 µg/m^3 at and maximum of 61.67 µg/m^3.
4. **Particulate Matter ($PM_{2.5}$):** Range between minimum of 12.33 µg/m^3 at .and maximum of 16.33 µg/m^3. All the values are below the standard limit.
5. **Ozone (O_3):** It is detected below detection limits at all the locations.
6. **Lead (Pb):** It is observed below detection limit at all locations.

7. **Carbon monoxide (CO):** It is also observed in very low concentrations and well below standard limit i.e. in the range of 2.21 to 2.84 mg/m^3.
8. **Nickel and Arsenic:** Being carcinogenic in nature high concentration of nickel and arsenic may become fatal for all human beings. Nickel is observed in the range of 0.35 to 0.50 ng/m^3, however arsenic is observed below detection limit in all the ambient air samples studied.
9. **Ammonia:** It is also observed BDL at all the locations.
10. **Benzene:** Benzene is categorized as a known carcinogen in CEPI guidelines. It is observed in the range of 2.60 to 6.23 µg/m^3 in all the collected samples.
11. **Benzo (a) Pyrene:** All values are observed BDL at all the locations.

5.3 Surface Water Quality:

Waste water parameters are compared with general water standards by CPCB. All the ground water parameters are compared with ISO 10500:2012 standards. Parameters which are not included in ISO 10500:2012 are compared with WHO standards like BOD (6mg/L) and COD (10mg/L).

A. MIDC Chikalthana: Samples from four different locations were drawn from (i) Sukana Dam (ii) Zalta Phata STP, Beed Road (iii) Nalla Near NHK Automotive Pvt. Ltd. (iv) Nalla Water, Uttaranagari.

- All the studied locations are observed with BOD and COD in standard limits. BOD is observed in the range of 7.67 to 26.67 mg/l and COD is observed in the range of 20 to 76.67 mg/L.
- Nitrate concentration is found in the range of 6.7 to 23.83 mg/L.
- Among all the heavy metals, little concentration of heavy metals like manganese, iron, vanadium and boron is found in all the samples. However, the observed concentrations are very much below the standard permissible limits.
- Bioassay test on fish is observed in the range of with 56.67 or 70% fish survival.

B. MIDC Waluj: Four samples were collected from 1) SMS CETP 2) Khama River (downstream) 3) Khama River (upstream) (4) MIDC Waluj

- In all the surface water samples, COD samples is observed within the permissible limits in the range of 31-39.67 mg/L. BOD is also observed within the standard limit in the range of 9 to 12.67 mg/L. samples.
- All heavy metals concentration is also observed below standard limits in all the waste water samples.
- Fish survival in Bioassay test is found in the range of 46.67 – 63.33%.

C. MIDC Shendra: Samples were taken from Nalla Water (Flowing Water), Radico Company, Nalla Water, Perkins Back Side and Nath Nagar.

- COD of all the water samples is found within the standard limit except Radico Company which is observed as 272 mg/L.
- BOD of all the water samples is found to within the standard limit except waste water of Radico which is observed as 83.33 mg/L.
- All the heavy metal parameters of industries under this MIDC are observed within the standard limits
- Fish survival in Bioassay test is observed in the range of 36.67 – 66.67 mg/L.

D. MIDC Paithan Road: Samples were collected from Farolla Village, Nalla Water, Railway Station, Nalla Water and Nalla Water Kanchanwadi.

- All water samples have COD and BOD within the permissible limits. COD is observed in the range of 11 to 81.67 mg/L and BOD is observed in the range of 3.67 to 29 mg/L.
- All the heavy metal parameters of industries under this MIDC are observed within the standard limits.
- Fish survival in Bioassay test is found in the range of 46.67-66.67%.

5.4 Ground water

A. MIDC Chikalthana: Three samples of Ground water from Chikalthana Area are Shree Shani Ashram, Naregaon and Mahada Colony.

- COD and BOD of all the water samples are observed within the standard limits
- Among all the heavy metals, little concentration of heavy metals like manganese, iron, vanadium and boron is found in all the samples. However, the observed concentrations are very much below the standard permissible limits.
- All the ground water samples show 66.67-70% fish survival in the Bioassay test.

B. MIDC Waluj: Three ground water samples are taken from Waluj MIDC. They are Gayake Gut No. 71/72, Hiwale Open Well and Near Sanskar School.

- COD of water sample collected from Hiwale Open Well (11.33 mg/L) is found to exceed the WHO permissible limit, however concentration of COD in other water samples was found within permissible limit.
- BOD of the water samples is found to below the standard limit.
- All the heavy metals are observed within the standard limit at both the locations
- The ground water samples show fish survival in the range of 46.67 to 60% in Bioassay test.

C. MIDC Shendra: MIDC Shendra comprised of water samples from 3 locations namely: Wockhardt Ltd. and Gut No. 95, Kambhelphal and Gut No. 96 Shendra Kamanagar.

- Out of three water samples COD concentration exceeds the standard limit in the samples of Wockhardt Ltd. and Gut No. 95, Kambhelphal.
- BOD of all water samples is found to within the standard limit.
- Nitrate concentration is also observed beyond standard limits in the water samples and found in the range of 31.3 to 40.97mg/L.
- All the heavy metal parameters of industries under this MIDC are observed within the standard limits.
- Fluoride concentration is also observed within the standard limits.
- Ground water samples show fish survival in Bioassay test in the range of 53.33-83.33%.

D. MIDC Paithan Road: At this MIDC, 3 water samples are collected. They are, Faroll Village, Allana Frigarico Campus and Hasare Patil.

- Out of all the three samples, samples of Allana (32 mg/L) and Hasare Patil (11.5 mg/L) are observed to exceed the standard limits.
- BOD is observed to exceed the standard limit in the water sample of Allana Frigarico Campus (11.5 mg/L).
- Except COD concentration (11 mg/L) in Esawadi Village sample, BOD and COD concentration in other samples are observed within the standard limits.
- Ground water samples show fish survival in Bioassay test in the range of 50-76.67%.

6. 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.

CPCB had evolved certain methodology to calculate CEPI, in which a score has been fixed for different environmental components based on the level of pollution. The scoring system involves an algorithm that takes into account the basic selection criteria. This approach is based on the basic hazard assessment logic that can be summarized as below.

Hazard = pollutant source, pathways, and receptor

CPCB has calculated CEPI for the identified critically polluted industrial clusters. It is calculated separately for air, water, and land. The basic framework and scoring system of the CEPI – based on three factors namely pollutant, pathway, and receptor – has been described further under this section.

To overcome the subjectivity, revised concept is proposed by eliminating the subjective factors as described in the previous section, but retaining the factors which can be measured precisely.

I. Revised concept is prepared by eliminating the debatable factors but retaining the factors which can be measured precisely.

II. It is decided to develop the Comprehensive Environmental Pollution Index (CEPI) retaining the existing algorithm of Source, Pathway and Receptor.

III. Health component was also retained in the revised concept in line with the suggestions of Secretary, MoEFCC during the meeting held in MoEF.

Outlines of revised CEPI 2016 criteria

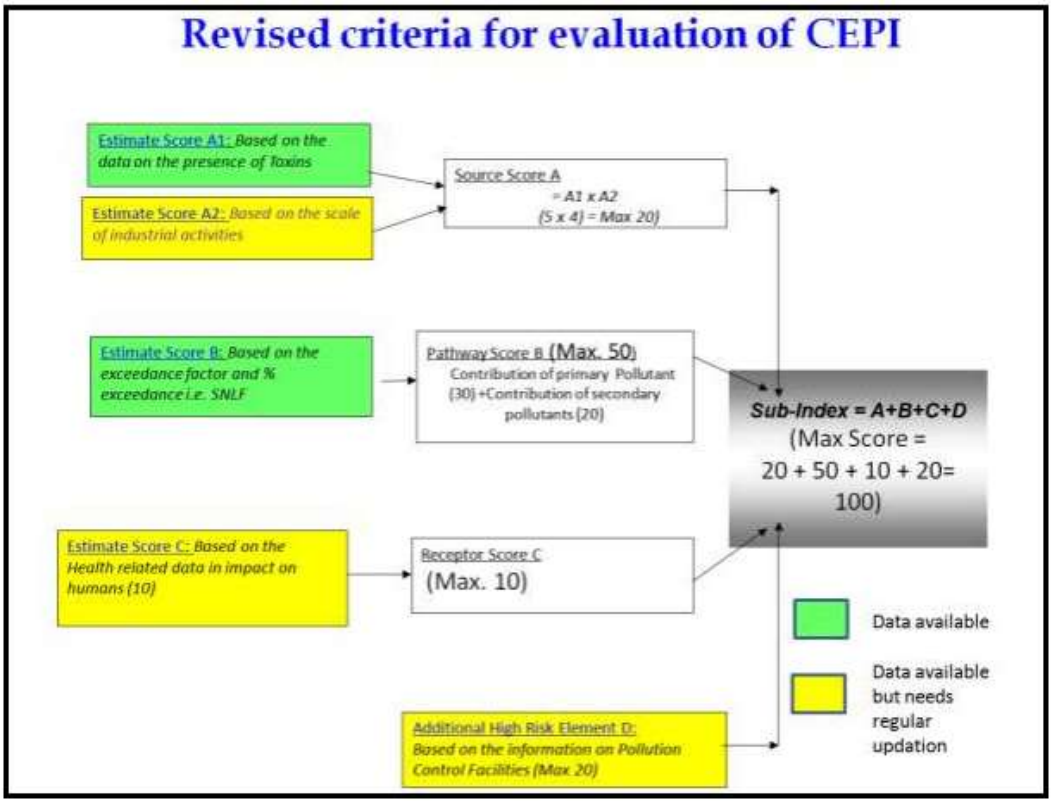
The outlines of the revised CEPI criteria are as follows:

1) It is proposed to develop the Comprehensive Environmental Pollution Index (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.

2) For assessment of the environmental quality of the area i.e. CEPI score, the concept of SNLF i.e. a surrogate number which represents the level of exposure (a function of percentage sample Exceedance & Exceedance Factor) shall be used.

3) Health component to be evaluated based on the health data available from major hospitals in the area was also retained in the revised concept.

The evaluation criterion of the revised CEPI version 2016 is described in the flowchart given below:



Here, health data collected for Receptor score C is included in Annexure I

Based on Sub-Index Score (score of individual environmental component like air, water etc.):

- **Score more than 63:** A Critical Level of Pollution in the respective level of environmental component

- **Score between 51-63:** Severe to critical level of pollution with reference to respective environmental component

Cut-off Score

- **Score 50:** Severely Polluted Industrial Clusters/areas
- **Score 60:** Critically Polluted Industrial Clusters/areas

Based on Aggregated CEPI Score (score includes sub-index score of all individual environmental components together):

- **Aggregated CEPI score >70:** Critically polluted areas
- **Aggregated CEPI score between 60-70:** Severely polluted areas

Since the inception of the program, MPCB has also formulated Action Plans to mitigate the environmental pollution problems for each of the 8 Critically Polluted Areas (CPAs) in Maharashtra. Based on available information, parameters selected and monitored in continuation with this, CEPI has been calculated and Short-Term Action Plan (STAP) as well as Long Term Action Plan (LTAP) was prepared in 2010 and every year review was taken on the same.

Subsequently NAAQS 2009 came in force. List of parameters to be considered increased and expanded including more critical and hazardous pollutants like benzene, BaP, Metals, etc. existing in the environment. There was revision of standards (limiting values) as well. In this present report of 2020 prepared by MPCB, CEPI is calculated considering all these revised standards' limiting values, list of parameters and complete scope of monitoring.

6.1 Comparison of CEPI Scores:

The result shows that CEPI score of present report is 59.9. The present study is the compilation of post monsoon season, which also affects the score value. This time CEPI is observed lower than the CPCB CEPI score February 2018.

Aggregated CEPI

	Air Index	**Water Index**	**Land Index**	**CEPI**
CEPI score March 2020	53.8	34.5	38.5	**59.9**
CPCB CEPI score Feb 2018	45	65.38	28.75	**69.85**

7 Conclusions

The result shows that the concentration of pollutants in ground water is lowered down at the Industrial clusters as compared to past studies, as most of the results are observed below their standards with an exception of one or two parameters. However, Air sampling parameters like PM_{10} and $PM_{2.5}$ of most of the samples are observed above the permissible limits of NAAQ standards 2009. Waste water parameters like BOD and COD are observed above their standards in most of the water samples.

The new CEPI index has ensured that the path is cleared for areas like Aurangabad to no longer be classified as critically polluted and to allow for an inflow of industrial activities. It is estimated that due to the moratorium, high investment was stalled in Aurangabad.

The overall present CEPI score (59.9) is lower than the CPCB CEPI score February 2018. This reveals the fact that the environmental pollution in this city is substantially decreased over the period of times. But still the city comes under severely polluted category, according to CEPI. Hence, there is lot of scope to improve the environmental quality of the city, for which continuous efforts, strategies, planning and actions are required.

	A1	**A2**	**A**	**B**	**C**	**D**	**CEPI**
Air Index	3	2.5	7.5	41.25	0	5	**53.8**
Water Index	2.5	2.5	6.25	2.325	0	5	**34.5**
Land Index	2.5	2.5	6.25	27.25	0	5	**38.5**
						Aggregated CEPI	**59.9**

8 Photographs


हे पाणी
पिण्यास
योग्य नाही

.

9 Annexures

Annexure I Health related data in impact on humans

C: Receptor

Component C (Impact on Human Health) 10	
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, Diarrhea, 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.

AMC ★ Kaisar Colony Hospital ★ Aurangabad

Signature of Hospital Head/Superintend

Annexure-B

INFORMATION ON HEALTH STATISTICS IN PIA

15. Name of the polluted industrial area (PIA) :
16. Name of the major health center/organization: AMC Hospital Aurangabad
17. Name and designation of the contact person :
18. Address: Qaisar Colony Hospital, Aurangabad
19. Year of establishment:

Health status data received from the Hospital

Sr.No.	Air Borne Diseases	No. of patients reported for the years						
		2018	2017	2016	2015	2014	2013	2012
28.	Asthma	—	Nil	Nil	Nil	Nil	Nil	Nil
29.	Acute Respiratory Infection	1743	Nil	Nil	Nil	Nil	Nil	Nil
30.	Bronchitis	—	Nil	Nil	Nil	Nil	Nil	Nil
31.	Cancer	—	Nil	Nil	Nil	Nil	Nil	Nil
	Water Borne Diseases							
32.	Gastroenteritis	—	3	2	3	4	3	5
33.	Diarrhea	111	38	42	31	32	22	19
34.	Renal diseases	—	Nil	Nil	Nil	Nil	Nil	Nil
35.	Typhoid	Nil	3	2	2	3	2	3
36.	Liver Cancer	—	Nil	Nil	Nil	Nil	Nil	Nil

Incharge Medical Officer
Kaisar Colony Hospital
Municipal Corporation, Aurangabad.

Annexure-B

INFORMATION ON HEALTH STATISTICS IN PIA

Name of the polluted industrial area (PIA) :

1. Name of the major health center/organization: United CIGMA Hospital Aurangabad
2. Name and designation of the contact person :
3. Address:
4. Year of establishment:

Health status data received from the Hospital

Sr.No.	Air Borne Diseases	No. of patients reported for the years						
		2018	2017	2016	2015	2014	2013	2012
1.	Asthma	320	300	250	213	200	5	NA
2.	Acute Respiratory Infection	26	22	14	17	15	2	NA
3.	Bronchitis	488	400	315	300	218	15	NA
4.	Cancer	11	8	7	5	4	3	NA
	Water Borne Diseases							
5.	Gastroenteritis	43	38	35	31	28	10	NA
6.	Diarrhea	11	9	5	7	3	1	NA
7.	Renal diseases	9	6	7	5	6	1	NA
8.	Typhoid	23	18	12	11	5	2	NA
9.	Liver Cancer	7	4	5	3	2	0	NA

UNITED CIIGMA HOSPITAL ★ AURANGABAD ★

Signature of Hospital Head/Superintend

Annexure-B

INFORMATION ON HEALTH STATISTICS IN PIA

10. Name of the polluted industrial area (PIA) :
11. Name of the major health center/organization: MGM Hospital Aurangabad
12. Name and designation of the contact person :
13. Address: Seven Hills, Aurangabad
14. Year of establishment:

Health status data received from the Hospital

Sr.No.	Air Borne Diseases	No. of patients reported for the years						
		2018	2017	2016	2015	2014	2013	2012
19.	Asthma	129	379	458	366	200	180	208
20.	Acute Respiratory Infection	797	476	325	220	192	187	128
21.	Bronchitis	76	194	75	133	98	136	130
22.	Cancer	13	11	2	Nil	NA	NA	NA
	Water Borne Diseases							
23.	Gastroenteritis	402	414	346	474	125	245	203
24.	Diarrhea	106	28	50	30	27	38	40
25.	Renal diseases	1241	NA	NA	NA	NA	NA	NA
26.	Typhoid	212	4	2	5	2	1	2
27.	Liver Cancer	18	164	95	134	106	97	83

Dr H.V. Mundhe

15/2/19

Resident Medical Officer
M.G.M. Hospital
N-6, CIDCO, Aurangabad.

Manik Hospital & Research Centre

Shivneri Nagar, Beside Jawahar Nagar Police Station, Garkheda Parisar, Aurangabad - 431 005.
Phone : (0240) 26630115, 6630116

Dt. - 14-02-2019

INFORMATION ON HEALTH STATISTICS IN PIA

1. Name of the polluted industrial area (PIA) :
2. Name of the major health center/organization: Manik Hospital Aurangabad
3. Name and designation of the contact person :
4. Address:
5. Year of establishment:

Health status data received from the Hospital

Sr.No.	Air Borne Diseases	No. of patients reported for the years						
		2018	2017	2016	2015	2014	2013	2012
1.	Asthma	62	Nil	Nil	Nil	Nil	Nil	Nil
2.	Acute Respiratory Infection	60	10	12	8	NA	7	10
3.	Bronchitis	9	Nil	Nil	Nil	Nil	Nil	Nil
4.	Cancer	95	Nil	Nil	Nil	Nil	Nil	Nil
		Water Borne Diseases						
5.	Gastroenteritis	37	10	14	8	Nill	Nill	20
6.	Diarrhea	15	8	NA	4	10	Nill	Nill
7.	Renal diseases	74	Nil	Nil	Nil	Nil	Nil	Nil
8.	Typhoid	14	Nil	Nil	Nil	Nil	Nil	Nil
9.	Liver Cancer	2	Nil	Nil	Nil	Nil	Nil	Nil

Signature of Hospital Head/Superintend

Medical Supritendant
Manik Hospital &
Research Center
Aurangabad

Annexure-B

Signature of Hospital Head/Superintend

Annexure-B

INFORMATION ON HEALTH STATISTICS IN PIA

25. Name of the polluted industrial area (PIA) :

26. Name of the major health center/organization: GHATI Hospital Aurangabad

27. Name and designation of the contact person :

28. Address: Aurangabad

29. Year of establishment:

Health status data received from the Hospital

Sr.No.	Air Borne Diseases	No. of patients reported for the years					
		2017-2018	2017-2016	2016-2015	2015-2014	2014-2013	2013-2012
46.	Asthma —	36	679	708	579	400	185
47.	Acute Respiratory Infection	58	3571	4167	3639	3373	4361
48.	Bronchitis		594	390	433	256	151
49.	Cancer	—	19	9	5	4	3
		Water Borne Diseases					
50.	Gastroenteritis	1	465	397	516	157	276
51.	Diarrhea	7	355	317	357	337	539
52.	Renal diseases		6	7	5	6	1
53.	Liver Cancer	—	168	100	137	108	97

15/2/19

Signature of Hospital Head/Superintend

Medical Superintendent
Govt. Medical College, Hospita
Aurangabad

15/02/19
HMIS office.

Annexure II: Stack Emission Sampling and Analysis Methodology

Sr.	Parameters	Method References	Techniques	Detection Limit
1.	Acid Mist (as Sulphuric Acid)	US EPA Method no.m-8	Barium thorine titration Method	0.6 mg/Nm^3
2.	Ammonia	IS 11255 (Part 6):1999, Reaffirmed 2003	Titration/ Nessler Reagent/ Spectrophotometric Method	1 mg/Nm^3
3.	Carbon Monoxide	USEPA Method 10B	GC-FID Method	0.2 mg/Nm^3
4.	Chlorine	US EPA Method 26 for sampling	Titrimetric	0.001 mg/Nm^3
5.	Fluoride (Gaseous)	US EPA Method 13 A	SPADNS Zirconium Lake Spectrophotometric Method	0.025 mg/Nm^3
6.	Fluoride (Particulate)	US EPA Method 13 A	SPADNS Zirconium Lake Spectrophotometric Method	0.005 mg/Nm^3
7.	Hydrogen Chloride	US EPA Method 26 for sampling	Titrimetric	0.25 mg/Nm^3
8.	Hydrogen Sulphide	IS 11255 (Part 4):1985	Titrimetric	1 mg/Nm^3
9.	Oxides of Nitrogen	IS 11255 (Part 7): 2005	PDSA Colorimetric Method	10 mg/Nm^3
10.	Oxygen	IS 13270 : 1992	ORSAT Apparatus	1 %
11.	Poly Aromatic Hydrocarbons (Particulate)	IS 5182 (Part 12) : 2004, Reaffirmed 2009 CPCB Guidelines, May 2011, Page No.39	GC-FID Method	0.25 mg/Nm^3
12.	Suspended Particulate Matter	IS 11255 (Part 1):1985, Reaffirmed 2003	Gravimetric Method	10 mg/Nm^3
13.	Sulphur Dioxide	IS 11255 (Part 2): 1985, Reaffirmed 2003	Titrimetric IPA thorine Method	5.0 mg/Nm^3 0.02 kg/day

Sr.	Parameters	Method References	Techniques	Detection Limit
14.	BTX (Benzene, Toluene, Xylene)	NIOSH (NMAM) 1501	Adsorption and Desorption followed by GC-FID analysis	0.001 mg/Nm^3
15.	VOC (Volatile Organic Compounds)	NIOSH (NMAM) 1501 for sampling	Adsorption and Desorption followed by GC-FID or GC/ MS analysis	-
i	Methyl Isobutyl Ketone	-	-	0.001 mg/Nm^3
ii	Benzene	-	-	0.001 mg/Nm^3
iii	Toluene	-	-	0.001 mg/Nm^3
iv	Xylene	-	-	0.001 mg/Nm^3
v	Ethyl Benzene	-	-	0.001 mg/Nm^3
vi	Ethyl Acetate	-	-	0.001 mg/Nm^3

Annexure III: Ambient Air Sampling and Analysis Methodology

Sr.	Parameters	Method References	Techniques	Detection Limit
1.	Sulphur Dioxide (SO_2)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No.1	Improved West & Gaeke Method	4 µg/m^3
2.	Nitrogen Dioxide (NO_2)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No.7	Modified Jacob & Hochheiser Method	3 µg/m^3
3.	Particulate Matter (size less than 10 µm) or PM_{10}	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No.11	Gravimetric Method	2 µg/m^3
4.	Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 15	Gravimetric Method	0.4 µg/m^3
5.	Ozone (O_3)	APHA, Method No. 820, Page no. 836	Chemical Method	19.6 µg/m^3
6.	Lead (Pb)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 47	AAS Method	0.02 µg/m^3
7.	Carbon Monoxide (CO)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume II, May 2011, Page No. 16	Non Dispersive Infra Red (NDIR) spectroscopy	0.05 mg/m^3
8.	Ammonia (NH_3)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 35	Indophenol Blue Method	4.0 µg/m^3
9.	Benzene (C_6H_6)	IS 5182 (Part 11):2006	Adsorption and Desorption followed by GC-FID analysis	1.0 µg/m^3

Sr.	Parameters	Method References	Techniques	Detection Limit
10.	Benzo (a) Pyrene (BaP) – particulate phase only,	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 39	Solvent extraction followed by GC-FID analysis	0.2 ng/m^3
11.	Arsenic (As)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 47	AAS Method	0.3 ng/m^3
12.	Nickel (Ni)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 47	AAS Method	3.0 ng/m^3

Annexure IV: Water/Wastewater Sampling and Analysis Methodology

Sr.	Parameters	Methods References	Techniques	Detection Limit
1.	Sampling Procedure for Chemical Parameters	IS 3025 (Part 1): 1987, Reaffirmed 1998, Amds.1& APHA, 22nd Ed., 2012, 1060 B, 1-39	-	-
2.	Sampling Procedure for Microbiological Parameters	APHA, 22nd Ed., 2012, 1060 B, 1-39, 9040, 9-17, and 9060B, 9-35	-	-
3.	Temperature	APHA, 22nd Ed., 2012, 2550-B, 2-69	By Thermometer	-
4.	Colour	APHA, 22nd Ed., 2012, 2120-B, 2-26	Visible Comparison Method	1 Hazen Unit
5.	Odour	IS 3025 (Part 5): 1983, Reaffirmed 2006	Qualitative Method	-
6.	pH	APHA, 22nd Ed., 2012, 4500-H^+- B, 4-92	By pH Meter	1
7.	Oil & Grease	APHA, 22nd Ed., 2012, 5520-B, 5-40	Liquid -liquid Partition-Gravimetric Method	1.0 mg/l
8.	Suspended Solids	IS 3025 (Part 17): 1984, Reaffirmed 2006, Amds.1	Filtration /Gravimetric Method	5.0 mg/l
9.	Dissolved Oxygen	IS 3025 (Part 38): 1989, Reaffirmed 2009	Iodometric Method-Azide modification	0.05 mg/l
10.	Chemical Oxygen Demand	APHA, 22nd Ed., 2012, 5220-B, 5-17	Open Reflux Method	5.0 mg/l
11.	Biochemical Oxygen Demand	IS 3025 (Part 44): 1993, Reaffirmed 2009, Amds.1	Iodometric Method	5.0 mg/l
12.	Electrical Conductivity	APHA, 22nd Ed., 2012, 2510- B, 2-54	By Conductivity Meter	0.1 µmho/cm
13.	Nitrite-Nitrogen	APHA, 22nd Ed., 2012, 4500-NO_2-B, 4-120	Colorimetric Method	0.006 mg/l

Sr.	Parameters	Methods References	Techniques	Detection Limit
14.	Nitrate-Nitrogen	APHA, 22nd Ed., 2012, 4500-NO_3, B-4-122	UV Spectrophotometer Screening Method	0.2 mg/l
15.	(NO_2 + NO_3)-Nitrogen	APHA, 22nd Ed., 2012, 4500-NO_2-B, 4-120 APHA, 22nd Ed., 2012, 4500-NO_3, B-4-122	Colorimetric Method V Spectrophotometer Screening Method	0.2 mg/l
16.	Free Ammonia	APHA, 22nd Ed., 2012, 4500 NH_3, F, 4 -115	Colorimetric Method	0.006 mg/l
17.	Total Residual Chlorine	IS 3025 (Part 26): 1986, Reaffirmed 2009, Ed. 2.1 (2004-02)	Iodometric Method	0.1 mg/l
18.	Cyanide (CN)	APHA, 22nd Ed., 2012,4500-CN, C & E, 4-41 & 4-43	Colorimetric Method	0.001 mg/l
19.	Fluoride (F)	APHA, 22nd Ed., 2012, 4500-F, D, 4-87	SPADNS Method	0.05 mg/l
20.	Sulphide (S^{2-})	APHA, 22nd Ed., 2012, 4500 –S^2, C-4-175, F-4-178	Iodometric Method	0.08 mg/l
21.	Dissolved Phosphate (P)	APHA, 22nd Ed., 2012, 4500 P,E, 4-155	Ascorbic Acid Method	0.03 mg/l
22.	Sodium Absorption Ratio	IS11624: 1986, Reaffirmed 2006	By Calculation	0.3
23.	Total Phosphorous (P)	APHA,22nd Ed., 2012, 4500 P,E, 4-155	Ascorbic Acid Method	0.03 mg/l
24.	Total Kjeldahl Nitrogen	APHA, 22nd Ed., 2012, 4500 NH_3, B & C, 4 -110, 4-112	Titrimetric Method	0.1 mg/l
25.	Total Ammonia (NH_4 +NH_3)-Nitrogen	APHA, 22nd Ed., 2012, 4500 NH_3, F, 4 - 115	Colorimetric Method	0.001 mg/l

Sr.	Parameters	Methods References	Techniques	Detection Limit
26.	Phenols (C_6H_5OH)	APHA, 22nd Ed., 2012, 5530- B & C, 5-44 & 5-47	Chloroform Extraction Method	0.001 mg/l
27.	Surface Active Agents	APHA, 22nd Ed., 2012, 5540-B & C, 5-50	Methylene Blue Extraction Method	0.1 mg/l
28.	Organo Chlorine Pesticides	APHA, 22nd Ed., 2012, 6410B, 6-74	GC MS-MS Method	0.01 µg/L
29.	Polynuclear aromatic hydrocarbons (PAH)	APHA, 22nd Ed., 2012, 6410B, 6-74	GC MS-MS Method	0.01 µg/L
30.	Polychlorinated Biphenyls (PCB)	APHA, 22nd Ed., 2012, 6410B, 6-74	GC MS-MS Method	0.01 µg/L
31.	Zinc (Zn)	IS 3025 (Part 2): 2004	ICP Method	0.1 mg/l
32.	Nickel (Ni)	IS 3025 (Part 2): 2004	ICP Method	0.05 mg/l
33.	Copper (Cu)	IS 3025 (Part 2): 2004	ICP Method	0.03 mg/l
34.	Hexavalent Chromium (Cr^{6+})	APHA, 22nd Ed., 2012, 3500-Cr, B, 3-69	Colorimetric Method	0.02 mg/l
35.	Total Chromium (Cr)	IS 3025 (Part 2): 2004	ICP Method	0.02 mg/l
36.	Total Arsenic (As)	IS 3025 (Part 2): 2004	ICP Method	0.005 mg/l
37.	Lead (Pb)	IS 3025 (Part 2): 2004	ICP Method	0.008 mg/l
38.	Cadmium (Cd)	IS 3025 (Part 2): 2004	ICP Method	0.002 mg/l
39.	Mercury (Hg)	IS 3025 (Part 2): 2004	ICP Method	0.0008 mg/l
40.	Manganese (Mn)	IS 3025 (Part 2): 2004	ICP Method	0.02 mg/l
41.	Iron (Fe)	IS 3025 (Part 2): 2004	ICP Method	0.06 mg/l

Sr.	Parameters	Methods References	Techniques	Detection Limit
42.	Vanadium (V)	IS 3025 (Part 2): 2004	ICP Method	0.05 mg/l
43.	Selenium (Se)	IS 3025 (Part 2): 2004	ICP Method	0.005 mg/l
44.	Boron (B)	IS 3025 (Part 2): 2004	ICP Method	0.1 mg/l
45.	Total Coliforms	APHA, 22nd Ed., 2012, 9221-B, 9-66	Multiple tube fermentation technique (MPN/100ml)	1.1 MPN/100ml
46.	Faecal Coliforms	APHA, 22nd Ed., 2012, 9221-E, 9-74	Multiple tube fermentation technique (MPN/100ml)	1.1 MPN/100ml
47.	Bioassay (Zebra Fish) Test	IS 6582, 1971, Reaffirmed 1987	Static Technique	-

Annexure V: National Ambient Air Quality Standards, 2009

The Gazette of India

EXTRAORDINARY PART III-Section 4 PUBLISHED BY AUTHORITY
NEW DELHI, WEDNESDAY, **NOBEMBER 18, 2009** No. B-29016/20/90/PCI-I

National Ambient Air Quality Standards: Central Pollution Control Board

In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevntion and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in suppression of the Notification No(s). S.O.384(E), dated 11th April, 1994 and S.O.935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards **with immediate effect**, namely:

Sr. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Areas (Notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2) µg/m³	Annual *	50	20	– Improved West and Gaeke – Ultraviolet fluorescence
		24 hours **	80	80	
2	Nitrogen Dioxide (NO_2) µg/m³	Annual *	40	30	– Modified Jacob & Hochheiser (Na-Arsenite) – Chemilminescence
		24 hours **	80	80	
3	Particulate Matter (size less than 10 µm) or PM_{10} µg/m³	Annual *	60	60	– Gravimetric – TOEM – Beta attenuation
		24 hours **	100	100	
4	Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$ µg/m³	Annual *	40	40	– Gravimetric – TOEM – Beta attenuation
		24 hours **	60	60	
5	Ozone (O_3) µg/m³	8 hours **	100	100	– UV photometric – Chemiluminescence – Chemical Method
		1 hour **	180	180	
6	Lead (Pb) µg/m³	Annual *	0.50	0.50	– AAS/ICP method after sampling on EPM 2000 or equivalent filter paper – EDXRF using Teflon filter
		24 hours **	1.0	1.0	
7	Carbon Monoxide (CO) mg/m³	8 hours **	02	02	– Non Dispersive Infra Red (NDIR) spectroscopy
		1 hour **	04	04	
8	Ammonia (NH_3) µg/m³	Annual *	100	100	– Chemiluminescence – Indophenol blue method
		24 hours **	400	400	
9	Benzene (C_6H_6) µg/m³	Annual *	05	05	– Gas Chromatography based continuous analyzer – Adsorption and Desorption followed by GC analysis
10	Benzo (a) Pyrene (BaP) – particulate phase only, ng/m³	Annual *	01	01	– Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As) ng/m³	Annual *	06	06	– AAS/ICP method after sampling on EPM 2000 or equivalent filter paper.
12	Nickel (Ni) ng/m³	Annual *	20	20	– AAS/ICP method after sampling on EPM 2000 or equivalent filter paper.

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2 % of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman, Central Pollution Control Board [ADVT-III/4/184/09/Exty.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India. Extraordinary vide notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October,1998.

µg/m³: micro-gram/m³ i.e. 10^{-6}gm/m³ ng/m³ : nano-gram/m³ i.e. 10^{-9}gm/m³

Annexure VI: General Standards for Discharge of Environmental Pollutants, Part A: Effluents (The Environment (Protection) Rules, 1986, Schedule VI)

Sr.	Parameter	Standards			
		Inland surface Water	**Public Sewers**	**Land for Irrigation**	**Marine Coastal Areas**
1.	Colour and Odour	See Note 1	--	See Note I	See Note 1
2.	Suspended solids, mg/l, Max.	100	600	200	a) For process waste water - 100 b) For cooling water effluent- 10 percent above total suspended mailer of influent cooling water.
3.	Particle size of suspended solids	Shall pass 850 micron IS Sieve			a. Floatable solids, Max 3 mm b. Settleable solids Max 850 microns
4.	Dissolved solids (Inorganic), mg/l, Max.	2100	2100	2100	--
5.	pH value	5.5 -9.0	5.5 -9.0	5.5 -9.0	5.5-9.0
6.	Temperature °C, Max	Shall not exceed 40 in any section of the stream within 15 mts. Downstream from the effluent outlet	45 at the point of discharge	--	45 at the point of discharge

Sr.	Parameter	Standards			
		Inland surface Water	**Public Sewers**	**Land for Irrigation**	**Marine Coastal Areas**
7.	Oil and Grease mg/l, Max	10	20	10	20
8.,	Total Residual chlorine, mg/l, Max	1.0	--	--	1.0
9.	Ammonical Nitrogen (as N), mg/l, Max	50	50	--	50
10.	Total Kjeldahl Nitrogen (as N), mg/l, Max.	100	--	--	100
11.	Free Ammonia (as NH_3), mg/l, Max	5.0	--	--	5.0
12.	Biochemical oxygen demand (5 days, at 20° c) mg/l, Max	30	350	100	100
13.	Chemical oxygen demand, mg/l, Max	250	--	--	250
14.	Arsenic (as As), mg/l, Max	0.2	0.2	0.2	0.2
15.	Mercury (as Hg). Mg/l, Max	0.01	0.01	--	0.01
16.	Lead (as Pb), mg/l, Max	0.1	1.0	-	1.0
17.	Cadmium (as Cd), mg/l,	2.0	1.0	--	2.0
18.	Hexavalent Chromium (as Cr^{+6}) mg/l, Max	1	2.0	--	1.0
19.	Total Chromium (as Cr), mg/l, Max	2.0	2.0	--	2.0

Sr.	Parameter	Standards			
		Inland surface Water	Public Sewers	Land for Irrigation	Marine Coastal Areas
20.	Copper (as Cu), mg/l, Max.	3.0	3.0	--	3.0
21.	Zinc (as Zn), mg/l, Max.	5.0	15	0--	15
22	Selenium (as Se), mg/l, Max.	0.05	0.05	--	0.05
23	Nickel (as Ni), mg/l, Max.	3.0	3.0	--	5.0
24	Boron (as B), mg/l, Max.	2.0	2.0	2.0	--
25.	Percent Sodium, Max.	--	60	60	--
26.	Residual Sodium carbonate, mg/l, Max.	--	--	5.0	--
27.	Cyanide (as Cn), mg/l, Max.	0.2	2.0	0.2	0.2
28.	Chloride (as Cl), mg/l, Max.	1000	1000	600	--
29.	Fluoride (as F), mg/l, Max.	2.0	15	--	15
30.	Dissolved Phosphate (as P), mg/l, Max.	5.0	--	--	--
31.	Sulphate (as SO_4), mg/l, Max.	1000	1000	1000	--
32.	Sulphide (as S), mg/l, Max.	2.0	--	--	5.0
33.	Pesticides	Absent	Absent	Absent	Absent
34.	Phenolic compounds (as C_6H_5OH), mg/l, Max.	1.0	5.0	--	5.0

Sr.	Parameter	Standards			
		Inland surface Water	**Public Sewers**	**Land for Irrigation**	**Marine Coastal Areas**
35.	Radioactive materials:				
	a. Alpha emitters MC/ml., Max.	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	b. Beta emitters µc/ml., Max	10^{-6}	10^{-6}	10^{-7}	10^{-6}

Annexure VII: Drinking Water Specification-IS 10500:2012

Sr.	Characteristic	Unit	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
Table 1	**Organoleptic and Physical Parameters**			
1.	Colour	Hazen units	Max 5	Max 15
2.	Odour	-	Agreeable	Agreeable
3.	pH value	-	6.5-8.5	No relaxation
4.	Taste	-	Agreeable	Agreeable
5.	Turbidity	NTU	Max 1	Max 5
6.	Total dissolved solids	mg/l	Max 500	Max 2000
Table 2	**General parameters concerning substances undesirable in excessive amounts**			
7.	Aluminium (as Al)	mg/l	Max 0.03	Max 0.2
8.	Ammonia (as total ammonia- N)	mg/l	Max 0.5	No relaxation
9.	Anionic detergents (as MBAS)	mg/l	Max 0.2	Max 1.0
10.	Barium (as Ba)	mg/l	Max 0.7	No relaxation
11.	Boron (as B)	mg/l	Max 0.5	Max 1.0
12.	Calcium (as Ca)	mg/l	Max 75	Max 200
13.	Chloramines (as $C1_2$)	mg/l	Max 4.0	No relaxation
14.	Chlorides (as Cl)	mg/l	Max 250	Max 1000
15.	Copper (as Cu)	mg/l	Max 0.05	Max 1.5
16.	Fluoride (as F)	mg/l	Max 1.0	Max 1.5
17.	Free residual chlorine	mg/l	Min 0.2	Min 1
18.	Iron (as Fe)	mg/l	Max 0.3	No relaxation

Sr.	Characteristic	Unit	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
19.	Magnesium (as Mg)	mg/l	Max 30	Max100
20.	Manganese (as Mn)	mg/l	Max 0.1	Max 0.3
21.	Mineral Oil	mg/l	Max 0.5	No relaxation
22.	Nitrate (as NO_3)	mg/l	Max 45	No relaxation
23.	Phenolic compounds (as C_6H_5OH)	mg/l	Max 0.001	Max 0.002
24.	Selenium (as Se)	mg/l	Max 0.01	No relaxation
25.	Silver (as Ag)	mg/l	Max 0.1	No relaxation
26.	Sulphate (as SO_4)	mg/l	Max 200	Max 400
27.	Sulphide (as H_2S)	mg/l	Max 0.05	No relaxation
28.	Total Alkalinity as calcium carbonate	mg/l	Max 200	Max600
29.	Total hardness (as $CaCO_3$)	mg/l	Max 200	Max 600
30.	Zinc (as Zn)	mg/l	Max 5	Max15
Table 3	**Parameters Concerning Toxic Substances**			
31.	Cadmium (as Cd)	mg/l	Max 0.003	No relaxation
32.	Cyanide (as CN)	mg/l	Max 0.05	No relaxation
33.	Lead (as Pb)	mg/l	Max 0.01	No relaxation
34.	Mercury (as Hg)	mg/l	Max 0.001	No relaxation
35.	Molybdenum (as Mo)	mg/l	Max 0.07	No relaxation
36.	Nickel (as Ni)	mg/l	Max 0.02	No relaxation
37.	Pesticides	mg/l	See Table 5	No relaxation
38.	Polychlorinated biphenyls	mg/l	Max 0.0005	No relaxation
39.	Poly nuclear aromatic Hydrocarbons (as PAH)	mg/l	Max 0.0001	No relaxation
40.	Total Arsenic (as As)	mg/l	Max 0.01	Max0.05

Sr.	Characteristic	Unit	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
41.	Total Chromium (as Cr)	mg/l	Max 0.05	No relaxation
42.	Trihalomethanes			
a)	Bromoform	mg/l	Max 0.1	No relaxation
b)	Dibromochloro Methane	mg/l	Max 0.1	No relaxation
c)	Bromodichloromethane	mg/l	Max 0.06	No relaxation
d)	Chloroform	mg/l	Max 0.2	No relaxation
Table 4	**Parameters Concerning Radioactive Substances**			
43.	Radioactive Materials			
a)	Alpha emitters	Bq/L	Max 0.1	No relaxation
b)	Beta emitters	Bq/L	Max 1.0	No relaxation
Table 5	**Pesticide Residues Limits and Test Method**			
i)	Alachor	µg/L	20	No relaxation
ii)	Atrazine	µg/L	2	No relaxation
iii)	Aldrin/ Dieldrin	µg/L	0.03	No relaxation
iv)	Alpha HCH	µg/L	0.01	No relaxation
v)	Beta HCH	µg/L	0.04	No relaxation
vi)	Butachlor	µg/L	125	No relaxation
vii)	Chlorpyriphos	µg/L	30	No relaxation
viii)	Delta HCH	µg/L	0.04	No relaxation
ix)	2,4- Dichlorophenoxyacetic acid	µg/L	30	No relaxation
x)	DDT (o,p & p,p — Isomers of DDT, DDE and DDD)	µg/L	1	No relaxation
xi)	Endosulfan (α, β & sulphate)	µg/L	0.4	No relaxation
xii)	Ethion	µg/L	3	No relaxation

Sr.	Characteristic	Unit	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
xiii)	Gamma - HCH (Lindane)	µg/L	2	No relaxation
xiv)	Isoproturon	µg/L	9	No relaxation
xv)	Malathion	µg/L	190	No relaxation
xvi)	Methyl parathion	µg/L	0.3	No relaxation
xvii)	Monocrotophos	µg/L	1	No relaxation
xviii)	Phorate	µg/L	2	No relaxation
Table 6	**Bacteriological Quality of Drinking Water**			
44.	E.coli or thermotolerant coliform bacteria	/100	Not detectable	-
45.	Total coliform bacteria	/100 mL	Not detectable	-
	Virological Requirements			
46.	MS2 phage	/1 L	Absent	-
	Biological Requirements			
47.	Cryptosporidium	/10 L	Absent	-
48.	Giardia	/10 L	Absent	-
49.	Microscopic organisms such as algae, zooplanktons, flagellates, parasites and toxin producing organisms		Free from microscopic organisms	-

Annexure VIII: CPCB Water Quality Criteria:

Designated best use	Quality Class	Primary Water Quality Criteria
Drinking water source without conventional treatment but with chlorination	A	➢ Total coliform organisms (MPN*/100 ml) shall be 50 or less ➢ pH between 6.5 and 8.5 ➢ Dissolved Oxygen 6 mg/l or more, and ➢ Biochemical Oxygen Demand 2 mg/l or less
Outdoor bathing (organized)	B	➢ Total coliform organisms (MPN/100 ml) shall be 500 or less ➢ pH between 6.5 and 8.5 ➢ Dissolved Oxygen 5 mg/l or more, and ➢ Biochemical Oxygen Demand 3 mg/l or less
Drinking water source with conventional treatment	C	➢ Total coliform organisms (MPN/100ml) shall be 5000 or less ➢ pH between 6 and 9 ➢ Dissolved Oxygen 4 mg/l or more, and ➢ Biochemical Oxygen Demand 3 mg/l or less
Propagation of wildlife and fisheries	D	➢ pH between 6.5 and 8.5 ➢ Dissolved Oxygen 4 mg/l or more, and ➢ Free ammonia (as N) 1.2 mg/l or less
Irrigation, industrial cooling, and controlled disposal	E	➢ pH between 6.0 and 8.5 ➢ Electrical conductivity less than 2250 micro mhos/cm, ➢ Sodium Absorption Ratio less than 26, ➢ and Boron less than 2 mg/l.
	Below E	➢ Not Meeting A, B, C, D & E Criteria

Annexure IX: Water Quality Parameters Requirements and Classification

Water quality parameters are classified into three categories, given in Table (i), (ii) and (iii) (Source: CPCB, 2002, "Water Quality Criteria and Goals", Monitoring of Indian National aquatic Resources Series: MINARS/17/2001-2002).

Table: Basic Water Quality Requirement and Classification (Surface Water + Ground Water)

i) Simple Parameters:

Sr.	Parameters	Requirement for Waters of Class		
		A-Excellent	**B-Desirable**	**C-Acceptable**
(i)	Sanitary Survey	Very Clean neighborhood and catchment	Reasonably clean neighborhood	Generally clean neighborhood
(ii)	General Appearance	No floating matter	No floating matter	No floating matter
(iii)	Colour	Absolutely Colourless	Almost colourless, very light shade if any	No colour of anthropogenic origin
(iv)	Smell	Odourless	Almost odourless	No unpleasant odour
(v)	Transparency	>1.0 depth	>0.5 to 0.1m depth	>0.2 to 0.5 m depth
(vi)	Ecological* (Presence of Animals)	Fish & Insects	Fish & Insects	Fish & Insects

* Applicable to only surface water

ii) Regular Monitoring Parameters:

Sr.	Parameters	Requirement for Waters of Class		
		A Excellent	**B-Desirable**	**C-Acceptable**
(i)	pH	7.0 to 8.5	6.5 to 9.0	6.5 to 9.0
(ii)	DO (% Saturation)	90-110	80-120	60-140
(iii)	BOD, mg/l	Below 2	Below 5	Below 8
(iv)	EC, µmhos/cm	<1000	<2250	<4000
(v)	(NO_2+NO_3)-Nitrogen, mg/l	<5	<10	<15
(vi)	Suspended solid, mg/l	<25	<50	<100

Sr.	Parameters	Requirement for Waters of Class		
		A Excellent	B-Desirable	C-Acceptable
(vii)	Fecal Coliform, MPN/ 100 ml	<20 per 100 ml	<200 per 100 ml	<2000 per 100 ml
(viii)	Bio-assay (Zebra Fish)	No death in 5 days	No death in 3 days	No death in 2 days

Note:

1. Dissolved Oxygen (DO) not applicable for ground waters.
2. Dissolved Oxygen in eutrophicated waters should include measurement for diurnal variation.
3. Suspended solid limit is applicable only during non-monsoon period.
4. Faecal Coliform values should meet for 90% times.
5. Static Bio-Assay method may be adopted.

iii) Specific Parameters: (Only in case of need/apprehensions)

Sr.	Parameters	Requirement for Waters of Class		
		A- Excellent	B-Desirable	C-Acceptable
(i)	Total Phosphorous	<0.1 mg/l	<0.2 mg/l	<0.3 mg/l
(ii)	T.K.N	<1.0 mg/l	<2.0 mg/l	<3.0 mg/l
(iii)	Total Ammonia (NH4 + NH3)-Nitrogen	<0.5 mg/l	<1.0 mg/l	<1.5 mg/l
(iv)	Phenols	<2 µg/l	<5 µg/l	<10 µg/l
(v)	Surface Active Agents	<20 µg/l	<100 µg/l	<200 µg/l
(vi)	Organo Chlorine Pesticides	<0.05 µg/l	<0.1 µg/l	<0.2 µg/l
(vii)	PAH	<0.05 µg/l	<0.1 µg/l	<0.2 µg/l
(viii)	PCB and PCT	<0.01 µg/l	<0.01 µg/l	<0.02 µg/l
(ix)	Zinc	<100 µg/l	<200 µg/l	<300 µg/l
(x)	Nickel	<50 µg/l	<100 µg/l	<200 µg/l
(xi)	Copper	<20 µg/l	<50 µg/l	<100 µg/l
(xii)	Chromium (Total)	<20 µg/l	<50 µg/l	<100 µg/l
(xiii)	Arsenic (Total)	<20 µg/l	<50 µg/l	<100 µg/l

Sr.	Parameters	Requirement for Waters of Class		
		A- Excellent	**B-Desirable**	**C-Acceptable**
(xiv)	Lead	<20 µg/l	<50 µg/l	<100 µg/l
(xv)	Cadmium	<1.0 µg/l	<2.5 µg/l	<5.0 µg/l
(xvi)	Mercury	<0.2 µg/l	<0.5 µg/l	<1.0 µg/l